



## 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 Technician Prestress

**SECTOR:** CONSTRUCTION

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

**OCCUPATION:** PRESTRESSING

**REFERENCE ID:** CON/Q0801

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

**Brief Job Description:** The person is responsible for providing support in carrying out prestressing works in RCC structures by handling materials and tools, helping in cutting and laying of strands/ sheathing ducts, preparing grout mix and carrying out pressure grouting of ducts.

**Personal Attributes:** The individual is expected to be physically fit and able to work across various locations in extreme weather/site conditions. The job holder should preferably be physically sound, free from vertigo problem, cardiovascular diseases as the nature of work involves sometimes working at height.

Job Details	Qualifications Pack Code	CON/Q0801		
	Job Role	Assistant Technician Prestress		
	Credits (NSQF)	TBD	Version number	2.0
	Sector	Construction	Drafted on	07/08/2015
	Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	24/07/2019
	Occupation	Prestressing	Next review date	24/07/2023
	NSQC Clearance on	22/08/2019		

Job Role	Assistant Technician Prestress
Role Description	The person is responsible for providing support in carrying out prestressing works in RCC structures by handling materials and tools, helping in cutting and laying of strands/sheathing ducts, preparing grout mix and carrying out pressure grouting of ducts.
NSQF level	3
Minimum Educational Qualifications	8 <sup>th</sup> standard
Maximum Educational Qualifications	Not Applicable
Prerequisite License or Training	
Minimum Job Entry Age	18 years
Experience	Non trained worker : 18 months site experience in same occupation Trained worker: 9 months site experience as a certified Helper Bar Bender and Fixer
Applicable National Occupational Standards (NOS)	<b>Compulsory:</b> <ol style="list-style-type: none"> <li><a href="#">CON/N0801: Identify, handle and store tools and construction materials for pre-stressing works</a></li> <li><a href="#">CON/N0802: Assist in uncoiling, cutting and placing of ducts and tendons</a></li> <li><a href="#">CON/N0803: Prepare grout mix and carry out pressure grouting</a></li> <li><a href="#">CON/N8001: Work effectively in a team to deliver desired results at the workplace</a></li> <li><a href="#">CON/N9001: Work according to personal health, safety and environment protocol at construction site</a></li> </ol>
Performance Criteria	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 need 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.

Acronyms

Keywords /Terms	Description
CON	Construction
NSQF	National Skill Qualifications Framework
QP	Qualification Pack
OS	Occupational Standards
TBD	To Be Decided

CON/N0801 Identify, handle and store tools and construction materials for pre-stressing works

# National Occupational Standard



## Overview

This NOS covers the skills and knowledge required by a workman to be proficient in identifying and handling and storing tools and construction materials for pre-stressing works.

## CON/N0801 Identify, handle and store tools and construction materials for pre-stressing works

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0801</b>
<b>Unit Title (Task)</b>	<b>Identify, handle and store tools and construction materials for pre-stressing works</b>
<b>Description</b>	This unit describes the skills and knowledge required to identify, handle and store tools and construction materials for pre-stressing works.
<b>Scope</b>	<p>The scope covers the following:</p> <ul style="list-style-type: none"> <li>Identify material and tools used for pre-stressing works</li> <li>Handle and store materials at sites</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Identify material and tools used for pre-stressing works</b>	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. identify and select common materials/components used for pre-stressing works such as cement, additives, steel tendons, tendon ducts (sheathing pipes) etc</p> <p>PC2. identify and select common hand/ power tools used for pipe and tendon laying operations such as hammer, spanner, drilling machine, circular power saw etc</p> <p>PC3. identify tendons to be used for pre-stressing works</p> <p>PC4. identify components of anchorage systems such as guides, bearing plates, grips &amp; circlips, cones base on their size and specification</p> <p>PC5. identify different types of anchorage systems such as flat anchorage, blind end anchorage etc</p> <p>PC6. identify different types of Tendon Ducts (sheathing) based on material (metallic or HDPE) and size</p> <p>PC7. identify spacers and supports which are required for placing and maintaining desired level of ducts</p> <p>PC8. identify blocks, inserts as applicable to the pre-stressing works</p>
<b>Handle and store materials at sites</b>	<p>PC9. shift and stack tendon coils at appropriate location as per specific storage norms</p> <p>PC10. shift and stack ducts, sleeves, anchorage components, inserts etc at specified locations as per specific storage norms</p> <p>PC11. shift and stack construction materials such as cement, sand, additives to appropriate storage locations as per instructions</p> <p>PC12. store tensioning jacks at appropriate location as per instruction</p> <p>PC13. erect protective covers to the stored materials and signage/ barricading as per instruction</p>
<b>Knowledge and Understanding (K)</b>	

## CON/N0801 Identify, handle and store tools and construction materials for pre-stressing works

<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KA1. standard practices of Prestressing works</li> <li>KA2. safety rules and regulations for handling, shifting, collecting and stacking required Prestressing materials, tools and tackles</li> <li>KA3. personal protection including the use of the related safety gears, safety equipment &amp; safety drills required for handling different façade installation materials, tools and tackles</li> <li>KA4. how to request for tools and materials as per set procedures</li> <li>KA5. maintenance of tools and equipment</li> </ul>
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KB1. basic concept of pre-stressing work and sequential steps involved in the same</li> <li>KB2. technical name of the materials used for pre-stressing works such as tendon, ducts, anchorage systems, supports etc</li> <li>KB3. basic properties of steel tendons</li> <li>KB4. hand and power tools required for making tendon/ duct laying arrangements and their respective uses</li> <li>KB5. concept of using anchorage systems and components used in anchorage systems</li> <li>KB6. common types of anchorage systems like flat anchorage, blind end anchorage and their respective use as per work requirement</li> <li>KB7. use of tendon ducts as per material and dimension</li> <li>KB8. standard procedure and dos and don'ts applicable for handling of tendons and pre-stressing materials/ components</li> <li>KB9. standard practice of storing and stacking steel tendons</li> <li>KB10. standard practice of storing and stacking pre-stressing materials/ components</li> <li>KB11. standard practice of storing and stacking tensioning jacks' materials/ components</li> <li>KB12. protective arrangements/ covers to be provided to the stored materials against heat, rain or possible adverse weathering effects</li> </ul>
<b>Skills (S)</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> <li>SA1. write in one or more languages, preferably in the local language of the site</li> </ul>
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> <li>SA2. read one or more languages, preferably the local language of the site</li> <li>SA3. read instructions, guidelines, sign boards, safety rules &amp; safety tags instruction related to exit routes during emergency at the workplace</li> </ul>



## CON/N0801 Identify, handle and store tools and construction materials for pre-stressing works

<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:
	SA4. speak in one or more languages, preferably in one of the local languages of site
	SA5. listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes
	SA6. orally communicate with co-workers regarding support required to complete the respective work
	<b>Decision Making</b>
	The user/ individual on the job needs to know and understand how to:
	SB1. decide whether the workplace is safe for working and also the relevant work is not creating hazardous conditions for others
	SB2. select appropriate materials, components, tools, anchorage systems, spacers, blocks, etc. for Prestressing works
	SB3. determine appropriate locations for shifting and stacking tendons, ducts, materials, tensioning jacks, etc.
	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to:
	SB4. plan self-work as per the direction /close supervision of a superior on site
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to:
	SB5. ensure work is done within time and as per desired quality as per instructions provided by superiors
	<b>Problem solving</b>
	SB6. ensure that necessary signages and barricading are in place for Prestressing works
	SB7. carry out erection of protective covers for stored materials
	<b>Analytical Thinking</b>
	N.A
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to:
	SB8. identify location at which violation of any safety norms may lead to accident

## CON/N0801 Identify, handle and store tools and construction materials for pre-stressing works

### NOS Version Control

NOS Code	CON/N0801		
Credits (NSQF)	TBD	Version number	1.1
Industry	Construction	Drafted on	07/08/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	24/07/2019
Occupation	Prestressing	Next review date	24/07/2023





CON/N0802

Assist in uncoiling, cutting and placing of ducts and tendons

# National Occupational Standard



## Overview

This NOS covers the skills and knowledge required by a workman to be proficient in assisting uncoiling, cutting and placing of ducts and tendons.

**CON/N0802 Assist in uncoiling, cutting and placing of ducts and tendons**

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0802</b>
<b>Unit Title (Task)</b>	<b>Assist in uncoiling, cutting and placing of ducts and tendons</b>
<b>Description</b>	This unit describes the skills and knowledge required to assist in uncoiling, cutting and placing of ducts and tendons.
<b>Scope</b>	<p>The scope covers the following:</p> <ul style="list-style-type: none"> <li>Assist in uncoiling and cutting of tendons</li> <li>Assist in placing of ducts and tendons</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Assist in uncoiling and cutting of tendons</b>	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. prepare bed for laying uncoiled tendons/ strands as per instruction</p> <p>PC2. remove covers from tendon coils prior to de-coiling</p> <p>PC3. check tendons/ ducts visually for rust, moistures or any visual deviation in shape</p> <p>PC4. cut/ untie wires, protective systems provided with the tendon coils</p> <p>PC5. un-coil the tendon as per instruction and place on the suitably prepared base (free from soil/dust, smooth surfaced)</p> <p>PC6. place roller cradles to the suitable base for dragging tendons</p> <p>PC7. drag and place tendons on the specified base as per instruction</p>
<b>Assist in placing of ducts and tendons</b>	<p>PC8. hold the ducts/tendons in to position, firmly during cutting works</p> <p>PC9. make bundle by putting tendons of required number together if necessary</p> <p>PC10. apply suitable tying to the bundle of tendons for firm binding</p> <p>PC11. assist in placing of ducts through the marked supports as per instruction</p> <p>PC12. assist in pushing tendons/ bundles through the ducts</p> <p>PC13. apply anti moisture wraps to the exposed portion of the tendons before and after placing as per instruction</p> <p>PC14. fix grouting nozzle, vents to the duct as per instruction</p> <p>PC15. close the nozzle or open terminals of the duct by using suitable material</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 of uncoiling and placing tendons on the base</p> <p>KA2. safety rules and regulations for handling, shifting, collecting and stacking required Prestressing materials, tools and tackles</p> <p>KA3. personal protection including the use of the related safety gears, safety equipment &amp; safety drills required for handling different façade installation materials, tools and tackles</p>

**CON/N0802 Assist in uncoiling, cutting and placing of ducts and tendons**

	<p>KA4. how to request for tools and materials as per set procedures</p> <p>KA5. maintenance of tools and equipment</p>
<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. standard practice of uncoiling and placing tendons on the base</p> <p>KB2. what visual checks are to be carried out to the tendons after removal of cover</p> <p>KB3. unit weight of tendons</p> <p>KB4. required nature of base for placing tendons</p> <p>KB5. visual checks to be carried out to ensure usability of tendons/ ducts for pre stressing works</p> <p>KB6. how to form bundle by tying multiple tendons together</p> <p>KB7. necessity of providing protective wrapping to the tendons</p> <p>KB8. how to hold tendons/ ducts safely during cutting works</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 one language, preferably in the local language of 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 at least one language, preferably in the local language of the site</p> <p>SA3. read instructions, guidelines, sign boards, safety rules and safety tags</p> <p>SA4. read instructions and 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 in one of the local languages of the site</p> <p>SA6. listen and follow instructions communicated by supervisors</p> <p>SA7. communicate orally and effectively with team member</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 the workplace is safe for working and also the relevant work is not creating hazardous conditions for others</p> <p>SB2. determine suitability of tendons / ducts, basis checking for rust, moisture, deviations in shape, etc.</p> <p>SB3. select appropriate materials for closing the nozzle of open terminals of the duct</p>
	<b>Plan and Organize</b>

**CON/N0802 Assist in uncoiling, cutting and placing of ducts and tendons**

	The user/individual on the job needs to know and understand how to: SB4. plan self-work as per the direction /close supervision of superior on site
	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to: SB5. ensure work is done within time and as per desired quality as per instructions provided by superiors
	<b>Problem solving</b>
	N.A
	<b>Analytical Thinking</b>
	SB6. determine whether or not there is a requirement for bundling of tendons
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB7. identify location at which violation of any safety norms may lead to accident



**CON/N0802 Assist in uncoiling, cutting and placing of ducts and tendons**

## **NOS Version Control**

NOS Code	CON/N0802		
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Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	24/07/2019
Occupation	Prestressing	Next review date	24/07/2023



CON/N0803

Prepare grout mix and carry out pressure grouting

# National Occupational Standard



## Overview

This NOS covers the skills and knowledge required by a workman to be proficient in preparing grout mix and carry out pressure grouting.



**CON/N0803**

**Prepare grout mix and carry out pressure grouting**

National Occupational Standard

<b>Unit Code</b>	<b>CON/N0803</b>
<b>Unit Title (Task)</b>	<b>Prepare grout mix and carry out pressure grouting</b>
<b>Description</b>	This unit describes the skills and knowledge required to prepare grout mix and carry out pressure grouting.
<b>Scope</b>	<p>The scope covers the following:</p> <ul style="list-style-type: none"> <li>Prepare grout mix and carry out grouting to the pre-stressing ducts</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Prepare grout mix and carry out grouting to the pre-stressing ducts</b>	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. collect suitable materials (such as cement, additives etc.) for grouting in mixing pan in required proportion</p> <p>PC2. add water to the mix in required proportion</p> <p>PC3. mix the grouting solution using appropriate hand/ power tools</p> <p>PC4. obtain the required workability of the grout mix as per specification</p> <p>PC5. carry out visual checks to the grouting pump and its accessories to determine its usability</p> <p>PC6. install the grouting pump to the provided grouting nozzles, vents and ensure adequate water tightness</p> <p>PC7. fix grouting caps to the ducts, anchorages as per instructions</p> <p>PC8. operate hand operated grouting machine to pump grout mix to the tendon ducts</p> <p>PC9. continue grouting works as per instruction under specified gauge pressure</p> <p>PC10. read and analyze gauge reading to determine whether the pressure applied is as per specification or not</p> <p>PC11. clean grouting machine and its accessories after completion of grouting work</p> <p>PC12. cut grouting nozzles/ vents using appropriate cutting tools as per instruction</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 Prestressing works</p> <p>KA2. safety rules and regulations for handling, shifting, collecting and stacking required Prestressing materials, tools and tackles</p> <p>KA3. personal protection including the use of the related safety gears, safety equipment &amp; safety drills required for handling different façade installation materials, tools and tackles</p> <p>KA4. how to request for tools and materials as per set procedures</p> <p>KA5. maintenance of tools and equipment</p>

**CON/N0803**

**Prepare grout mix and carry out pressure grouting**

<b>B. Technical Knowledge</b>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. materials to be used for preparation of grout mix</p> <p>KB2. mix proportion of the grout materials and water to be kept while preparing grout mix</p> <p>KB3. use of additives in grout mix and their functions</p> <p>KB4. use of hand/ power tools to achieve homogeneity of grout mix</p> <p>KB5. how to operate hand grouting machine</p> <p>KB6. pressure to be applied for grouting works as per specification</p> <p>KB7. how to determine the completion of grouting works by visual inspection</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 one language, preferably in the local language of 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 at least one language, preferably in the local language of the site</p> <p>SA3. read instructions, guidelines, sign boards, safety rules and safety tags</p> <p>SA4. read instructions and 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 languages, preferably in one of the local languages of the site</p> <p>SA6. listen and follow instructions communicated by supervisors</p> <p>SA7. communicate orally and effectively with team member</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 the workplace is safe for working and also the relevant work is not creating hazardous conditions for others</p> <p>SB2. identify and select appropriate materials in their correct proportions for the grouting mix</p> <p>SB3. determine the usability of the grouting pump</p> <p>SB4. select appropriate cutting tools for cutting of grouting nozzle / vents</p>
	<b>Plan and Organise</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. plan self-work as per the direction under close supervision of a superior</p> <p>SB6. plan for methodology of applying grout as per method statement</p>

CON/N0803

## Prepare grout mix and carry out pressure grouting

	<b>Customer centricity</b>
	The user/individual on the job needs to know and understand how to: SB7. ensure work is done within time and as per desired quality as per instructions provided by superiors
	<b>Problem solving</b>
	N.A
	<b>Analytical Thinking</b>
	SB8. assess the workability of the grouting mix
	<b>Critical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB9. identify location at which violation of any safety norms may lead to accident SB10. assess and analyze whether pressure is applied as per specifications, basis taking readings of the gauge



CON/N0803

Prepare grout mix and carry out pressure grouting

## NOS Version Control

NOS Code	CON/N0803		
Credits (NSQF)	TBD	Version number	1.1
Industry	Construction	Drafted on	07/08/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	24/07/2019
Occupation	Prestressing	Next review date	24/07/2023



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 effectively with co-workers, superiors and sub-ordinates across different teams</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, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task</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>	



CON/N8001

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

<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. own roles and responsibilities KA2. importance of effective communication and establishing strong working relationships with co-workers KA3. risks of a failure in teamwork in terms of effects on project outcomes, timelines, safety at the construction site, etc. KA4. different modes of communication, and its appropriate usage KA5. importance of creating healthy and cooperative work environment among the gangs of workers
<b>B. Technical Knowledge</b>	The user/individual on the job needs to know and understand: KB1. different activities within the work area where an interaction with other workers are required KB2. applicable techniques of work, properties of materials used, tools and tackles used, safety standards that co-workers might need as per the requirement 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 KB4. importance and need of supporting co-workers facing problems for smooth functioning of work
<b>Skills (S)</b>	
<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 languages, preferably in the local language of the site
	<b>Reading Skills</b>
	The user/ individual on the job needs to know and understand how to: SA2. read in one or more languages, preferably the local language of the site SA3. read communication from team members regarding work completed, materials used, tools and tackles used, support required
	<b>Oral Communication (Listening and Speaking skills)</b>
The user/ individual on the job needs to know and understand how to: SA4. speak in one or more languages, preferably in one of the local languages of the site SA5. listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes SA6. orally communicate with co-workers regarding support required to SA7. complete the respective work	

CON/N8001

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

<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 information is to be shared with co-workers within the team or from interfacing gang of workers
	<b>Plan and Organise</b>
	The user/individual on the job needs to know and understand how to: SB2. plan work and organize required resources in coordination with team members
	<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

**CON/N8001**

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

## **NOS Version Control**

<b>NOS Code</b>	<b>CON/N8001</b>		
<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.1</b>
<b>Industry</b>	<b>Construction</b>	<b>Drafted on</b>	<b>07/08/2015</b>
<b>Industry Sub-sector</b>	<b>Real Estate and Infrastructure Construction</b>	<b>Last reviewed on</b>	<b>24/07/2019</b>
<b>Occupation</b>	<b>Prestressing</b>	<b>Next review date</b>	<b>24/07/2023</b>



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**

<b>Unit Code</b>	<b>CON/N9001</b>
<b>Unit Title (Task)</b>	<b>Work according to personal health, safety and environment protocol at construction site</b>
<b>Description</b>	This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocol at construction site
<b>Scope</b>	<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>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Follow safety norms as defined by organization</b>	<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. select and operate different types of fire extinguishers corresponding to types of fires as per EHS guideline</p> <p>PC6. identify near miss, unsafe condition and unsafe act</p>
<b>Adopt healthy &amp; safe work practices</b>	<p>PC7. 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>PC8. handle all required tools, tackles, materials &amp; equipment safely</p> <p>PC9. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines</p> <p>PC10. install and apply properly all safety equipment as instructed</p> <p>PC11. follow safety protocol and practices as laid down by site EHS department</p> <p>PC12. undertake and pass height pass test as per EHS guideline</p>

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

<b>Implement good housekeeping and environment protection process and activities</b>	<p>PC13. 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>PC14. 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>KA1. reporting procedures in cases of breaches or hazards for site safety, accidents, and emergency situations as per guidelines</p> <p>KA2. types of safety hazards at construction sites</p> <p>KA3. 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>KB1. the procedure for responding to accidents and other emergencies at site</p> <p>KB2. use of appropriate personal protective equipment to be used based on various working conditions</p> <p>KB3. importance of handling tools, equipment and materials as applicable</p> <p>KB4. health and environmental effect of construction materials as per applicability</p> <p>KB5. various environmental protection methods as per applicability</p> <p>KB6. storage of waste including the following at appropriate location</p> <p>KB7. non-combustible scrap material and debris</p> <p>KB8. combustible scrap material and debris</p> <p>KB9. general construction waste and trash (non-toxic, non-hazardous)</p> <p>KB10. any other hazardous wastes</p> <p>KB11. any other flammable wastes</p> <p>KB12. how to use hazardous material, in a safe and appropriate manner as per applicability</p> <p>KB13. types of fire</p> <p>KB14. procedure of operating different types of fire extinguishers</p> <p>KB15. safety relevant to tools, tackles, &amp; requirement as per applicability</p> <p>KB16. 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>SA1. write in one or more languages, preferably in the local language of the site</p> <p>SA2. 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>SA3. read in one or more languages, preferably in the local language of the site</p> <p>SA4. read sign boards, notice boards relevant to safety</p>



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

B. Professional Skills	<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 languages, preferably in one of the local languages of 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. maintain safe 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

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

### NOS Version Control

NOS Code	CON/N9001		
Credits (NSQF)	TBD	Version number	1.4
Industry	Construction	Drafted on	07/08/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	24/07/2019
Occupation	Prestressing	Next review date	24/07/2023

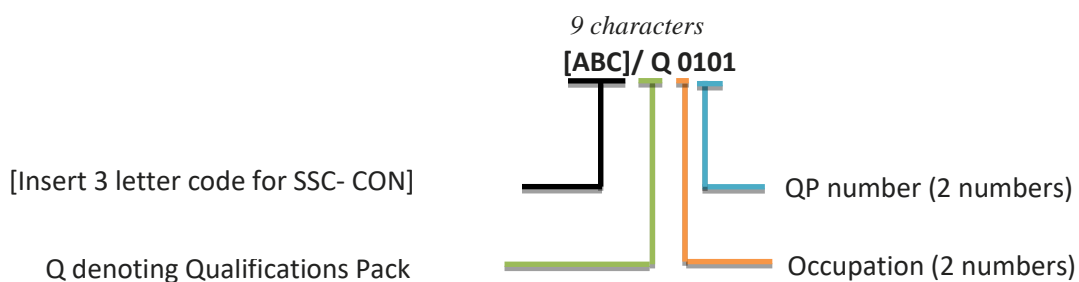


Assessment Criteria for Assistant Technician Prestress

## Annexure

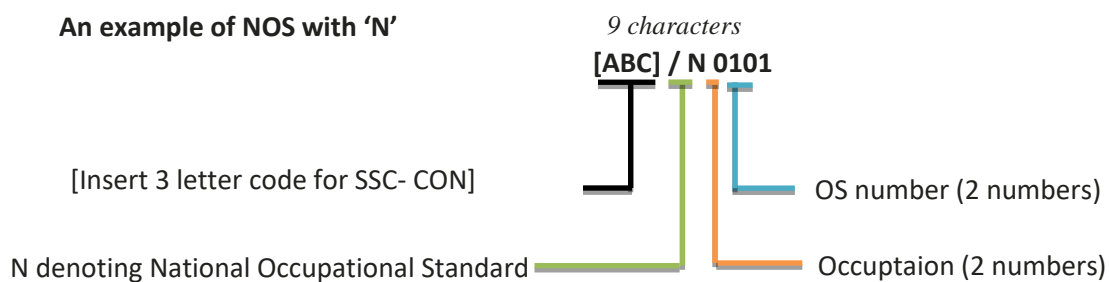
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with 'N'



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### *Assessment Criteria for Assistant Technician Prestress*

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Real Estate and Infrastructure	1-35
Rural Infrastructure Construction	36-50
Scope for new Sub-Sectors	51-99

Sequence	Description	Example
Three letters	Construction Skill Development Council of India	CON
Slash	/	/
Next letter	Whether QP or NOS	Q
Next two numbers	Occupation code	12
Next two numbers	OS number	01

*Assessment Criteria for Assistant Technician Prestress*

**CRITERIA FOR ASSESSMENT OF TRAINEES**

<b><u>Job Role</u></b>	Assistant Technician Prestress
<b><u>Qualification Pack</u></b>	CON/Q0801
<b><u>Sector Skill Council</u></b>	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 iterations 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.

Assessment outcomes	Assessment Criteria for outcomes	Marks Allocation			
		Total Mark	Out Of	Theory	Skills Practical
CON/N0801: Identify, handle and store tools and construction materials for pre-stressing works	PC1. identify and select common materials/components used for pre-stressing works such as cement, additives, steel tendons, tendon ducts (sheathing pipes) etc.	100	60	18	42
	PC2. identify and select common hand/ power tools used for pipe and tendon laying operations such as hammer, spanner, drilling machine, circular power saw etc				
	PC3. identify tendons to be used for pre-stressing works				

*Assessment Criteria for Assistant Technician Prestress*

	PC4. identify components of anchorage systems such as guides, bearing plates, grips & circlips, cones base on their size and specification				
	PC5. identify different types of anchorage systems such as flat anchorage, blind end anchorage etc.				
	PC6. identify different types of tendon ducts (sheathing) based on material (metallic or HDPE) and size				
	PC7. identify spacers and supports which are required for placing and maintaining desired level of ducts				
	PC8. identify blocks, inserts as applicable to the pre-stressing works				
	PC9. shift and stack tendon coils at appropriate location as per specific storage norms				
	PC10. shift and stack ducts, sleeves, anchorage components, inserts etc at specified locations as per specific storage norms				
	PC11. shift and stack construction materials such as cement, sand, additives to appropriate storage locations as per instructions				
	PC12. store tensioning jacks at appropriate location as per instruction				
	PC13. erect protective covers to the stored materials and signage/ barricading as per instruction				
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>
CON/N0802: Assist in uncoiling, cutting and placing of ducts and tendons	PC1. prepare bed for laying uncoiled tendons/ strands as per instruction	<b>100</b>	50	15	35
	PC2. remove covers from tendon coils prior to de-coiling				
	PC3. check tendons/ ducts visually for rust, moistures or any visual deviation in shape				
	PC4. cut/ untie wires, protective systems provided with the tendon coils				
	PC5. un-coil the tendon as per instruction and place on the suitably prepared base (free from soil/dust, smooth surfaced)				
	PC6. place roller cradles to the suitable base for dragging tendons				
	PC7. drag and place tendons on the specified base as per instruction				
	PC8. hold the ducts/tendons in to position, firmly during cutting works				
	PC9. make bundle by putting tendons of required number together if necessary				
	PC10. apply suitable tying to the bundle of				
			50	15	35



*Assessment Criteria for Assistant Technician Prestress*

	tendons for firm binding				
	PC11. assist in placing of ducts through the marked supports as per instruction				
	PC12. assist in pushing tendons/ bundles through the ducts				
	PC13. apply anti moisture wraps to the exposed portion of the tendons before and after placing as per instruction				
	PC14. fix grouting nozzle, vents to the duct as per instruction				
	PC15. close the nozzle or open terminals of the duct by using suitable material				
	<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>	
CON/N0803: Prepare grout mix and carry out pressure grouting	PC1. collect suitable materials (such as cement, additives etc.) for grouting in mixing pan in required proportion	<b>100</b>	100	30	70
	PC2. add water to the mix in required proportion				
	PC3. mix the grouting solution using appropriate hand/ power tools				
	PC4. obtain the required workability of the grout mix as per specification				
	PC5. carry out visual checks to the grouting pump and its accessories to determine its usability				
	PC6. install the grouting pump to the provided grouting nozzles, vents and ensure adequate water tightness				
	PC7. fix grouting caps to the ducts, anchorages as per instructions				
	PC8. operate hand operated grouting machine to pump grout mix to the tendon ducts				
	PC9. continue grouting works as per instruction under specified gauge pressure				
	PC10. read and analyze gauge reading to determine whether the pressure applied is as per specification or not				
	PC11. clean grouting machine and its accessories after completion of grouting work				
	PC12. cut grouting nozzles/ vents using appropriate cutting tools as per instruction				
	<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>	
CON/N8001: Work effectively in a team to deliver desired results at	PC1. pass on work related information/ requirement clearly to the team members	<b>100</b>	60	18	42
	PC2. inform co-workers and superiors about any kind of deviations from work				

*Assessment Criteria for Assistant Technician Prestress*

the workplace	PC3. address the problems effectively and report if required to immediate supervisor appropriately				
	PC4. receive instructions clearly from superiors and respond effectively on the same				
	PC5. communicate to team members/subordinates for appropriate work technique and method				
	PC6. seek clarification and advice as per the requirement and applicability				
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams				
	PC8. work together with co-workers in a synchronized manner				
	<b>Total</b>		<b>100</b>	<b>30</b>	<b>70</b>
CON/N9001: Work according to personal health, safety and environment protocol at construction site	PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority	<b>100</b>	30	10	20
	PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities				
	PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable				
	PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site				
	PC5. select and operate different types of fire extinguishers corresponding to types of fires as per EHS guideline				
	PC6. identify near miss, unsafe condition and unsafe act				
	PC7. use appropriate Personal Protective Equipment (PPE) as per work requirements including: • Head Protection (Helmets) • Ear protection • Fall Protection • Foot Protection • Face and Eye Protection, • Hand and Body Protection • Respiratory Protection (if required)		50	15	35
	PC8. handle all required tools, tackles, materials & equipment safely				
	PC9. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines				

*Assessment Criteria for Assistant Technician Prestress*

	PC10. install and apply properly all safety equipment as instructed				
	PC11.follow safety protocol and practices as laid down by site EHS department				
	PC 12. undertake and pass height pass test as per EHS guidelines				
	PC13. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		20	5	15
	PC14.apply ergonomic principles wherever required				
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>