



Model Curriculum

QP Name: Foreman-Electrical Works

QP Code: CON/Q0604

QP Version: 2.0

NSQF Level: 5

Model Curriculum Version: 1.0

Construction Skill Development Council of India | Construction Skill Development Council of India (CSDCI), CPB – 201 & 202, Block-4B, DLF corporate Park, Phase – III, MG Road Gurugram – 122002
Near Guru Dronacharya Metro Station



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Training Parameters

Sector	Construction Skill Development Council of India
Sub-Sector	Real Estate and Infrastructure Construction
Occupation	Construction Electrical Works
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7411.0301
Minimum Educational Qualification and Experience	10th Class/ I.T.I (Electrical) with 3 Years of experience as a certified Construction Electrician LV OR 10th Class/ I.T.I (Electrical) with 8 Years of experience in Construction Electrical Works for a Non-trained worker
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	31/03/2022
Next Review Date	31/03/2025
NSQC Approval Date	31/03/2022
QP Version	Version number 2.0
Model Curriculum Creation Date	03/09/2021
Model Curriculum Valid Up to Date	31/03/2025
Model Curriculum Version	Version number 1.0
Minimum Duration of the Course	540 hrs.
Maximum Duration of the Course	540 hrs.



Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Interpret electrical drawings, specifications, IS codes, and manufacture’s guidelines for conducting electrical works at the construction site.
- Elaborate the use and working principle of complex electrical circuits, electrical panels, transformers, generators, motors (single and three phase), pumps, and starter (DOL, star delta, step down starters, etc.).
- Discuss about the various resources, them and organise/ arrange them prior to electrification of heavy machineries.
- Explain the electrification procedure of heavy plant and machineries.
- Discuss about the materials and tools required for the permanent wiring work.
- Explain the procedure to install and maintain wiring, electrical fixtures, and equipment as per standard practice.
- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.
- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.
- Explain the methods of allocating targets to the worker’s gangs and subordinates as per the work plan/ schedule.
- Discuss about the supervising methods and performance evaluating techniques of workers/ subordinates/ gangs.
- Discuss about maintaining healthy and safe working environment at the construction site.
- Identify risks and other emergency situations at the workplace and respond accordingly to minimize risk.
- Explain methods of sanitization and infection control measures followed at the construction site.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
<i>Bridge Module</i>	08:00	00:00	00:00	00:00	08:00
CON/N0611 Monitor regular electrical works (installation, maintenance and repairing) at a construction site NOS Version No.2.0	22:00	00:00	60:00	00:00	82:00



NSQF Level 5					
<i>Monitor regular electrical works (installation, maintenance and repairing) at a construction site</i>	22:00	00:00	60:00	00:00	82:00
CON/N0612 Establish electrical connections during erection of plant and heavy construction machineries NOS Version No.2.0 NSQF Level 5	60:00	00:00	90:00	00:00	150:00
<i>Establish electrical connections during erection of plant and heavy construction machineries</i>	60:00	00:00	90:00	00:00	150:00
CON/N0613 Conduct permanent wiring, maintenance work in buildings NOS Version No. 2.0 NSQF Level 5	90:00	00:00	120:00	00:00	210:00
<i>Conduct permanent wiring, maintenance work in buildings</i>	90:00	00:00	120:00	00:00	210:00
CON/N8001 Work effectively in a team to deliver desired results at the workplace NOS Version No.6 NSQF Level 5	07:30	00:00	22:30	00:00	30:00
<i>Communicate effectively at workplace</i>	07:30	00:00	22:30	00:00	30:00
CON/N8002 Plan and organize work to meet expected outcomes NOS Version No. 5 NSQF Level 5	07:30	00:00	22:30	00:00	30:00
<i>Prioritise activities and organise resources</i>	07:30	00:00	22:30	00:00	30:00
CON/N8003 Supervise, monitor and evaluate performance of subordinates at workplace NOS Version No. 2.0 NSQF Level 5	07:30	00:00	22:30	00:00	30:00
<i>Supervise, monitor and evaluate performance of</i>	07:30	00:00	22:30	00:00	30:00



<i>subordinates at workplace</i>					
CON/N9002 Manage workplace for safe and healthy work environment NOS Version No.2.0 NSQF Level 5	07:30	00:00	22:30	00:00	30:00
<i>Manage safety and healthy at workplace</i>	07:30	00:00	22:30	00:00	30:00
Total Duration	210:00	00:00	360:00	00:00	570:00



Module Details

Module 1: Introduction to the job role Foreman Electrical Works

(Construction)

Bridge Module

Terminal Outcomes:

- Explain the role and responsibilities of the Foreman-electrical Works (Construction).
- Discuss the career progression for the Foreman-electrical Works (Construction).

Duration: 08:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the role and responsibilities of a Foreman-electrical Works. • Define the personal attributes required in Construction Electrical Works occupation. • Explain the future possible progression and career development options of a Foreman-electrical Works. 	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	



Module 2: Monitor regular electrical works (installation, maintenance and repairing) at a construction site

Mapped to CON/N0611, v 2.0

Terminal Outcomes:

- Interpret electrical drawings, specifications, IS codes, and manufacture’s guidelines for conducting electrical works at the construction site.
- Elaborate the use and working principle of complex electrical circuits, electrical panels, transformers, generators, motors (single and three phase), pumps, and starter (DOL, star delta, step down starters, etc.).

Duration: 22:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Interpret the electrical drawings, plans and Single Line Diagrams (SLDs) related to single and three phase wiring system. • Estimate the required quantity of materials, tools, equipment and manpower from the drawings • Discuss the method to calculate load for the electrical circuit/ wiring s per electrical diagrams/ points. • Explain the procedure to monitor regular electrical (Low Voltage, LV) works at the construction site as per Indian Standard codes and practices. • Describe the manufacturer’s details of electrical equipment, materials, fixtures, tools, etc. to be used. • Discuss the principles of electrical theory applied to electrical circuit/ wiring and safety norms as per standard/ organisational norms. • Discuss the details of electrical isolation procedure for both single and three phase electrical connections. • Explain method for electrical inspections to determine faults/ malfunctions in the electrical connections/ circuits. • Describe the use of electrical measuring and testing devices, and record the results as per standard/ organisational norms. • Explain how to develop electrical drawings using appropriate symbols and abbreviations as per standard practice. • Discuss the use and working principle of complex electrical circuits, electrical panels, transformers, generators, motors (single and three phase), pumps, and starter (DOL, star delta, step down starters, etc.). 	



- Explain the application and specification of electrical protective devices and earthing work.
- Describe the steps for the measurement of Earth resistance by earth tester, and testing of Earth Leakage by ELCB and relay, etc.
- Discuss the standards procedure for storing, and stacking of electrical tools and equipment.
- Explain the procedure for calibration of equipment and machines as per the standard/ organization policy.
- Elaborate about the quality control systems, safety provisions and site documentation procedures for electrical works at the construction site.

Classroom Aids:

Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids

Tools, Equipment and Other Requirements

screw drivers, wire cutters, wire strippers, pliers, hammers, hacksaws, chisels, spanners (set), wrenches, measuring tape, spirit level, plumb-bob, mason’s line, multi-meter, voltage tester, drilling machine, hand cutting machine, cables, wires, sockets, switches, lights, conduits (flexible and rigid)m, raceways, vibrators, bar cutting machine, bar bending machine, water pumps



Module 3: Establish electrical connections during erection of plant and heavy construction machineries

Mapped to CON/N0612, v. 2.0

Terminal Outcomes:

- Discuss about the various resources, them and organise/ arrange them prior to electrification of heavy machineries.
- Explain the electrification procedure of heavy plant and machineries.

Duration: 60:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the concept of drawings, SLDs related schematics for single and three phase wiring system. • Explain the guidelines provided in Indian Standard code of practice applicable for establishing and inspecting electrical wiring works. • Describe the electrical wiring details, and circuit configuration of a concrete batching plant/ hot mix plant/ crusher plant. • Discuss the power arrangement for the slip-form works in silos, and special structures. • Brief about the electrical installation sequence of electrical panels, transformers, DGs, cables, cranes and electrification of machineries. • Prepare the work plan for installation of the heavy machineries. • Explain the working and installation of electric panel with its components. • Discuss the power rating/ specification of electrical fixtures/ materials used in an electrical panel. • Elaborate the type of electrical works involved in process of tower crane erection and concrete batching plant installation. • Discuss the various type of electrical earthing work including material and specification. 	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
wall chasing chisel, hammer, hacksaw, file, marking tools, table vice, Stock and die set, Pipe cutter to cut pipes, Hand brooms, Shovels, Screw driver set, measuring tape, spirit level, plumb-bob , mason’s line , cutting machine, drilling machine, power source, , rigid conduits, flexible conduit, clamps for conduits, screws, helmet , safety shoes , safety belt, cotton hand gloves, goggles, Reflective jackets, Safety message boards, Fire extinguishers, Sand buckets	



Module 4: Conduct permanent wiring, maintenance work in buildings

Mapped to CON/N0613, v. 2.0

Terminal Outcomes:

- Discuss about the materials and tools required for the permanent wiring work.
- Explain the procedure to install and maintain wiring, electrical fixtures, and equipment as per standard practice.

Duration: 90:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the guidelines provided in Indian Standard code of practice applicable to electrical wiring works. • State the common electrical wiring Accessories, and their specifications. • Explain the functions of switches, lamp holders, plugs and sockets • Elaborate the concept of drawings, circuit diagrams and/or related schematics for single and three phase LV house wiring system. • Describe the estimation methods for material quantity from the electrical drawings. • Discuss the use of hand and power tools, measuring devices, electrical fittings/ fixtures as per standard practice and manufacturer’s guidelines. • Explain 3 phases and single-phase types of connections with their uses. • Elaborate the concept of colour coding for the cables used in wiring system. • Describe the properties of different components used in electrical earthing work. • Discuss about the size and shape of battens, raceways, and conduits (Flexible/rigid). • Explain the process of cable laying through conduits. • Describe the various methods of earthing. • Explain the process to measure Earth resistance by earth tester and also test for Earth Leakage detection by ELCB and relay. • Elaborate the area of application and specification of protective devices like fire alarm, MCB, ELCB, MCCB. • Discuss the methods of standard house wiring and best practices involved. 	



- Brief the standard procedure of storing, stacking electrical material, tools and equipment at workplace.

Classroom Aids:

Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids

Tools, Equipment and Other Requirements

Trowel, pointing Trowel, Shovel, mortar Pan, spade, pick axe, GI bucket 5L capacity, wheel Barrow, lime powder, wooden pegs, hammer, hard broom, source of water, ladder, measuring tape, mason's line, hand roller, plate vibrator, power source, helmet , safety shoes , cotton hand gloves, goggles, Reflective jackets, Safety message boards



Module 5: Communicate effectively at workplace

Mapped to CON/N8001, v.6.0

Terminal Outcomes:

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.

Duration: 07:30	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the effects and benefits of timely actions relevant to the task at hand with examples. • Explain the importance of teamwork and its effects relevant to the task at hand with examples. • Explain the importance of proper and effective communication and its adverse effects in case of failure of proper communication. • Discuss about gender and its related concept: gender equality, gender equity (group work) • Discuss different types of disabilities (physical, mental, intellectual or sensory impairment). • Discuss the activities sensitive to the cultural diversity, disabilities and gender neutrality at the workplace. • Discuss the basic rules and regulations related to gender sensitivity, disabilities, and cultural diversity, with their impact on operations of a workplace. • Discuss how to take initiative in resolving issues among co-workers in a given situation. • Discuss reporting procedure followed at the workplace. 	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 6: Prioritise activities and organise resources

Mapped to CON/N8002, v.5.0

Terminal Outcomes:

- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.

Duration: 07:30	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain methods to upkeep, store and stack tools, materials used for domain specific works. • Explain the process of planning of the given tasks and activities relevant to the trade/job role within defined scope and duration. • Explain the procedure adopted for prioritizing an activity and sequencing of activities. • Explain the work plan and flow of activities in sequence for the assigned work. • Explain basic concept of labour productivity and work productivity. • Explain requisition of resources, reporting for requirement of resources orally and in written to concerned authority. • Explain how to minimise wastage of resources. • Explain the plan for waste collection and disposal after task. 	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 7: Supervise, monitor and evaluate performance of subordinates at workplace

Mapped to CON/N8003, v.2.0

Terminal Outcome:

- Explain the methods of allocating targets to the worker’s gangs and subordinates as per the work plan/ schedule.
- Discuss about the supervising methods and performance evaluating techniques of workers/ subordinates/ gangs.

Duration: 07:30	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the procedures and policies regarding the performance evaluation and appraisal of the construction workers/ subordinates. • Explain the methods to assign and track the work targets given to the various worker’s gangs and subordinates. • Describe the checks/ procedures to ensure the quality/ accuracy of the completed work/ task as per standard practices. • Discuss the inclusion of activities and practices into the construction work which are sensitive towards PWD (Person with disabilities), Cultural diversity and gender equality. 	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 8: Manage safety and healthy at workplace

Mapped to CON/N9002, v 2.0

Terminal Outcome:

- Discuss about maintaining healthy and safe working environment at the construction site.
- Identify risks and other emergency situations at the workplace and respond accordingly to minimize risk.
- Explain methods of sanitization and infection control measures followed at the construction site.

Duration: 07:30	Duration: 00:00
Theory – Key Learning Outcomes <ul style="list-style-type: none"> • Explain the various types of hazards at construction site and procedures to respond in case of any emergency or accidents. • Discuss about the various personal protective equipment (PPE) used during various construction works. • Describe the safe work practices to be followed while performing task. • Discuss the methods to ensure the workplace safety and good health of workers. • Explain the safe ways for using tools, tackles, equipment and materials as specified by Environment, Health and Safety (EHS) department. • Discuss the policies, guidelines and other requirements related to workplace safety as per EHS department/ government norms. • Describe the various types of infectious disease, their symptoms and control, at the construction site. • Discuss the medical guidelines, national legislation, local policies and protocols regarding spread of infectious disease. 	Practical – Key Learning Outcomes
Classroom Aids: Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements Leather Hand Gloves, Jump suit, Wire brush, Hand & Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board, personal protective equipment (PPE), organizational and statutory documents for EHS	



Module 9: On-the-Job Training

Mapped to Foreman – Electrical Works V. 2.0

CON/N0611 V. 2.0, Mandatory Duration: 60:00	Recommended Duration:
Location: On Site	
<ul style="list-style-type: none"> • Demonstrate to ensure the period maintenance of the electric wiring, cables, equipment and fixtures deployed at construction site as per standard practice. • Check the installed LV electrical circuits/ arrangements, materials, fixtures and devices are as per standard specifications. • Demonstrate the methods to troubleshoot wiring system, circuit, lighting arrangements, temporary electrical panels and its components for any malfunction/ fault by using appropriate tools and equipment. • Prepare sketches of the electrical circuits using standard symbols for various components, as per the requirement. • Demonstrate to conduct the required electrical works and its periodic maintenance as per the given instruction/ specifications. • Demonstrate to conduct the installation and maintenance of electrical distribution box with its accessories and common construction equipment like pumps, bar bending/ cutting machine, transformers, etc. • Monitor the activities to isolate and terminate the cables properly at the power source and equipment. • Ensure the safety against the adverse situation like vicinity of water, fire, and other hazards for installed electrical system at regular intervals. • Demonstrate to ensure proper earthing of the electrical circuits as per the standard practice and specification. • Demonstrate to conduct the trial run of the electrical circuit and obtain approvals from the appropriate authorities. • Prepare reports, data sheets and reading documents as per the requirements and organisational norms. 	
screw drivers, wire cutters, wire strippers, pliers, hammers, hacksaws, chisels, spanners (set), wrenches, measuring tape, spirit level, plumb-bob, mason’s line, multi-meter, voltage tester, drilling machine, hand cutting machine, cables, wires, sockets, switches, lights, conduits (flexible and rigid)m, raceways, vibrators, bar cutting machine, bar bending machine, water pumps	
CON/N0612 V. 2.0, Mandatory Duration: 90:00	
Location: On Site	
<ul style="list-style-type: none"> • Demonstrate statutory compliances to be maintained during installation of electrical equipment/ machinery • Explain common requirements of various electrical work approving bodies/ authorities • Develop sketches for laying electrical cables and placing construction equipment/ machineries/ power sources • Preparation of work schedule for electrical inspections/ installations • Detailed electrical specifications of the equipment/ machinery • Interpret electrical safety guidelines and manufacturer’s specification regarding common construction equipment/ cranes/ heavy machineries required for construction work • Explain electrical works involved and their sequence in erection procedure of concrete batching plant and tower crane in a construction site • Explain preparatory works required and their timelines of completion for different key electrical activities involved in each phase of erection procedure of equipment/ heavy construction machinery • Demonstrate nature of common faults in electrical installations of equipment. and possible electrical tests/ inspections 	



- Demonstrate method of safe electrical isolations prior to undertake inspection in electrical circuits
- Prepare list of required consumables, tools, diagnostic devices from work schedule, for installation and inspection of electrical circuits/ equipment.
- Estimate and justify time requirement for electrical activities involved, referring to the supplied diagrams of electrical installation to be done for machineries/ equipment to be erected
- Describe various electrical tests done in the circuits to ensure its conformance with specifications, requirements and applicable statutory and HSE requirements
- Diagnose malfunctioning of construction equipment/ machineries, cables, electrical panels and electrical fixtures
- Prepare observation sheet and test reports be collating data from electrical inspections
- Check calibration certificates and describe quality norms related to calibration procedure
- Explain and demonstrate electrical safety norms/ safe working practices applicable to 3 phase LV electrical works
- Carry out following tasks as per equipment manufacturer’s guidelines/ instructions
- install/ Inspect and repair (if required) electrical cable for critical construction equipment.
- Join electrical cables using standard cable joining methods
- Inspect switchgears and Temporary electrical panels
- Inspect electrical transformers attached to machinery/ equipment
- Inspect electrical generators attached to the equipment/ machinery
- Install earthing system for three phase electrical circuits used for LV construction equipment
- Electrical safety devices provided with equipment such as limit switches, circuit breakers etc.
- Explain method of taking quality approvals from concerned authority
- Recording/ reporting procedure of daily work status as per standard procedure
- Describe method of resource reconciliation and prepare of reconciliation sheet after assigned tasks

wall chasing chisel, hammer, hacksaw, file, marking tools, table vice, Stock and die set, Pipe cutter to cut pipes, Hand brooms, Shovels, Screw driver set, measuring tape, spirit level, plumb-bob , mason’s line , cutting machine, drilling machine, power source, , rigid conduits, flexible conduit, clamps for conduits, screws, helmet , safety shoes , safety belt, cotton hand gloves, goggles, Reflective jackets, Safety message boards, Fire extinguishers, Sand buckets

CON/N0613 V. 2.0, Mandatory Duration: 120:00

Location: On Site

- Demonstrate the method of cable laying through conduits.
- Demonstrate the installation of conduits, race ways, switch boards, distribution boards, lights, fans and lighting fixtures
- Carry out electrical isolations to the circuit prior to undertake
- Carry out inspections on installed electrical circuits to trace out leakage in the circuits, resistance in the circuits, short circuit (if any).
- Carry out earthing of the installed electrical circuit as per standard practice.

Trowel, pointing Trowel, Shovel, mortar Pan, spade, pick axe, GI bucket 5L capacity, wheel Barrow, lime powder, wooden pegs, hammer, hard broom, source of water, ladder, measuring tape, mason’s line, hand roller, plate vibrator, power source, helmet, safety shoes , cotton hand gloves, goggles, Reflective jackets, Safety message boards

CON/N8001 V. 2.0, Mandatory Duration: 22:30

Location: On Site

- Apply effective communication skills while interacting with co-workers, trade seniors and others during the assigned task.



- Use appropriate writing skills and verbal communication reporting as per commonly applicable organisational norms.
- Demonstrate teamwork skills during assigned task.
- Demonstrate acceptable interpersonal transactions with individuals having disabilities (physical, mental, intellectual or sensory impairment) or cultural diversity.
- Demonstrate the process modifications required to make the workplace free from gender biases.

CON/8002 V.6.0 Mandatory Duration: 22:30

Location: On Site

- Identify the work target and plan activities to achieve the desired productivity.
- Demonstrate requisition of resource citing an example.
- Demonstrate the planning for various activities relevant to task as per the scope and schedule.
- Demonstrate how to organise the required tool, manpower and material resources for the assigned task.
- Select required quantity of materials, tools or devices for defined work activities.
- Demonstrate how to prioritize all works/ activities to maximise output.
- Demonstrate optimum use of resources while performing domain specific work activities.
- Demonstrate waste collection and disposal as per organisational norms.
- Demonstrate completion of work within stipulated time and plan.

CON/8003 V.6.0 Mandatory Duration: 22:30

- Demonstrate the methods to set the targets for the gangs of workers as per their expertise/skill and requirement at the construction site.
- Identify and set the performance standards for each of the workers in the gangs as per their skills and responsibilities.
- Demonstrate the methods to inspect and supervise the work activities of worker's gangs and subordinates at the construction site.
- Implement the effective methods to monitor, evaluate, and record overall performance/productivity of the subordinates and other workers at the construction site.
- Ensure that all the relevant organisational policies and procedures are followed during the execution of the construction activities.
- Demonstrate the all gender sensitive and inclusive work environment at the construction site as per the statutory/ organisational rule.

CON/9002 V 6.0, Mandatory Duration: 22:30

Location: On Site

- Ensure that all the safety and protection installation at construction site are adequate and correctly placed.
- Demonstrate effective implementation of the health and safety plan for all the subordinates at the construction site.
- Perform checks to ensure the safe handling, stacking and storing of tools, tackles, equipment and materials at the work place.
- Demonstrate effective use of proper PPE by the subordinates.
- Demonstrate provision for proper entrance and exit from confined spaces, excavated pits and other locations of workplace, as per safety recommendations.
- Demonstrate the use of fire protection equipment for different type of fire hazard.
- Demonstrate ways to create awareness about organisational policies and procedures associated with health, safety and welfare of construction workers.
- Demonstrate the procedures for identifying, recording and reporting of hazards/accidents/hazard of any infectious disease/ pandemic as per organizational and statutory requirements.
- Ensure effective adherence to response to emergency procedures / protocols.



- Demonstrate effective implementation of control measures to reduce risks.
- Demonstrate vertigo test.
- Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization.
- Ensure proper housekeeping at the workplace.

Leather Hand Gloves, Jump suit, Wire brush, Hand & Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board, personal protective equipment (PPE), organizational and statutory documents for EHS

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Post-Graduation/Graduation in Engineering	M. Tech /B. Tech	Three	Electrical Engineering	0	Electrical Engineering	As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory. However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience
Diploma	M. Tech /B. Tech	Five	Electrical Engineering	0	Electrical Engineering	
Graduation/ Ex. Army /ITI /12 th pass	Any Graduation, certificate from Army/ITI certificate in relevant trade/12 th pas.	Seven	Working Experience as Foreman-Electrical Works / supervisory role in construction electrical works	0	Working Experience as Foreman-Electrical Works / supervisory role in construction electrical works	

Trainer Certification	
Domain Certification	Platform Certification
Trainer- 80 % in each NOS of Qualification Pack “Foreman-Electrical Works CON/Q0604 v2.0” and 80% overall.	Trainers - 80% in each NOS of Qualification Pack “Trainer MEP/Q2601, v1.0” and 80% overall.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Year s	Specialization	Year s	Specialization	
Post-Graduation/Graduation in Engineering	M. Tech /B. Tech	Four	Electrical Engineering	0	Electrical Engineering	As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory . However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience
Diploma	M. Tech /B. Tech	Six	Electrical Engineering	0	Electrical Engineering	
Graduation/ Ex. Army /ITI /12 th pass	Any Graduation, certificate from Army/ITI certificate in relevant trade/12 th pas.	Eight	Working Experience as Foreman-Electrical Works / supervisory role in construction electrical works	0	Working Experience as Foreman-Electrical Works / supervisory role in construction electrical works	

Assessor Certification	
Domain Certification	Platform Certification
Assessor- 80 % in each NOS of Qualification Pack “Foreman- Electrical Works CON/Q0604 v2.0” and 80% overall.	Assessors- 80% in each NOS of Qualification Pack “Assessor MEP/Q2701, v1.0”and overall 80%.



Assessment strategy

Assessment system Overview

Assessment is done through CSDCI affiliated Assessment Agencies. Assessors are trained & certified by CSDCI after training of assessors program. Assessments is conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas. The assessment will have both theory and practical components in 40:60 ratio for Foreman Electrical Works (Construction) job role.

During the practical task, trainees are assessed on their workmanship, quality of finished product and time management. They will be graded for all their assessments based on the approved assessment strategy which is signed off by CSDCI. The Assessor submits an assessment plan to CSDCI prior to assessments.

The assessment plan contains the following information:

- What will be assessed, i.e. the competency based on each NOS based on theory and practical questions
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- duration of assessment
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- The criteria for decision making i.e. those aspects that will guide judgments and
- Where appropriate, any supplementary criteria used to make a judgment on the level of performance.

Testing Environment

Training partner shares the batch start date and end date, number of trainees and the job role.

Assessment will be fixed for a day after the end date of training. It could be next day or later.

Assessment will be conducted at the training venue/test center.

The knowledge/theory assessments is conducted with proper seating arrangements with enough space between the candidates to prevent copying.

Question set for theory and practical will be distributed to each candidate by the Assessor. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject. The skill /practical assessments will be conducted in the approved test centers. The training provider will ensure adequate tools and materials are available to conduct the practical test.

If number of candidates are more than 30, more assessors will be organized on same day to complete the assessment.

The assessment has to comprise of two components, namely:

1. Knowledge assessment (theory/viva assessment)
2. Skill assessment (practical/hands-on skill assessment)



Mode of assessment

1. Demonstration/Practical for Performance /Skill Assessment
 2. Synoptic multiple choice question test
 3. Viva
- } For Knowledge Assessment

Performance/skill assessment: The performance/skill assessment will be conducted through demonstration/practical

For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.

The assessment is conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

Knowledge Assessment: The knowledge assessments are conducted through written test/ viva.

Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which are prepared externally and externally marked, meaning by agency having no link with training partners. The test may be conducted by the assessor in the oral mode, if required, considering the lack of reading and comprehending acumen (skills) of trainees. In such cases, the assessor will mention it on top of the MCQ submitted to CSDCI.

The assessment strategy, weightage and duration of assessment for Foreman – Electrical works is summarized below

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ/Viva	40	2.5
Skill	Summative	Structured practical task	30	3.0
Skill	Formative	Structured practical task	30	1.5

Assessment Quality Assurance framework

CSDCI has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criteria under knowledge and skill. The criteria ensures quality assurance as it ensures valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment body develop questions based on CSDCI issued assessment criteria.



Evidences in the form of answer sheets in case of knowledge assessments are collected. For skill assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. CSDCI does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.

The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit is conducted by CSDCI to monitor assessment.

Methods of Validation

Unless the trainee is registered, the person cannot undergo assessment. To further ensure that the person registered is the person appearing for assessment, ID verification is carried out. Aadhar card number is part of registering the candidate for training. This forms the basis of further verification during the assessment.

Assessor conducts the assessment through theory and practical questions developed in accordance with the assessment criteria and guidelines issued by CSDCI. This too is verified by random audits carried out by CSDCI.

Evidences for assessments are to be collected and submitted to CSDCI for verification as per demand.

Assessment agency is responsible to put details in SIP. CSDCI will also validate the data and result received from the assessment agency.

Method of assessment documentation and access

The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by CSDCI assessment team. After upload, only CSDCI can access this data. CSDCI approves the results within five days after which results are uploaded on SIP by Assessment Agency.



References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.



Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
CSDCI	Construction Skill development Council of India
MCQ	Multiple Choice Question
PPEs	Personal Protective Equipment
RCC	Reinforced Cement Concrete