Model Curriculum

QP Name: Helper Electrician

QP Code: CON/Q0601

QP Version: 2.0

NSQF Level: 2

Model Curriculum Version: 1.0

Construction Skill Development Council of India|| Construction Skill Development Council of India (CSDCCI), CPB – 103 & 104, 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	2
Aligned to NCO/ISCO/ISIC Code	NCO-2015/9313.0501
Minimum Educational Qualification and Experience	Ability to read and write
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	2.0
Model Curriculum Creation Date	05/01/2020
Model Curriculum Valid Up to Date	31/03/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	270 hrs
Maximum Duration of the Course	270 hrs

Program Overview

Training Outcomes

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

- Handle different tools, measuring devices and materials used for LV electrical work.
- Shift and stack various materials and tools used for electrical work.
- Perform wall chasing work in concealed wiring work.
- Perform laying of conduits in concealed wiring work.
- Perform external threading on MS conduit.
- Identify different components of scaffold.
- List tools, materials components required for erection of 3.6-meter scaffold.
- Erect and dismantle scaffold up to 3.6 metres height.
- Stack all the components of the scaffold after dismantling.
- 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.
- Identify various hazards at construction site.
- Use PPE's relevant to electrical works.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Compulsory Modules

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

NOS and Module Details	Theory Duration (Hrs)	Practical Duration (Hrs)	On-the-Job Training Duration (Mandatory) (Hrs)	On-the-Job Training Duration (Recommended) (Hrs)	Total Duration (Hrs)
Bridge Module	**08:00**	**00:00**	**00:00**	**00:00**	**08:00**
CON/N0606 *Handle different tools, measuring devices and materials relevant to LV (low voltage) electrical works* **NOS Version No. 2.0** **NSQF Level 2**	**07:00**	**45:00**	**00:00**	**00:00**	**52:00**
Handle different tools, measuring devices and materials relevant to LV	**07:00**	**45:00**	**00:00**	**00:00**	**52:00**

(low voltage) electrical works					
CON/N0607 *Carry out wall chasing and external threading on MS (mild steel) conduit* NOS Version No. 2.0 NSQF Level 2	22:30	67:30	00:00	00:00	90:00
Wall chasing and external threading on MS (mild steel) conduit	22:30	67:30	00:00	00:00	90:00
CON/N0101 *Erect and dismantle temporary scaffold up to 3.6 meter height* NOS Version No. 5.0 NSQF Level 2	07:30	52:30	00:00	00:00	60:00
Erect and dismantle scaffold up to 3.6-meter height	07:30	52:30	00:00	00:00	60:00
CON/N8001 *Work effectively in a team to deliver desired results at the workplace* NOS Version No. 5.0 NSQF Level 2	07:00	22:30	00:00	00:00	30:00
Team work and effective communication at workplace	07:00	22:30	00:00	00:00	30:00
CON/N9001 *Work according to personal health, safety and environment protocol at construction site* NOS Version No. 7.0 NSQF Level 2	07:00	22:30	00:00	00:00	30:00
Follow safety norms as defined by organization, adopt healthy and safe work practices	07:00	22:30	00:00	00:00	30:00
Total Duration	60:00	210:00	00:00	00:00	270:00

Module Details

Module 1: Introduction to Helper Electrician job role

Bridge Module

Terminal Outcomes:

- Explain the role and responsibilities of Helper Electrician
- Discuss the career progression options for Helper Electrician

Duration: *08:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain roles and responsibilities of the job role of Helper Electrician. • Define the personal attributes required in the occupation of Construction electrician works. • Explain the future possible progression and career development options of a helper electrician.	
Classroom Aids:	
Computer, Printer, Projector, White board/ flip chart, Marker and duster	
Tools, Equipment and Other Requirements	
N.A	

Module 2: Handle different tools, measuring devices and materials relevant to LV (low voltage) electrical works

Mapped to CON/N0606, v.2.0

Terminal Outcomes:

- Handle different tools, measuring devices and materials used for LV electrical work.
- Shift and stack various materials and tools used for electrical work.

Duration: 07*:00*	**Duration**: *845:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List the different materials, fixtures, tools and equipment relevant to LV electrical work. • Explain the use of common electrical measuring devices required to undertake LV electrical tests/ inspections. • List the common construction equipment used in other construction activities such as bar bending, concreting etc. • List the types of circuit breakers, starters, relays including their areas of use. • Explain physical and chemical properties of good conductor, semi-conductor and bad conductor materials. • Explain basic concept of electrical current flow and factors which influence electrical flow through conductor. • Explain standard practice of material handling and storing at workplace.	• Demonstrate the use of different hand and power tools relevant to LV electrical works. • Demonstrate the use of measuring and marking tools relevant to LV electrical installation work. • Demonstrate standard procedure of shifting lights, cables, conduits, cable trays, brackets, DBs, ladders and other relevant materials. • Demonstrate storing and stacking of electrical materials as per standard practices. • Demonstrate standards practice of tagging materials, tools and tackles.
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	
Wall Chasing Chisel, Hammer, Hacksaw, File, Marking Tools, Table Vice, Stock and Die Set, Pipe Cutter, Hand Brooms, Shovels, Screw Driver Set, Measuring Tape, Spirit Level, Plumb-Bob, Mason's Line, Power Tools, 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 3: Carry out wall chasing and external threading on MS (mild steel) conduit

Mapped to CON/N0607, v.2.0.

Terminal Outcomes:

- Perfom wall chasing work in concealed wiring work.
- Perform laying of conduits in concealed wiring work.
- Perform external threading on MS conduit.

Duration: *22:30*	**Duration**: *67:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain electrical wiring methods adopted in electrification of buildings. • Identify electrical fixtures used in electrical wiring works. • Explain concealed electrical wiring and its use. • Discuss the use of power tools and hand tools required for wall chasing and threading of conduits. • Explain common accessories used for fixing of conduits • Explain specification of conduits and their uses. • Explain standard procedure of handling and storing of electrical materials required for wiring work.	• Demonstrate marking and measurement on the wall prior to chasing. • Demonstrate how to chase the wall of given depth using appropriate tools. • Perform fixing of conduit in the chased wall using appropriate accessories. • Perform cutting and edge preparation of MS conduits. • Demonstrate threading of MS conduits using die and tap. • Demonstrate maintenance/ upkeep of electrical fixtures, tools and equipment.
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	
Wall Chasing Chisel, Hammer, Hacksaw, File, Marking Tools, Table Vice, Stock And Die Set, Pipe Cutter, Hand Brooms, Shovels, Screw Driver Set, Measuring Tape, Spirit Level, Plumb-Bob , Mason's Line , Power Tools, 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: Erect and dismantle scaffold up to 3.6-meter height

Mapped to CON/N0101, v.5.0

Terminal Outcomes:

- Identify different components of scaffold.
- List tools, materials components required for erection of 3.6 meter scaffold.
- Erect and dismantle scaffold up to 3.6 metres height.
- Stack all the components of the scaffold after dismantling.

Duration: *07:30*	**Duration**: *52:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain scaffolding and its purpose. • List the common materials and tools used for erection of scaffolding (pipe, cup lock (vertical and ledgers), H- frames, bamboo and balli. • Discuss the functions of different hand tools like hammer, spanner, pulleys, hooks, ropes, etc., used for erection/ dismantling of scaffolds • Describe the visual checks to be carried out on the scaffolding components to ascertain their usability • Explain the functions of materials, components and accessories used in scaffolding • Explain the methods adopted during the erection of the scaffold to ensure its safety. • Explain various checks to be done on completion of erection of scaffolds, such as verticality check, stability check and so on • Explain the sequence and standard procedure to dismantle the scaffold and stack their components	• Select different components used in scaffolding such as base, toe board, guard rails, platform, walkways, and ladder • Demonstrate preparation of scaffolding base for a scaffold up to 3.6 m height. • Demonstrate erection of a scaffold (up to 3.6 m height) using pipes and couplers/ cup lock system/ H frame • Demonstrate the process of conducting verticality check, stability check and rigidity check • Demonstrate the dismantling and stacking of scaffolding components
Classroom Aids:	
Computer, printer, projector, white board/ flip chart, marker and duster	
Tools, Equipment and Other Requirements	
Hammer, Spanner (Set), Wrench, Pulley, Rope, Nuts And Bolts, Measuring Tape, Spirit Level, Plumb-Bob , Mason's Line , Cup-Lock Scaffolding Components (Set), 40 NB Pipes, Swivel Coupler, Fixed Clamp, Steel Walers, Steel Walkways, Aluminum/ GI Ladder, Safety Net, Helmet , Safety Shoes , Safety Belt, Cotton Hand Gloves, Goggles, Reflective Jackets, Safety Message Boards	

Module 5: Team work and effective communication at workplace

Mapped to CON/N8001, v.5.0.

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**: *22:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• 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.	• 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.
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: Follow safety norms as defined by organization, adopt healthy and safe work practices

Mapped to CON/N9001, v.7.0.

Terminal Outcome:

- Identify various hazards at construction site.
- Use PPE's relevant to electrical works.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Duration: *07:30*	**Duration**: *22:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works. • Recall the safety control measures and actions to be taken under emergency situation. • Explain the classes of fire and types of fire extinguishers. • Explain the importance of participation of workers in safety drills. • Explain the reporting procedure to the concerned authority in case of emergency situations. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories. • Explain different types of waste at construction sites and their disposal method. • Explain the purpose and importance of vertigo test at construction site. • List out basic medical tests required for working at construction site. • Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites. • Explain the importance of housekeeping works. • List different types of infectious disease that can spread/ originate at a construction site • Discuss the ways of transmission of the various infectious disease.	• Demonstrate the operating procedure of the fire extinguishers. • Demonstrate use of PPEs as per work requirements. • Demonstrate vertigo test. • Demonstrate safety techniques to be adopted in case of accidents. • Demonstrate safe waste disposal practices followed at construction site. • Demonstrate safe housekeeping practices. • Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization. • Demonstrate the methods to clean and disinfect all materials, tools and supplies before and after use. • Demonstrate the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.

• Explain the methods to check the spread of the infectious disease. • Describe the symptoms and cure of the various infectious disease.	
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	

Annexure

Trainer Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Post-Graduation/ Graduation in Engineering	M. Tech in Civil/B. Tech in civil	Six months	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	Diploma in Civil	One	Electrical Engineering	0	Electrical Engineering	
Graduation/ Ex. Army /ITI /12th pass	General B.A./B.Sc./ Graduation certificate from Army/ITI certificate in relevant trade/12th pass	Two	Working as Construction electrician LV/ electrical domain/Experience at Supervisory role in electrical domain	0	Working as Construction electrician LV/ electrical domain/Experience at Supervisory role in electrical domain	

Trainer Certification	
Domain Certification	**Platform Certification**
Trainer-70 % in each NOS of Qualification Pack "Helper Electrician, CON/Q0601 v 2.0" & 80% overall	Trainers -80% in each NOS of Qualification Pack "MEP/Q2601, v1.0"and 80% overall

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Post-Graduation/ Graduation in Engineering	M. Tech in Civil/B. Tech in civil	One	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	Diploma in Civil	Two	Electrical Engineering	0	Electrical Engineering	
Graduation/ Ex. Army /ITI /12th pass	General B.A./B.Sc./ Graduation certificate from Army/ITI certificate in relevant trade/12th pass	Three	Working as Construction electrician LV/ electrical domain/Experience at Supervisory role in electrical domain	0	Working as Construction electrician LV/ electrical domain/Experience at Supervisory role in electrical domain	

Assessor Certification	
Domain Certification	**Platform Certification**
Assessor-70% in each NOS of Qualification Pack "Helper Electrician, CON/Q0601 v2.0" & 80% overall	Assessors- 80% in each NOS of Qualification Pack "MEP/Q2701"and overall 80%.

Assessment strategy

Assessment system Overview

Assessment is done through CSDCI affiliated Assessment Body. Assessors are trained & certified by CSDCI after a 10-day 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 20:80 ratios for helper electrician 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 Assessment agency/ Assessor will ensure adequate tools and materials are available to conduct the practical test.

The theory and practical assessments will be carried out on same day. If number of candidates are more than 20, 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 Helper Electrician is summarized below:

Assessment Type	**Formative or Summative**	**Strategies**	**Weightage**	**Duration (hours)**
Knowledge	Summative	MCQ/Viva	20	1.0
Skill	Summative	Structured practical task	80	5.0

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. This 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. The assessments may also be carried out on line.

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
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).
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.
CON	Construction
MCQ	Multiple Choice Questions
VIVA	Viva voce (means oral exam)

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
SIP	Skill India Portal
LV	Low Voltage
MS	Mild Steel
LED	Light Emitting Diode
AC	Alternate Current
DC	Direct Current
MCB	Miniature Circuit Breaker
ELCB	Earth Leakage Circuit Breaker
RCCB	Residual Current Circuit Breaker