



## QUALIFICATIONS PACK- OCCUPATIONAL STANDARDS FOR CONSTRUCTION INDUSTRY

### What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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## Introduction

### Qualifications Pack – Assistant Electrician

**SECTOR:** CONSTRUCTION

**SUB-SECTOR:** Real Estate and Infrastructure Construction

**OCCUPATION:** CONSTRUCTION ELECTRICAL WORKS

**REFERENCE ID:** CON/Q0602

**ALIGNED TO:** NCO-2004/7137.2

This job role installs temporary lighting arrangement necessary for construction activities and carries out basic electrical wiring installations (LV) at temporary/permanent structures.

**Brief Job Description:** Assistant Electrician will be assisting level-4 electrician or superior in electrical work for the installation, repair, and maintenance of temporary LV electrical connections at the construction sites and permanent connections at residential and commercial buildings. The individual will be engaged in laying conduits for LV single phase wiring with appropriate selection and use of hand and power tools efficiently.

**Personal Attributes:** The job holder is expected to be physically fit and should be able to work across various locations in withstanding extreme conditions while working at the site; well versed with tasks and functions of basic electrical work. The person must be able to work within a team, handle the various tools and materials related to electrical work safely, consciously and take responsibility for own work.

Job Details	Qualifications Pack Code	CON/Q0602		
	Job Role	Assistant Electrician		
	Credits(NSQF)	TBD	Version number	1.0
	Sector	Construction	Drafted on	07/03/2015
	Sub Sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
	Occupation	Construction Electrical Works	Next review date	23/03/2017
	NSQC Clearance on	19/05/2015		

Job Role	Assistant Electrician
Role Description	Responsible for performing basic electrical installation of LV cables/ wirings and their maintenance at construction sites, temporary and permanent structures.
NSQF Level	3
Minimum Educational Qualifications*	Preferably 10th Class
Maximum Educational Qualifications*	N.A
Training (Suggested but not mandatory)	Recommended training period of 12-16 weeks as per QP of Assistant Electrician level-3.
Minimum Job Entry Age	18 years
Experience	Desirable: <ol style="list-style-type: none"> <li>1. Non trained worker : 5 years site experience in same occupation</li> <li>2. Trained worker : 3 years site experience as a certified Helper Electrician level-2</li> </ol>
Applicable National Occupational Standards (NOS) `	<b>Compulsory:</b> <ol style="list-style-type: none"> <li>1. <a href="#">CON/N0602: Select and use hand, power tools and electrical devices relevant to construction electrical works</a></li> <li>2. <a href="#">CON/N0603: Install temporary lighting arrangement at construction sites</a></li> <li>3. <a href="#">CON/N0604: Install LV electrical wiring at permanent structures</a></li> <li>4. <a href="#">CON/N0605: Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site</a></li> <li>5. <a href="#">CON/N8001: Work effectively in a team to deliver desired results at the workplace</a></li> <li>6. <a href="#">CON/N8002: Plan and organize work to meet expected</a></li> </ol>

	<p><a href="#">outcomes</a></p> <p>7. <a href="#">CON/N9001: Work according to personal health, safety and environment protocol at construction site</a></p> <p><b>Optional:</b></p> <p><b>N.A</b></p>
<b>Performance Criteria</b>	As described in the relevant OS units

Definitions	Keywords / Terms	Description
	Sector	Sector is conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
	Sub-Sector	Sub-Sector is derived from a further breakdown based on the characteristics and interests of its components

Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet the standard consistently. Occupational Standards are applicable both in the Indian contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack (QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualification Pack is assigned a unique qualification pack code
Qualification Pack Code	Qualification Pack Code is a unique reference code that identifies a qualifications pack.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills / Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
<b>Keywords /Terms</b>	<b>Description</b>
CON	Construction
NSQF	National Skill Qualifications Framework
QP	Qualification Pack
OS	Occupational Standards
TBD	To Be Decided

CON/N0602    *Select and use hand, power tools and electrical devices relevant to construction electrical works*

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required by a workman to select and use hand, power tools and electrical devices relevant to construction electrical works.

CON/N0602     *Select and use hand, power tools and electrical devices relevant to construction electrical works*

**National Occupational Standard**

<b>Unit Code</b>	<b>CON/N0602</b>
<b>Unit Title (Task)</b>	<b>Select and use hand, power tools and electrical devices relevant to construction electrical works</b>
<b>Description</b>	This unit describes the knowledge and the skills required to select and use hand, power tools and electrical devices relevant to construction electrical works.
<b>Scope</b>	<p>This scope covers the following:</p> <ul style="list-style-type: none"> <li>• Select appropriate hand tools, power tools and measuring devices to carry out various electrical works required for construction activities.</li> <li>• Use appropriate hand tools, power tools and measuring devices to carry out necessary electrical works as per requirement of construction work</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Select appropriate hand, power tools and electrical devices</b>	<p>To be competent, the user / individual on the job must be able to</p> <p>PC1. select and handle appropriate hand and power tools for establishing/ terminating electrical connections as per requirement</p> <p>PC2. select appropriate electrical measuring devices to examine electrical units for power interruptions/ continuity</p> <p>PC3. select appropriate tools and measuring devices to trace out short circuits / faults and leakages in electrical wiring</p> <p>PC4. select electrical devices such as starters, circuit breakers, relays as per equipment/ wiring installation rating, current rating</p> <p>PC5. follow operating procedure and standards set by manufacturer while handling and using power tools and measuring devices</p>
<b>Use appropriate hand, power tools and electrical devices to carry out electrical works</b>	<p>PC6. perform basic checks on power tools prior to use</p> <p>PC7. use measuring instruments to measure size and dimension of wires, conduits as per electrical installation or maintenance work requirement</p> <p>PC8. use hand and power tools to cut, and bend wire and conduit as per electrical installation or maintenance work requirement</p> <p>PC9. use right tools to splice wires by stripping insulation from terminal leads and twisting wires together</p> <p>PC10. use appropriate hand and power tools to thread conduit ends, connect couplings, and fabricate and secure conduit support brackets</p> <p>PC11. use appropriate hand, power tools and diagnostic devices like digital ammeter, multimeter, tong tester, earth tester or similar devices to install, repair power connections</p> <p>PC12. maintain and upkeep of relevant tools and devices after use</p> <p>PC13. work safely as per standard practices, manufacturer's specifications and guidelines, electrical / organization safety norms while carrying out any electrical work</p>



CON/N0602     *Select and use hand, power tools and electrical devices relevant to construction electrical works*

Knowledge and Understanding (K)	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. standard practices for electrical works related to selecting and using hand and power tools</p> <p>KA2. safety rules and regulations for handling and storing required electrical tools, equipment and materials</p> <p>KA3. personal protection including the use of related safety gears &amp; equipments</p> <p>KA4. how to request for tools and materials as per organizational procedures for tools and equipments</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. wiring symbols of single and three phase electrical wiring</p> <p>KB2. how to read and interpret single line diagram (SLD), and schematics, wiring diagrams of electrical connections</p> <p>KB3. manufacturer's guidelines/ specifications for use of hand and power tools and measuring devices</p> <p>KB4. how to use hand, power tools to carry out required activities</p> <p>KB5. how to use electrical measuring/ diagnostic devices to undertake required tests to install and maintain electrical circuits</p> <p>KB6. electrical units of measurements and their signs (such as Watt, Ampere, Ohm, volt etc.)</p> <p>KB7. basic principles of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations</p> <p>KB8. basic concept of AC and DC current and circuits.</p> <p>KB9. electrical theory such as ohm's law, ampere's law, electromagnetic field and its effects</p> <p>KB10. types of wires, cables based on their insulation and their respective uses in LV electrical works</p> <p>KB11. explanation, definition and properties of various type of conductors, insulators and semi-conductors</p> <p>KB12. features of resistors, switches, fuses and various circuit protection devices</p> <p>KB13. selection, use and maintenance of electrical measuring devices like digital multimeter, earth tester, megger, tong tester etc.</p> <p>KB14. basic arithmetic and use of calculator,</p> <p>KB15. operating characteristics and application of electrical test equipment</p> <p>KB16. method to trace out short circuit, power interruption/ continuity using diagnostic tools/devices.</p> <p>KB17. standard conditions for storing and stacking electrical tools and equipment</p>
Skills (S)	
	<b>Writing Skills</b>

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<b>A. Core Skills/ Generic Skills</b>	The user/ individual on the job needs to know and understand how to: SA1. write in at least two languages, preferably the local language at the site and basic English
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. read in at least two language, preferably the local language at the site and basic English SA3. read and interpret manufacturer's specifications, guidelines, SLDs as per applicability SA4. read and interpret safety sign boards, signage, tags etc. provided at workplace SA5. read instructions related to exit routes during emergency
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/ individual on the job needs to know and understand how to: SA6. speak in one or more language, preferably one of the local language at site SA7. listen and follow instructions given by supervisor SA8. orally and effectively communicate with team members
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to: SB1. decide on appropriate hand tools, power tools and measuring tools for relevant electrical works SB2. decide whether the work place is safe for working and also relevant task is not creating hazardous condition for others SB3. decide whether work is adequately defined for the day , work front is clear and adequate materials and tools are available for performing work
	<b>Plan and Organise</b>
	The user/individual on the job needs to know and understand how to: SB4. plan work & organize required resource in coordination with team members and superior
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to: SB5. complete work as per agreed time schedule and quality
	<b>Problem solving</b>



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	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. perform required tests and repair electrical wires, circuits and connections using appropriate tools and equipment</p> <p>SB7. detect deviation of LV electrical works(if any) from specification by inspecting the units visually or by undertaking suitable tests</p> <p>SB8. resolve any conflict within the team</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB9. trace out short circuits / faults in wiring</p> <p>SB10. determine quantum of power leakage through wires/ conductors</p> <p>SB11. derive specification of materials to be used such as MCBs, gauge of wires, fuses as per load requirement of the circuit</p> <p>SB12. minimize wastage in the workplace</p> <p>SB13. reconcile material consumption</p>
	<b>Critical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB14. evaluate the complexity of the task and seek assistance and support wherever required</p> <p>SB15. report to the superiors for any requirement of resources</p> <p>SB16. report superiors for any violation of safety, quality or organizational norms which may lead to accidents or any undesired situations</p>

CON/N0602 Select and use hand, power tools and electrical devices relevant to construction electrical works

## NOS Version Control

NOS Code	CON/N0602		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



CON/N0603

*Install temporary lighting arrangement at construction sites*

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required by a workman to install temporary lighting arrangement at construction sites.

CON/N0603

*Install temporary lighting arrangement at construction sites*

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0603</b>
<b>Unit Title (Task)</b>	<b>Install temporary lighting arrangement at construction sites</b>
<b>Description</b>	This unit describes the knowledge and the skills required to install temporary lighting arrangement at construction sites.
<b>Scope</b>	<p>This scope covers the following:</p> <ul style="list-style-type: none"> <li>Select and use relevant material components for installation of temporary lighting arrangement at construction sites under LV connections.</li> <li>Carry out maintenance and basic tests to ensure desired functioning of installed lighting arrangement.</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Select and install electrical material components and fixtures for temporary lighting arrangement.</b>	<p>To be competent, the user / individual on the job must be able to</p> <p>PC1. check and select cable, conduits , lights, sockets, temporary power distribution panels at power source and other required fixtures and accessories as per manufacturer's guidelines and specification</p> <p>PC2. assist in /carry out laying of cables through ducts or conduits, underground or through poles (overhead) as per plans and instructions</p> <p>PC3. select the type and wattage of lights considering illumination requirement at worksite and install them at secured positions</p> <p>PC4. fix lights and its accessories, brackets, bulkheads with screws and bolts or by other standard means, pull wires through conduit leading to connection boxes, temporary panels/ distribution boards or other temporary electrical terminals</p> <p>PC5. extend/ join LV electrical cable using straight through joints, splicing them together and secure joints by applying PVC insulation tapes, caps or by other safe method as and when necessary</p> <p>PC6. carry out termination of LV cables selecting the right method as per standard practice</p> <p>PC7. work safely as per electrical safety guidelines provided by manufacturer, standard safety practice or organizational safety norms while establishing or disconnecting live electrical connections</p> <p>PC8. upkeep of all relevant key electrical tools and fixtures</p> <p>PC9. tag embedded, exposed electrical lines and other key equipment appropriately</p>
<b>carry out maintenance and operate basic test on lighting arrangement</b>	<p>PC10. repair and replace light arrangements as per instruction or requirement</p> <p>PC11. replace burned out bulbs, light units and ballast in light fixtures as needed</p>

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	<p>PC12. carry out relevant tests to trace out power interruptions/ continuity at lighting arrangements</p> <p>PC13. replace damaged cable, other relevant parts as and when necessary</p> <p>PC14. shift light at various locations during construction activity as per requirement</p> <p>PC15. replace faulty circuit breakers, fuses, switches, electrical and electronic components and wire as per requirement</p> <p>PC16. perform preventive maintenance on diesel generators at site provided for temporary lighting (if any) at scheduled intervals as per direction of concerned authority</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. standard practices for establishing temporary lighting arrangement at sites</p> <p>KA2. safety rules and regulations for handling and storing required electrical tools, equipment and materials</p> <p>KA3. personal protection including the use of related safety gears &amp; equipments</p> <p>KA4. how to request for tools and materials as per organizational procedures</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. wiring symbols of single and three phase wiring</p> <p>KB2. how to read and interpret single line diagram (SLD), and schematics, wiring diagrams of electrical connections</p> <p>KB3. manufacturer's guidelines/ specifications for use of hand and power tools and measuring devices</p> <p>KB4. how to use hand, power tools to carry out required activities</p> <p>KB5. how to use electrical measuring/ diagnostic devices to undertake required tests to install and maintain electrical circuits</p> <p>KB6. selection of cable depending upon the circuit load requirement</p> <p>KB7. electrical units of measurements and their signs (such as Watt, Ampere, Ohm, volt etc.)</p> <p>KB8. method of termination of wires and cables during installation and maintenance</p> <p>KB9. basic principles for setting and maintaining temporary lighting and other related electrical systems under LV connection</p> <p>KB10. basic electrical theory such as ohm's law, ampere's law, electromagnetic field and its effects</p> <p>KB11. basic concept LV of single phase and three phase connections and their uses</p> <p>KB12. basic concept of AC and DC current and circuits</p> <p>KB13. basic characteristics of series, parallel and combination circuits and test to be performed in the same</p>

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	<p>KB14. basic concept of bridge circuits, their connections and tests to be carried out in the same</p> <p>KB15. basic principle of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations</p> <p>KB16. types of cables based on their insulation and their respective uses in electrical works</p> <p>KB17. joining of LV cable by straight through joints</p> <p>KB18. explanation, definition and properties of conductors, insulators and semi-conductors</p> <p>KB19. selection, use and maintenance of electrical measuring devices like digital multimeter, earth tester, megger, tong tester etc.</p> <p>KB20. basic arithmetic and use of calculator</p> <p>KB18. method to trace out short circuit, power interruption/ continuity using diagnostic tools/devices</p> <p>KB21. standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices</p> <p>KB22. safe procedure of erection and dismantling of temporary scaffolding, ladders or working platforms</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in at least two languages, preferably the local language at the site and basic English</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in at least two language, preferably the local language at the site and basic English</p> <p>SA3. read and interpret manufacturer's specifications, guidelines, SLDs as per applicability</p> <p>SA4. read and interpret safety sign boards, signage, tags etc. provided at workplace.</p> <p>SA5. read instructions related to exit routes during emergency</p>
	<b>Oral Communication (Listening and Speaking skills)</b>



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*Install temporary lighting arrangement at construction sites*

<b>B. Professional Skills</b>	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA6. speak in one or more language, preferably one of the local language at site</p> <p>SA7. listen and follow instructions given by supervisor</p> <p>SA8. orally and effectively communicate with team members</p>
	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. decide right method for termination of cables as per standard electrical norms</p> <p>SB2. decide whether the work place is safe for working and also relevant task is not creating hazardous condition for others</p> <p>SB3. decide whether the physical condition of the materials under work is safe or not</p> <p>SB4. decide whether wires/ cables, lights etc. can be re-used or to be replaced by visual inspection</p> <p>SB5. decide whether work is adequately defined for the day, work front is clear and adequate materials and tools are available for performing work</p>
	<b>Plan and Organise</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. plan work &amp; organize required resource in coordination with team members and superior</p>
	<b>Customer centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. complete work as per agreed time schedule and quality</p>
	<b>Problem solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB8. assess whether maintenance (if any) to be done is under scope or not and take necessary action</p> <p>SB9. detects which test to be performed during repair and maintenance of connections, equipments efficiently or adheres to guidelines or instructions</p> <p>SB10. establish electrical connection under adverse weather condition if required as per instruction ensuring safe working of installed system</p> <p>SB11. detect deviation (if any) from desired quality by inspecting the materials under use visually</p> <p>SB12. resolve any conflict within the team</p>
	<b>Analytical Thinking</b>

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	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB13. determine suitable path for laying cable and provide suitable protection as per standard practice</p> <p>SB14. anticipate how laid cable can be damaged by external actions and take necessary precautions during laying</p> <p>SB15. reconcile material consumption</p>
	<p><b>Critical Thinking</b></p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB16. evaluate the complexity of the task and seek assistance and support wherever required</p> <p>SB17. report to the superiors or proper authorities for any requirement of resources or if any adverse/ unsafe condition arises</p> <p>SB18. report superiors for any violation of safety, quality or organizational norms which may lead to accidents or any undesired situations</p>



CON/N0603

*Install temporary lighting arrangement at construction sites*

## NOS Version Control

NOS Code	CON/N0603		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



CON/N0604

*Install LV electrical wiring at permanent structures*

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required by a workman to assist in LV electrification works at permanent structures.

CON/N0604

*Install LV electrical wiring at permanent structures*

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0604</b>
<b>Unit Title (Task)</b>	<b>Install LV electrical wiring at permanent structures</b>
<b>Description</b>	This unit describes the knowledge and the skills required to install LV electrical wiring at permanent structures.
<b>Scope</b>	<p>This scope covers the following:</p> <ul style="list-style-type: none"> <li>Lay conduit in RCC and brick/ block masonry structures and assist in LV electrical wiring work in buildings and other permanent structures</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Install conduits and assist in LV wiring at house electrification works</b>	<p>To be competent, the user / individual on the job must be able to</p> <p>PC1. identify and select house wiring components (such as wires, flexible and rigid conduits, PVC raceways, wooden battens, clamps etc.) according to their specification / size</p> <p>PC2. read and interpret single phase LV wiring diagram</p> <p>PC3. carry out necessary linear measurement to cut, bend, join conduits and cables and use them as per requirement or instruction</p> <p>PC4. lay conduit through RCC structures (slabs, beams, walls) or through chased wall (brick wall) surface as per instruction</p> <p>PC5. lock conduit pipe in its location by means of clamp or other standard means as per instruction</p> <p>PC6. pull, push wires through conduits in order to expose them at desired locations as per requirement</p> <p>PC7. perform drilling, cutting work as and when necessary using appropriate hand and power tools</p> <p>PC8. handle and shift electrical fixtures, fittings as per instructions within workplace</p> <p>PC9. assist in fixing of electrical fixtures and fittings as per instruction</p> <p>PC10. carry out termination of cables safely as per instruction</p> <p>PC11. carry out necessary tests to electrical circuit during and post wiring activity using appropriate tools as per direction of electrician</p> <p>PC12. assist in carrying out electrical earthing work by installing earthing components as per instruction</p> <p>PC13. work safely according to manufacturer guidelines, specification, standard electrical safety practices or organizational safety and as per direction of superior authority</p>

CON/N0604

*Install LV electrical wiring at permanent structures*

Knowledge and Understanding (K)	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> <li>KA1. standard practices for laying conduit and cable for LV single phase wiring work</li> <li>KA2. safety rules and regulations for handling and storing required electrical tools, equipment and materials</li> <li>KA3. personal protection including the use of related safety gears &amp; equipments</li> <li>KA4. how to request for tools and materials as per set procedures</li> <li>KA5. maintenance of tools and equipments</li> </ul>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> <li>KB1. wiring symbols of single and three phase wiring</li> <li>KB2. how to read and interpret single line diagram (SLD), and schematics, wiring diagrams of electrical connections</li> <li>KB3. manufacturer's guidelines/ specifications for use of hand and power tools and measuring devices</li> <li>KB4. how to use hand, power tools to carry out required activities</li> <li>KB5. how to use electrical measuring/ diagnostic devices to undertake required tests to install and maintain electrical circuits</li> <li>KB6. selection of LV cable depending upon the circuit load requirement</li> <li>KB7. electrical units of measurements and their signs (such as Watt, Ampere, Ohm, volt etc.)</li> <li>KB8. method of termination of wires and cables during installation and maintenance</li> <li>KB9. basic principles for setting and maintaining temporary lighting and other related electrical systems</li> <li>KB10. electrical theory such as ohm's law, ampere's law, electromagnetic field and its effects</li> <li>KB11. basic concept LV of single phase and three phase connections and their uses</li> <li>KB12. basic concept of AC and DC current and circuits</li> <li>KB13. basic characteristics of series, parallel and combination circuits and test to be performed in the same.</li> <li>KB14. basic concept of bridge circuits, their connections and tests to be carried out in the same</li> <li>KB15. basic principle of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations</li> <li>KB16. types of cables based on their insulation and their respective uses in electrical</li> </ul>



CON/N0604

*Install LV electrical wiring at permanent structures*

	<p>works</p> <p>KB17. explanation, definition and properties of conductors, insulators and semi-conductors</p> <p>KB18. selection, use and maintenance of electrical measuring devices like digital multimeter, earth tester, megger, tong tester etc.</p> <p>KB19. basic arithmetic and use of calculator</p> <p>KB20. method to trace out short circuit, power interruption/ continuity using diagnostic tools/devices</p> <p>KB21. standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices</p> <p>KB22. safe procedure of erection and dismantling of temporary scaffolding, ladders or working platforms</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in at least two languages, preferably the local language at the site and basic English</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in at least two language, preferably the local language at the site and basic English</p> <p>SA3. read and interpret manufacturer's specifications, guidelines, SLDs as per applicability</p> <p>SA4. read and interpret safety sign boards, signage, tags etc. provided at workplace</p> <p>SA5. read instructions related to exit routes during emergency</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA6. speak in one or more language, preferably one of the local language at site</p> <p>SA7. listen and follow instructions given by supervisor</p> <p>SA8. orally and effectively communicate with team members</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. decide whether conduits can be used or not by visual inspection</p> <p>SB2. decide spacing of clamps, ties to be provided to lock conduits in its location.</p>

CON/N0604

*Install LV electrical wiring at permanent structures*

	<p>SB3. decide whether the work place is safe for working and also relevant task is not creating hazardous condition for others</p> <p>SB4. decide whether work is adequately defined for the day , work front is clear and adequate materials and tools are available for performing work</p>
	<b>Plan and Organise</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. plan work &amp; organize required resource in coordination with team members and superior</p>
	<b>Customer centricity</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. complete work as per agreed time schedule and quality</p>
	<b>Problem solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. assess whether maintenance (if any) to be done is under scope or not and take necessary action</p> <p>SB8. detects which test to be performed during repair and maintenance of connections, equipments efficiently or adheres to guidelines or instructions</p> <p>SB9. establish electrical connection under adverse weather condition if required as per instruction ensuring safe working of installed system</p> <p>SB10. detect deviation (if any) from desired quality by inspecting the materials under use visually</p> <p>SB11. resolve any conflict within the team</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. assess type and gauge of cable required depending upon load requirement</p> <p>SB13. optimize use of resources efficiently</p> <p>SB14. determine total load on circuit and use electrical fixtures according to their power rating</p> <p>SB15. reconcile material consumption</p>
	<b>Critical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB16. evaluate the complexity of the task and seek assistance and support wherever required</p> <p>SB17. report to the superiors or proper authorities for any requirement of resources or if any adverse/ unsafe condition arises</p> <p>SB18. report superiors for any violation of safety, quality or organizational norms which may lead to accidents or any undesired situations</p>

CON/N0604

Install LV electrical wiring at permanent structures

## NOS Version Control

NOS Code	CON/N0604		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required by a workman to assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site.

CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0605</b>
<b>Unit Title (Task)</b>	<b>Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site</b>
<b>Description</b>	This unit describes the knowledge and the skills required to Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site.
<b>Scope</b>	<p>This scope covers the following:</p> <ul style="list-style-type: none"> <li>Assemble temporary LV power distribution panels (distribution boards) by selecting appropriate fixtures as per circuit load requirement</li> <li>Repair/ replace faulty parts/ fixtures as and when necessary</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Assemble and install temporary LV electrical panels/ distribution boards</b>	<p>To be competent, the user / individual on the job must be able to</p> <p>PC1. read relevant SLDs, instructions, safety guidelines, manufacturer's specifications prior to assemble temporary panel/ distribution boards</p> <p>PC2. select and install required fixtures like power sockets, switches, wires, MCBs of appropriate specification as per circuit load requirement</p> <p>PC3. ensure tightness and safe working condition of wires, fixtures prior to connect the assembly with power source</p> <p>PC4. connect DB to main power cable and undertake standard tests to ensure its safe and desired working</p> <p>PC5. place and secure the distribution board against water, fire and other external damaging agents</p> <p>PC6. carry out proper termination of cables as per standard practice while connecting to the sockets of the panel</p> <p>PC7. carry out earthing of the panels as per standard procedure</p> <p>PC8. work safely as per manufacturer's guidelines, specifications, standard electrical practices or organizational safety norms whichever applicable</p> <p>PC9. check and ensure necessary tagging, barricading near to the live/ active electrical distribution boards</p>
<b>Carry out maintenance by replacing/ repairing installed electrical components</b>	<p>PC10. carry out visual inspection of the live/ active board regularly to ensure safe working condition of all components</p> <p>PC11. ensure that the live connections get discontinued after completion of daily construction works in order to minimize energy wastage and enhance working efficiency of electrical units</p> <p>PC12. respond promptly on failure/ damage or malfunctioning of panel or any of its component</p> <p>PC13. carry out necessary tests in order to determine root cause of failure</p> <p>PC14. report, notify concerned authorities prior to shut down, deactivate or repair the electrical unit</p>

CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

	<p>PC15. replace, repair faulty components as per SLD, instruction, safety guideline, manufacturer's specification</p> <p>PC16. carry out necessary documentation, keep records relevant to maintenance/ repairing of panels as per organizational norms</p> <p>PC17. isolate the panel safely and shift to another location as and when necessary</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. standard practices for repairing and maintaining common electrical equipments</p> <p>KA2. safety rules and regulations for handling and storing required electrical tools, equipment and materials</p> <p>KA3. personal protection including the use of related safety gears &amp; equipments</p> <p>KA4. how to request for tools and materials as per set procedures</p> <p>KA5. maintenance of tools and equipments</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. wiring symbols of single and three phase wiring</p> <p>KB2. how to read and interpret single line diagram (SLD), and schematics, wiring diagrams of electrical connections</p> <p>KB3. manufacturer's guidelines/ specifications for use of hand and power tools and measuring devices</p> <p>KB4. how to use hand, power tools to carry out required activities</p> <p>KB5. how to use electrical measuring/ diagnostic devices to undertake required tests to install and maintain electrical circuits</p> <p>KB6. selection of cable depending upon the circuit load requirement</p> <p>KB7. electrical units of measurements and their signs (such as Watt, Ampere, Ohm, volt, etc.)</p> <p>KB8. method of termination of wires and cables during installation and maintenance</p> <p>KB9. basic principles for setting and maintaining temporary lighting and other related electrical systems</p> <p>KB10. electrical theory such as ohm's law, ampere's law, electromagnetic field and its effects</p> <p>KB11. concept LV of single phase and three phase connections and their uses</p> <p>KB12. basic concept of AC and DC current and circuits</p> <p>KB13. basic characteristics of series, parallel and combination circuits and test to be performed in the same</p> <p>KB14. concept of bridge circuits, their connections and tests to be carried out in the same</p> <p>KB15. basic principle of electrical current flow, fundamental terms like resistance, temperature, c/s of conductor and their relations</p>



CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

	<p>KB16. types of cables based on their insulation and their respective uses in electrical works</p> <p>KB17. joining of LV cable by straight through joints and other standard procedures</p> <p>KB18. explanation, definition and properties of conductors, insulators and semi-conductors</p> <p>KB19. selection, use and maintenance of electrical measuring devices like digital multimeter, earth tester, megger, tong tester etc.</p> <p>KB20. basic arithmetic and use of calculator</p> <p>KB21. method to trace out short circuit, power interruption/ continuity using diagnostic tools/devices</p> <p>KB22. standard conditions for storing and stacking electrical units, materials, fixtures, tools and devices</p> <p>KB23. safe procedure of erection and dismantling of temporary scaffolding, ladders or working platforms</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in at least two languages, preferably the local language at the site and basic English</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in at least two language, preferably the local language at the site and basic English</p> <p>SA3. read and interpret manufacturer's specifications, guidelines, SLDs as per applicability</p> <p>SA4. read instructions related to exit routes during emergency</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. speak in one or more language, preferably one of the local language at site</p> <p>SA6. listen and follow instructions given by supervisor</p> <p>SA7. orally and effectively communicate with team members</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. decide on appropriate gauge, type, colour coding of wires to be used depending on circuit load requirements, insulation, use, etc.</p> <p>SB2. decide specification of components (sockets, switches, circuit breakers, fuses</p>

CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

	etc.) to be used prior to assemble/ repair a temporary panel/ distribution board.
	SB3. decide primary action to be taken on failure of panel or its components
	SB4. decide safety measures to be adopted while placing/ repairing a panel or during any emergency situation
	SB5. decide whether the work place is safe for working and also relevant task is not creating hazardous condition for others
	SB6. decide whether work is adequately defined for the day , work front is clear and adequate materials and tools are available for performing work
	<b>Plan and Organise</b>
	The user/individual on the job needs to know and understand how to:
	SB7. plan work & organize required resource in coordination with team members and superior
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to:
	SB8. complete work as per agreed time schedule and quality
	<b>Problem solving</b>
	The user/individual on the job needs to know and understand how to:
	SB9. assess whether maintenance (if any) to be done is under scope or not and take necessary action
	SB10. detects which test to be performed during repair and maintenance of connections, equipments efficiently or adheres to guidelines or instructions
	SB11. establish electrical connection under adverse weather condition if required as per instruction ensuring safe working of installed system.
	SB12. detect deviation (if any) from desired quality by inspecting the materials under use visually
	SB13. resolve any conflict within the team
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB14. determine circuit load
	SB15. determine specification/ power rating of components and circuit breakers to be used
	SB16. optimize resources efficiently
	SB17. minimize wastage in the workplace
	SB18. reconcile material consumption
	<b>Critical Thinking</b>

CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB19. assess requirement for preventive checks for common equipments like pumps, motors, cutting and bending machines as per direction or maintenance schedule</p> <p>SB20. evaluate the complexity of the task and seek assistance and support wherever required</p> <p>SB21. report to the superiors or proper authorities for any requirement of resources or if any adverse/ unsafe condition arises</p> <p>SB22. report superiors for any violation of safety, quality or organizational norms which may lead to accidents or any undesired situations</p>
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CON/N0605 Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site

## NOS Version Control

NOS Code	CON/N0605		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



CON/N8001

*Work effectively in a team to deliver desired results at the workplace*

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required to work effectively within a team to achieve the desired results.

CON/N8001

*Work effectively in a team to deliver desired results at the workplace*

National Occupational Standard

<b>Unit Code</b>	<b>CON/N8001</b>
<b>Unit Title (Task)</b>	<b>Work effectively in a team to deliver desired results at the workplace</b>
<b>Description</b>	This unit describes the skills and knowledge required to work effectively within a team to achieve the desired results.
<b>Scope</b>	<p>The scope covers the following:</p> <ul style="list-style-type: none"> <li>Interact and communicate effectively with co-workers, superiors and sub-ordinates across different teams</li> <li>Support co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Interact and communicate in effective and conclusive manner</b>	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. pass on work related information/ requirement clearly to the team members</p> <p>PC2. inform co-workers and superiors about any kind of deviations from work</p> <p>PC3. address the problems effectively and report if required to immediate supervisor appropriately</p> <p>PC4. receive instructions clearly from superiors and respond effectively on same</p> <p>PC5. communicate to team members/subordinates for appropriate work technique and method</p> <p>PC6. seek clarification and advice as per requirement and applicability</p>
<b>Support co-workers to execute project requirements</b>	<p>PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams</p> <p>PC8. work together with co-workers in a synchronized manner</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. own roles and responsibilities</p> <p>KA2. importance of effective communication and establishing strong working relationships with co-workers</p> <p>KA3. risks of a failure in teamwork in terms of effects on project outcomes, timelines, safety at the construction site, etc.</p> <p>KA4. different modes of communication, and its appropriate usage</p> <p>KA5. importance of creating healthy and cooperative work environment among the gangs of workers</p>

CON/N8001

*Work effectively in a team to deliver desired results at the workplace*

<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. different activities within his work area where an interaction with other workers is required</p> <p>KB2. applicable techniques of work, properties of materials used, tools and tackles used, safety standards that co-workers might need as per the requirement</p> <p>KB3. importance of proper and effective communication and the expected adverse effects in case of failure relating to quality, timelines, safety, risks at the construction project site</p> <p>KB4. importance and need of supporting co-workers facing problems for smooth functioning of work</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in one or more languages, preferably the local language at the site</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in one or more languages, preferably the local language at the site</p> <p>SA3. read communication from team members regarding work completed, materials used, tools and tackles used, support required</p>
	<b>Oral Communication (Listening and Speaking skills)</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. speak in one or more languages, preferably one of the local language at the site</p> <p>SA5. listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes</p> <p>SA6. orally communicate with co-workers regarding support required to complete the respective work</p>
<b>B. Professional Skills</b>	<b>Decision Making</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. decide on what information is to be shared with co-workers within the team or from interfacing gang of workers</p>
	<p><b>Plan and Organise</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. plan work and organize required resources in coordination with team members</p>



CON/N8001

*Work effectively in a team to deliver desired results at the workplace*

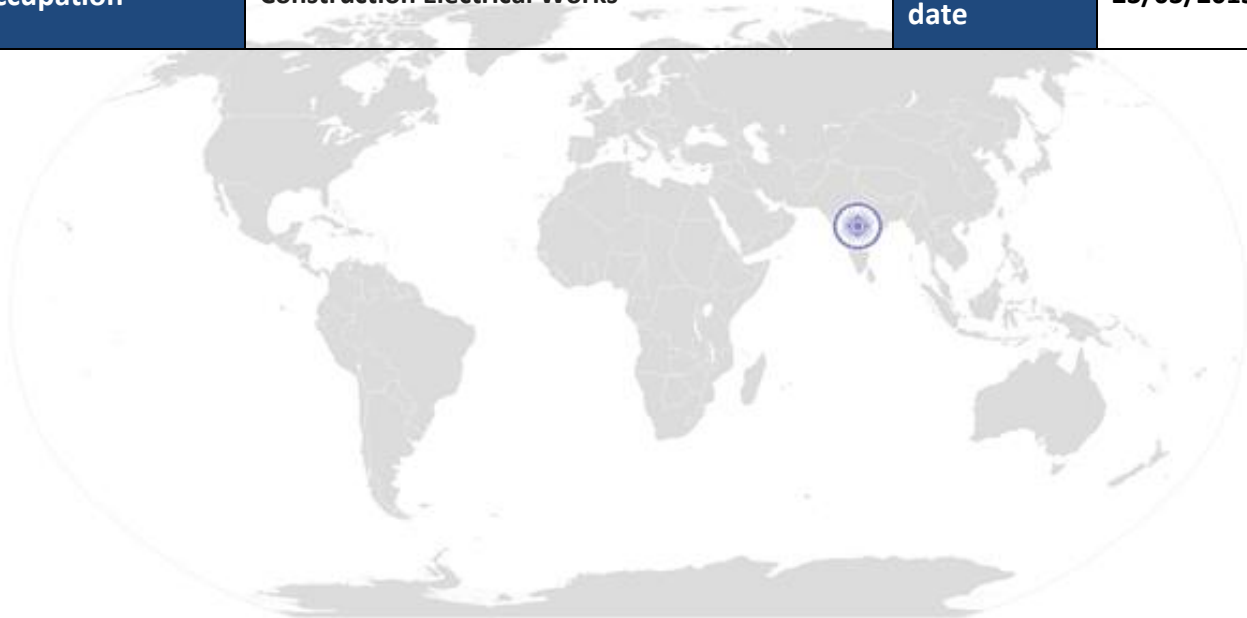
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to: SB3. complete all assigned task in coordination with team members
	<b>Problem solving</b>
	The user/individual on the job needs to know and understand how to: SB4. take initiative in resolving issues among co-workers or report the same to superiors
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB5. ensure best ways of coordination among team members SB6. communicate with co-workers considering their educational / social background
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB7. evaluate the complexity of task and determine if any guidance is required from superiors

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*Work effectively in a team to deliver desired results at the workplace*

## **NOS Version Control**

NOS Code	CON/N8001		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	01/01/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	15/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



# National Occupational Standard



## Overview

This NOS covers the skills and knowledge required to plan and organize work in order to meet expected quality in established time frame.

CON/N8002

Plan and organize work to meet expected outcomes

National Occupational Standard

<b>Unit Code</b>	<b>CON/N8002</b>
<b>Unit Title (Task)</b>	<b>Plan and organize work to meet expected outcomes</b>
<b>Description</b>	This unit describes the knowledge and the skills required for an individual to plan and organize own work in order to meet expected outcome.
<b>Scope</b>	<p>This scope covers the following:</p> <ul style="list-style-type: none"> <li>Prioritize work activities to achieve desired results</li> <li>Organize desired resources prior to commencement of work</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Prioritize work activities to achieve desired results</b>	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. understand clearly the targets and timelines set by superiors</p> <p>PC2. plan activities as per schedule and sequence</p> <p>PC3. provide guidance to the subordinates to obtain desired outcome</p> <p>PC4. plan housekeeping activities prior to and post completion of work</p>
<b>Organize desired resources prior to commencement of work</b>	<p>PC5. list and arrange required resources prior to commencement of work</p> <p>PC6. select and employ correct tools, tackles and equipment for completion of desired work</p> <p>PC7. complete the work with allocated resources</p> <p>PC8. engage allocated manpower in an appropriate manner</p> <p>PC9. use resources in an optimum manner to avoid any unnecessary wastage</p> <p>PC10. employ tools, tackles and equipment with care to avoid damage to the same</p> <p>PC11. organize work output, materials used, tools and tackles deployed,</p> <p>PC12. processes adopted to be in line with the specified standards and instructions</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. importance of proper housekeeping</p> <p>KA2. policies, procedures and work targets set by superiors</p> <p>KA3. roles and responsibilities in executing the work for subordinates and self</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. standard practices of work to be adopted for assigned task</p> <p>KB2. how to use available resources in a judicious and appropriate manner to minimize wastages or damage</p>

CON/N8002

*Plan and organize work to meet expected outcomes*

Skills (S) [Optional]	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: SA1. write in one or more language, preferably the local language at the site SA2. list out the assigned works and targets
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA3. read in one or more language, preferably the local language at the site SA4. read communication from co-workers, superiors and notices from other departments as per requirement of the level
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/ individual on the job needs to know and understand how to: SA5. speak in one or more language, preferably one of the local language at the site SA6. listen and follow communication shared by co-workers regarding standard work processes, resources available, timelines, etc. SA7. communicate effectively with co-workers and subordinates
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to: SB1. decide on what sequence is to be adopted for execution of work
	<b>Plan and Organise</b>
	The user/individual on the job needs to know and understand how to: SB2. plan and organize the materials, tools, tackles and equipment required to execute the work
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to: SB3. complete all assigned task with proper planning and organizing
	<b>Problem solving</b>
	The user/individual on the job needs to know and understand how to: SB4. arrange or seek help to arrange for material, tools and tackles in case of shortfall
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB5. analyze areas of work which could result in a delay of work, wastage of

CON/N8002

*Plan and organize work to meet expected outcomes*

	material or damage to tools and tackles
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB6. evaluate potential solutions to minimize avoidable delays and wastages at the construction site



CON/N8002

Plan and organize work to meet expected outcomes

## **NOS Version Control**

NOS Code	CON/N8002		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015





CON/N9001

*Work according to personal health, safety and environment protocol at construction site*

# National Occupational Standard



## Overview

This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocol at construction site.

CON/N9001      Work according to personal health, safety and environment protocol at construction site

National Occupational Standard

Unit Code	CON/N9001
Unit Title (Task)	Work according to personal health, safety and environment protocol at construction site
Description	This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocol at construction site
Scope	<p>The scope covers the following:</p> <ul style="list-style-type: none"> <li>Follow safety norms as defined by organization</li> <li>Adopt healthy &amp; safe work practices</li> <li>Implement good housekeeping and environment protection process and activities</li> </ul>
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Follow safety norms as defined by organization	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority</p> <p>PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities</p> <p>PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable</p> <p>PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site</p> <p>PC5. identify near miss, unsafe condition and unsafe act</p>
Adopt healthy & safe work practices	<p>PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including:</p> <ul style="list-style-type: none"> <li>Head Protection (Helmets)</li> <li>Ear protection</li> <li>Fall Protection</li> <li>Foot Protection</li> <li>Face and Eye Protection,</li> <li>Hand and Body Protection</li> <li>Respiratory Protection (if required)</li> </ul> <p>PC7. handle all required tools, tackles, materials &amp; equipment safely</p> <p>PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines</p> <p>PC9. install and apply properly all safety equipment as instructed</p> <p>PC10. follow safety protocol and practices as laid down by site EHS department</p>

CON/N9001      Work according to personal health, safety and environment protocol at construction site

<b>Implement good housekeeping practices</b>	<p><b>PC11.</b> collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes</p> <p><b>PC12.</b> apply ergonomic principles wherever required</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p><b>KA1.</b> reporting procedures in cases of breaches or hazards for site safety, accidents, and emergency situations as per guidelines</p> <p><b>KA2.</b> types of safety hazards at construction sites</p> <p><b>KA3.</b> basic ergonomic principles as per applicability</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p><b>KB1.</b> the procedure for responding to accidents and other emergencies at site</p> <p><b>KB2.</b> appropriate personal protective equipment to used based on various working conditions</p> <p><b>KB3.</b> importance of handling tools, equipment and materials as per applicable</p> <p><b>KB4.</b> health and environments effect of construction materials as per applicability</p> <p><b>KB5.</b> various environmental protection methods as per applicability</p> <p><b>KB6.</b> storage of waste including the following at appropriate location:</p> <ul style="list-style-type: none"> <li>• non-combustible scrap material and debris</li> <li>• combustible scrap material and debris</li> <li>• general construction waste and trash (non-toxic, non-hazardous)</li> <li>• any other hazardous wastes</li> <li>• any other flammable wastes</li> </ul> <p><b>KB7.</b> how to use hazardous material, in a safe and appropriate manner as per applicability</p> <p><b>KB8.</b> safety relevant to tools, tackles, &amp; requirement as per applicability</p> <p><b>KB9.</b> housekeeping activities relevant to task</p>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p><b>SA1.</b> write in one or more language, preferably the local language at the site</p> <p><b>SA2.</b> fill safety formats for near miss, unsafe conditions and safety suggestions</p>
	<b>Reading Skills</b>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p><b>SA3.</b> read in one or more language, preferably the local language at the site</p> <p><b>SA4.</b> read sign boards, notice boards relevant to safety</p>

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<b>B. Professional Skills</b>	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/ individual on the job needs to know and understand how to:
	SA5. speak in one or more language, preferably one of the local language at the site
	SA6. listen instructions / communication shared by site EHS and superiors regarding site safety, and conducting tool box talk
	SA7. communicate reporting of site conditions, hazards, accidents, etc.
	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to:
	SB1. not create unsafe conditions for others
	SB2. keep the workplace clean and tidy
	<b>Plan and Organise</b>
	N.A
	<b>Customer centricity</b>
	N.A
	<b>Problem solving</b>
	The user/individual on the job needs to know and understand how to:
	SB3. identify safety risks that affect the health, safety and environment for self and others working in the vicinity, tackle it if within limit or report to appropriate authority
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB4. assess and analyze areas which may affect health, safety and environment protocol on the site
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB5. ensure personal safety behavior
	SB6. respond to emergency

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## NOS Version Control

NOS Code	CON/N9001		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Construction Electrical Works	Next review date	23/03/2015



*Assessment Criteria for Assistant Electrician*

## **CRITERIA FOR ASSESSMENT OF TRAINEES**

**Job Role** Assistant Electrician

**Qualification Pack** CON/Q0602

**Sector Skill Council** Construction

### **Guidelines for Assessment**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5. The passing percentage for each QP will be 50%. To pass the Qualification Pack, every trainee should score a minimum of 50% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.
7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
8. After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.
10. Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

				Marks Allocation	
		Total Mark	Out Of	Theory	Skills Practical
<b>CON/N0602: Select and use hand, power tools and electrical devices relevant to construction electrical works</b>	PC1. select and handle appropriate hand and power tools for establishing/ terminating electrical connections as per requirement	<b>100</b>	7	2	5
	PC2. select appropriate electrical measuring devices to examine electrical units for power interruptions/ continuity		3	1	2
	PC3. select appropriate tools and measuring devices to trace out short circuits/ faults and leakages in electrical wiring		10	3	7

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	PC4. select electrical devices such as starters, circuit breakers, relays as per equipment/ wiring installation rating, current rating		3	1	2
	PC5. follow operating procedure and standards set by manufacturer while handling and using power tools and measuring devices		7	2	5
	PC6. perform basic checks on power tools prior to use		10	3	7
	PC7. use measuring instruments to measure size and dimension of wires, conduits as per electrical installation or maintenance work requirement		13	4	9
	PC8. use hand and power tools to cut, and bend wire and conduit as per electrical installation or maintenance work requirement		10	3	7
	PC9. use right tools to splice wires by stripping insulation from terminal leads and twisting wires together		7	2	5
	PC10. use appropriate hand and power tools to thread conduit ends, connect couplings, and fabricate and secure conduit support brackets		7	2	5
	PC11. use appropriate hand, power tools and diagnostic devices like digital ammeter, multimeter, tong tester, earth tester or similar devices to install, repair power connections		10	3	7
	PC12. maintain and upkeep of relevant tools and devices after use		7	2	5
	PC13. work safely as per standard practices, manufacturer's specifications and guidelines, electrical / organization safety norms while carrying out any electrical work		7	2	5
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N0603: Install temporary lighting arrangement at construction sites</b>	PC1. check and select cable, conduits , lights, sockets, temporary power distribution panels at power source and other required fixtures and accessories as per manufacturer's guidelines and specification	<b>100</b>	7	2	5
	PC2. assist in /carry out laying of cables through ducts or conduits, underground or through poles (overhead) as per plans and instructions		7	2	5
	PC3. select the type and wattage of lights considering illumination requirement at worksite and install them at secured positions		7	2	5



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	PC4. fix lights and its accessories, brackets, bulkheads with screws and bolts or by other standard means, pull wires through conduit leading to connection boxes, temporary panels/ distribution boards or other temporary electrical terminals		7	2	5
	PC5. extend/ join LV electrical cable using straight through joints, splicing them together and secure joints by applying PVC insulation tapes, caps or by other safe method as and when necessary		7	2	5
	PC6. carry out termination of LV cables selecting the right method as per standard practice		7	2	5
	PC7. work safely as per electrical safety guidelines provided by manufacturer, standard safety practice or organizational safety norms while establishing or disconnecting live electrical connections		3	1	2
	PC8. upkeep of all relevant key electrical tools and fixtures		3	1	2
	PC9. tag embedded, exposed electrical lines and other key equipment appropriately		3	1	2
	PC10. repair and replace light arrangements as per instruction or requirement		7	2	5
	PC11. replace burned out bulbs, light units and ballast in light fixtures as needed		7	2	5
	PC12. carry out relevant tests to trace out power interruptions/ continuity at lighting arrangements		10	3	7
	PC13. replace damaged cable, other relevant parts as and when necessary		7	2	5
	PC14. shift light at various locations during construction activity as per requirement		7	2	5
	PC15. replace faulty circuit breakers, fuses, switches, electrical and electronic components and wire as per requirement		10	3	7
	PC16. perform preventive maintenance on diesel generators at site provided for temporary lighting (if any) at scheduled intervals as per direction of concerned authority		3	1	2
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N0604: Install LV electrical wiring at permanent structures</b>	PC1. identify and select house wiring components (such as wires, flexible and rigid conduits, PVC raceways, wooden battens, clamps etc.) according to their specification / size	<b>100</b>	7	2	5
	PC2. read and interpret single phase LV wiring diagram		10	3	7

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	PC3. carry out necessary linear measurement to cut, bend, join conduits and cables and use them as per requirement or instruction		7	2	5
	PC4. lay conduit through RCC structures (slabs, beams, walls) or through chased wall (brick wall) surface as per instruction		7	2	5
	PC5. lock conduit pipe in its location by means of clamp or other standard means as per instruction		7	2	5
	PC6. pull, push wires through conduits in order to expose them at desired locations as per requirement		7	2	5
	PC7. perform drilling, cutting work as and when necessary using appropriate hand and power tools		10	3	7
	PC8. handle and shift electrical fixtures, fittings as per instructions within workplace		7	2	5
	PC9. assist in fixing of electrical fixtures and fittings as per instruction		7	2	5
	PC10. carry out termination of cables safely as per instruction		7	2	5
	PC11. carry out necessary tests to electrical circuit during and post wiring activity using appropriate tools as per direction of electrician		10	3	7
	PC12. assist in carrying out electrical earthing work by installing earthing components as per instruction		10	3	7
	PC13. work safely according to manufacturer guidelines, specification, standard electrical safety practices or organizational safety and as per direction of superior authority		7	2	5
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N0605: Assemble, install and maintain temporary LV electrical panels (distribution boards) at construction site</b>	PC1. read relevant SLDs, instructions, safety guidelines, manufacturer's specifications prior to assemble temporary panel/ distribution boards	<b>100</b>	10	3	7
	PC2. select and install required fixtures like power sockets, switches, wires, MCBs of appropriate specification as per circuit load requirement		10	3	7
	PC3. ensure tightness and safe working condition of wires, fixtures prior to connect the assembly with power source		3	1	2
	PC4. connect DB to main power cable and undertake standard tests to ensure its safe and desired working		7	2	5
	PC5. place and secure the distribution board against water, fire and other external damaging agents		7	2	5
	PC6. carry out proper termination of cables as per standard practice while connecting to the sockets of the panel		7	2	5

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	PC7. carry out earthing of the panels as per standard procedure		10	3	7
	PC8. work safely as per manufacturer's guidelines, specifications, standard electrical practices or organizational safety norms whichever applicable		3	1	2
	PC9. check and ensure necessary tagging, barricading near to the live/ active electrical distribution boards		3	1	2
	PC10. carry out visual inspection of the live/ active board regularly to ensure safe working condition of all components		3	1	2
	PC11. ensure that the live connections get discontinued after completion of daily construction works in order to minimize energy wastage and enhance working efficiency of electrical units		3	1	2
	PC12. respond promptly on failure/ damage or malfunctioning of panel or any of its component		7	2	5
	PC13. carry out necessary tests in order to determine root cause of failure		10	3	7
	PC14. report, notify concerned authorities prior to shut down, deactivate or repair the electrical unit		3	1	2
	PC15. replace, repair faulty components as per SLD, instruction, safety guideline, manufacturer's specification		7	2	5
	PC16. carry out necessary documentation, keep records relevant to maintenance/repairing of panels as per organizational norms		3	1	2
	PC17. isolate the panel safely and shift to another location as and when necessary		3	1	2
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N8001: Work effectively in a team to deliver desired results at the workplace</b>	PC1. pass on work related information/ requirement clearly to the team members	100	7	2	5
	PC2. inform co-workers and superiors about any kind of deviations from work		7	2	5
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		10	3	7
	PC4. receive instructions clearly from superiors and respond effectively on same		7	2	5
	PC5. communicate to team members/subordinates for appropriate work technique and method		10	3	7
	PC6. seek clarification and advice as per requirement and applicability		7	2	5
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		27	8	19

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	PC8. work together with co-workers in a synchronized manner		27	8	19
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N8002: Plan and organize work to meet expected outcomes</b>	PC1. understand clearly the targets and timelines set by superiors	<b>100</b>	7	2	5
	PC2. plan activities as per schedule and sequence		7	2	5
	PC3. provide guidance to the subordinates to obtain desired outcome		10	3	7
	PC4. plan housekeeping activities prior to and post completion of work		7	2	5
	PC5. list and arrange required resources prior to commencement of work		10	3	7
	PC6. select and employ correct tools, tackles and equipment for completion of desired work		10	3	7
	PC7. complete the work with allocated resources		10	3	7
	PC8. engage allocated manpower in an appropriate manner		10	3	7
	PC9. use resources in an optimum manner to avoid any unnecessary wastage		10	3	7
	PC10. employ tools, tackles and equipment with care to avoid damage to the same		7	2	5
	PC11. organize work output, materials used, tools and tackles deployed,		7	2	5
	PC12. processes adopted to be in line with the specified standards and instructions		7	2	5
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
<b>CON/N9001: Work according to personal health, safety and environment protocol at construction site</b>	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authorities	<b>100</b>	7	2	5
	PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities		7	2	5
	PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable		10	3	7
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		7	2	5
	PC5. identify near miss , unsafe condition and unsafe act		7	2	5

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	PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including: <ul style="list-style-type: none"><li>• Head Protection (Helmets)</li><li>• Ear protection</li><li>• Fall Protection</li><li>• Foot Protection</li><li>• Face and Eye Protection</li><li>• Hand and Body Protection</li><li>• Respiratory Protection (if required)</li></ul>		10	3	7
	PC7. handle all required tools, tackles , materials & equipment safely		7	2	5
	PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines		7	2	5
	PC9. install and apply properly all safety equipment as instructed		13	4	9
	PC10. follow safety protocol and practices as laid down by site EHS department		13	4	9
	PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		7	2	5
	PC12. apply ergonomic principles wherever required		7	2	5
			<b>Total</b>	<b>100</b>	<b>30</b>