



QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CONSTRUCTION INDUSTRY



Contents

1. Introduction and Contacts.....P1
2. Qualifications Pack.....P2
3. Glossary of Key TermsP4
4. OS Units.....P6
5. Assessment Criteria.....P36

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

Contact Us:

CSDCI
204, Aashirwad
Complex, D-1, Green
Park, New Delhi -
110016
E-mail:
standards@csdcindia.org



Introduction

Qualifications Pack – Bar Bender & Steel Fixer

SECTOR: CONSTRUCTION

SUB-SECTOR: Real Estate and Infrastructure Construction

OCCUPATION: BAR BENDING & FIXING

REFERENCE ID: CON/Q0203

ALIGNED TO: NCO-2004/7214.70

This job role performs cutting, bending and fabrication of reinforcement steel as per drawing

Brief Job Description: Bar bender & Steel Fixer is responsible for marking, cutting and bending of rebars using hand or power tools effectively, fabricating, placing and fixing reinforcement at the desired location using correct ties within specified time and tolerance. The individual should have good knowledge of safe work practices and handling of rebars properly.

Personal Attributes: The individual is expected to be physically fit and should be able to work across various locations in withstanding extreme conditions while working. The individual should be organized, diligent, methodical and able to implement and maintain safety practices. The individual should have independent ability to take quick decisions and have good communication skills and shall be able to work within a team to handle various bar bending tools and materials and work responsibly for own work within defined limit.

Job Details	Qualifications Pack Code	CON/Q0203		
	Job Role	Bar Bender & Steel Fixer		
	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	Bar Bending & Fixing	Next review date	23/03/2017
	NSQC Clearance on	19/05/2015		

Job Role	Bar Bender & Steel Fixer
Role Description	Responsible for carrying out cutting and bending of reinforcement steel bar using hand and power tools along with fabrication and placing of reinforcement steel bar as per drawing requirement
NSQF Level	4
Minimum Educational Qualifications	Preferably 5th standard
Maximum Educational Qualifications	N.A
Training (Suggested but not mandatory)	Recommended training period of 8-12 weeks as per QP of Bar Bender & Steel Fixer Normal literacy of reading, writing and understanding
Minimum Job Entry Age	18 years
Experience	Desirable: 1. Non trained worker : 5 years site experience in same occupation 2. Trained worker : 2 years site experience as a certified Assistant Bar Bender & steel fixer
Applicable National Occupational Standards (NOS)	Compulsory: 1. CON/N0204: Read and understand routine drawings / sketches and Bar Bending Schedule 2. CON/N0205: Use hand and power tools for cutting and bending of reinforcement 3. CON/N0206: Prepare, fabricate, place and fix reinforcement for RCC structures 4. CON/N8001: Work effectively in a team to deliver desired

	<p>results at the workplace</p> <p>5. CON/N8002: Plan and organize work to meet expected outcomes</p> <p>6. CON/N9001: Work according to personal health, safety and environment protocol at construction site</p> <p>Optional:</p> <p>N.A</p>
Performance Criteria	As described in the relevant OS units

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

CON/N0204

Read and understand routine drawings / sketches and Bar Bending Schedule

National Occupational Standard



Overview

This NOS covers the skills and knowledge required by a workman to read and understand routine drawings / sketches and Bar Bending Schedule.

CON/N0204

Read and understand routine drawings / sketches and Bar Bending Schedule

National Occupational Standard

Unit Code	CON/N0204
Unit Title (Task)	Read and understand routine drawings / sketches and Bar Bending Schedule
Description	This unit describes the skills and knowledge to read and understand routine drawings / sketches and Bar Bending Schedule.
Scope	<p>This scope covers the following:</p> <ul style="list-style-type: none"> Read and understand routine drawings / sketches Read and understand Bar Bending Schedule
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Read and understand routine drawings / sketches	<p>to be competent, the user / individual on the job must be able to</p> <p>PC1. read and interpret basic detail from the sketches / drawings</p> <p>PC2. understand fixing/insertion sequence from the drawings</p> <p>PC3. find out the direction and position of rebars from the drawing</p> <p>PC4. calculate number of chairs, spacer bars requirement to be used</p> <p>PC5. find out the size and type of cover block to be used from the drawing</p> <p>PC6. calculate cutting length required for basic works from the sketches</p> <p>PC7. plan for cutting of rebars as per instructions</p>
Read and understand Bar Bending Schedule	<p>PC8. read & interpret correct detail from Bar bending schedule including types, diameter, shape, cutting length, number of rebars</p> <p>PC9. calculate the cutting length of rebar from the provided BBS</p> <p>PC10. understand terms used in bar bending schedule</p> <p>PC11. estimate quantities of work from bar bending schedule</p> <p>PC12. plan for cutting of rebars as per instructions, considering minimum wastage and cutting length</p>
Knowledge and Understanding (K)	
A. Organizational Context (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 reinforcement work</p> <p>KA2. safety rules and regulations for handling and storing required tools, equipment and materials</p> <p>KA3. personal protection including the use of related safety gears & equipments</p> <p>KA4. service request procedure for tools, materials and equipments</p> <p>KA5. maintenance of tools and equipments</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. how to read basic drawing/sketches for bar bending and fixing works</p> <p>KB2. use of measurement and marking tool</p> <p>KB3. simple arithmetic calculation</p>

CON/N0204

Read and understand routine drawings / sketches and Bar Bending Schedule

	<p>KB4. how to carry out simple measurements using metric and imperial systems</p> <p>KB5. how to read and understand BBS</p> <p>KB6. conversion of linear unit for measurement</p> <p>KB7. unit weight of steel</p> <p>KB8. different types of cover block and their uses</p> <p>KB9. how to prevent reinforcement from rusting</p> <p>KB10. different types of steel rods, length and diameter</p> <p>KB11. different types of binding wire, thickness and uses</p> <p>KB12. mould forms and their specific requirements along with process / procedure to be followed for pre cast reinforcement</p> <p>KB13. basic material properties of bars like strength</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	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
	Reading Skills
	The user/ individual on the job needs to know and understand how to:
	<p>SA2. read one or more language, preferably the local language at the site</p> <p>SA3. read /sketches/Drawing or instructions provided for the work</p> <p>SA4. read various, sign boards, safety rules and safety tags , instruction related to exit routes during emergency at the workplace</p>
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	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 instructions given by the superior
	Decision Making
	The user/individual on the job needs to know and understand how to:
B. Professional Skills	SB1. decide whether his workplace is safe for working and also his work is not creating hazardous conditions for other
	Plan and Organise
	The user/individual on the job needs to know and understand how to:
	SB2. plan work & organize required resource in coordination with team members and superior
B. Professional Skills	Customer centricity

CON/N0204

Read and understand routine drawings / sketches and Bar Bending Schedule

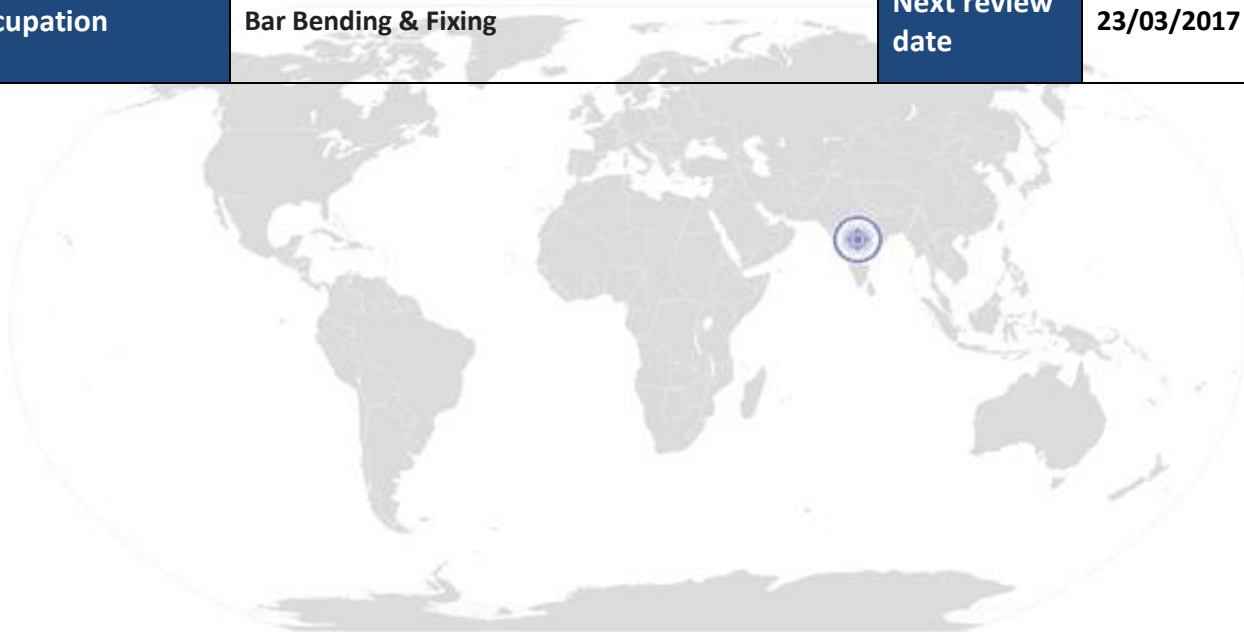
	The user/individual on the job needs to know and understand how to: SB3. complete work as per agreed time schedule and quality
	Problem solving
	The user/individual on the job needs to know and understand how to: SB4. rectify any problem in related to fixing or insertion of reinforcement in congested area SB5. resolve any conflict within the team
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB6. insert and fix reinforcement in case of critical structures SB7. revert to superior for selection/sorting of materials SB8. minimize wastages SB9. optimize resources
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB10. evaluate the complexity of the tasks and seek assistance and support wherever required SB11. identify violation of any safety norms which may lead to accidents

CON/N0204

Read and understand routine drawings / sketches and Bar Bending Schedule

NOS Version Control

NOS Code	CON/N0204		
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	Bar Bending & Fixing	Next review date	23/03/2017



CON/N0205

Use hand and power tools for cutting and bending of reinforcement

National Occupational Standard



Overview

This NOS covers the skills and knowledge required by a workman for using hand and power tools for cutting and bending of reinforcement.

CON/N0205

Use hand and power tools for cutting and bending of reinforcement

National Occupational Standard

Unit Code	CON/N0205
Unit Title (Task)	Use hand and power tools for cutting and bending of reinforcement
Description	This unit describes the skills and knowledge required for using hand & power tools for cutting and bending of reinforcement.
Scope	<p>This scope covers the following:</p> <ul style="list-style-type: none"> • Use hand and power tools for cutting of reinforcement bars • Use hand and power tools for bending of reinforcement bars
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Use hand and power tools for cutting of reinforcement bars	<p>To be competent, the user / individual on the job must be able to</p> <p>PC1. select hand tools/power tools for cutting rebars as per requirement / instruction</p> <p>PC2. select cutting blade for cutting of rebar as per requirement / instruction</p> <p>PC3. make use of measurement and marking tool to mark on rebars for cutting as per specified length in the BBS</p> <p>PC4. place rebars properly for cutting, as per requirement and instruction</p> <p>PC5. ensure adequate number of rods are placed for cutting to avoid damage to machine</p> <p>PC6. maintain correct body posture while cutting rebars manually or mechanically</p> <p>PC7. tag and stack rebars after cutting as per standards practices</p>
Use hand and power tools for bending reinforcement bars	<p>PC8. select hand/power tools for bending rebars with respect to the work</p> <p>PC9. select accessories for bending with respect to the diameter of rebar used & machine used</p> <p>PC10. mark on rebar and place & fix rods on correct position for bending</p> <p>PC11. maintain correct body posture while bending rebars manually or mechanically</p> <p>PC12. bend rebars as per the shape and dimensions given in the BBS, including hooks</p> <p>PC13. check for length, shape of rebars to ensure they are within the tolerance limit</p> <p>PC14. tag and stack rebars after bending as per standard practices</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. standard practices for reinforcement work</p> <p>KA2. safety rules and regulations for handling and storing required tools, equipment and materials</p> <p>KA3. personal protection including the use of related safety gears & equipments</p>

CON/N0205

Use hand and power tools for cutting and bending of reinforcement

its processes)	<p>KA4. service request procedure for tools, materials and equipments</p> <p>KA5. maintenance of tools and equipments</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. safety measures for use of different types of hand and power tools</p> <p>KB2. different types of power tools, accessories for cutting , bending and threading of reinforcement</p> <p>KB3. how to fix cutting blade and other accessories in cutting and bending machine</p> <p>KB4. knowledge about capacity and required details of cutting machines, bending machine and threading machine</p> <p>KB5. use of CNC machine for reinforcement works</p> <p>KB6. methods of protecting steel from rusting</p> <p>KB7. tolerance limits for bending and cutting of rebars</p> <p>KB8. tagging procedures for rebars basis shape, size and location</p> <p>KB9. types of hand tool available for cutting and bending</p> <p>KB10. use of measurement and marking tools</p> <p>KB11. simple arithmetic calculation</p> <p>KB12. how to carry out simple measurements using metric and imperial systems</p> <p>KB13. how to read and understand BBS in order to carry out cutting and bending of reinforcement</p> <p>KB14. conversion of linear unit for measurement</p> <p>KB15. unit weight of steel</p> <p>KB16. method and knowledge of storing cut rebars and scrap material</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in one or more language, preferably the local language at the site</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in one or more language, preferably the local language at the site read one or more language, preferably the local language at the site</p> <p>SA3. read /sketches/routine working drawing or instructions provided for the work</p> <p>SA4. read bar bending schedule provided by supervisor for the placing and fixing of reinforcement</p> <p>SA5. read various, sign boards, safety rules and safety tags , instruction related to exit routes during emergency at the workplace</p>
	Oral Communication (Listening and Speaking skills)

CON/N0205

Use hand and power tools for cutting and bending of reinforcement

B. Professional Skills	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 the site SA7. listen and follow instructions given by the superior
	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. decide whether his workplace is safe for working and also his work is not creating hazardous conditions for other
	Plan and Organise
	The user/individual on the job needs to know and understand how to: SB2. plan work & organize required resource in coordination with team members and superior
	Customer centricity
	The user/individual on the job needs to know and understand how to: SB3. complete work as per agreed time schedule and quality
	Problem solving
	The user/individual on the job needs to know and understand how to: SB4. rectify any problem in related to fixing or insertion of reinforcement in congested area SB5. resolve any conflict within the team
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB6. insert and fix reinforcement in case of critical structures SB7. revert to superior for selection/sorting of materials SB8. minimize wastages SB9. optimize resources
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB10. evaluate the complexity of the tasks and seek assistance and support wherever required SB11. identify violation of any safety norms which may lead to accidents

CON/N0205

Use hand and power tools for cutting and bending of reinforcement

NOS Version Control

NOS Code	CON/N0205		
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	Bar Bending & Fixing	Next review date	23/03/2017



CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

National Occupational Standard



Overview

This NOS covers the skills and knowledge required by a workman to prepare, fabricate, place and fix reinforcement for RCC structures.

CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

National Occupational Standard

Unit Code	CON/N0206
Unit Title (Task)	Prepare, fabricate, place and fix reinforcement for RCC structures
Description	This unit describes the skills and knowledge required to prepare, fabricate, place and fix reinforcement for RCC structures as per Bar bending Schedule.
Scope	<p>This scope covers the following:</p> <ul style="list-style-type: none"> Fabricate, place and fix reinforcement for R.C.C structures as per Bar Bending Schedule and drawing
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Fabricate, place and fix reinforcement for RCC structures as per Bar Bending Schedule and drawing	<p>To be competent, the user / individual on the job must be able to:</p> <p>PC1. read & understand relevant specification given in the sketches/drawing</p> <p>PC2. follow correct method for insertion/ fixing of rebars as per the types of structure</p> <p>PC3. select rebars for placement as per the drawing</p> <p>PC4. mark and place rebars, fabricate cage and fix on its position as per the drawing</p> <p>PC5. maintain uniform spacing between the bars, stirrups, link rod as per the drawing</p> <p>PC6. stagger the lap to avoid more than 50% of splicing</p> <p>PC7. place and fix mechanical coupler in case of higher diameter rebars used</p> <p>PC8. tie reinforcement with approved binding wires as per drawing with specified spacing</p> <p>PC9. ensure cover blocks and spacers are placed to maintain appropriate covers & spacing</p> <p>PC10. place and fix chairs at specified spacing to maintain correct thickness</p> <p>PC11. ensure that location and position of reinforcement and fixing ties to reinforcement are checked for accuracy</p> <p>PC12. follow sequence of tying as per method statement</p> <p>PC13. provide suitable stiffeners for lifting in case of prefabricated cage</p> <p>PC14. check quality of reinforcement work with reference to spacing, placement of rebars</p> <p>PC15. report to superior for checking of work executed and take corrective action if any error or issue is found</p>
Knowledge and Understanding (K)	

CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. standard practices for reinforcement work KA2. safety rules and regulations for handling and storing required tools, equipment and materials KA3. personal protection including the use of related safety gears & equipments KA4. service request procedure for tools, materials and equipments KA5. maintenance of tools and equipments
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. basic drawing/sketches related to reinforcement work KB2. sequence for tying of reinforcement for in-situ, prefabrication works KB3. insertion and fixing process for slab, beam, column, footing, wall, staircase etc. KB4. one way and two way slab KB5. prefabrication of reinforcement cage and its uses in different types of structure KB6. lapping length and importance of lapping for different diameter of rebars KB7. different types of stirrups and ties used in bar bending works KB8. importance of clear cover while carrying out reinforcement works KB9. use of chairs, spacer bar, hanger bars KB10. use of mechanical coupler and threading of reinforcement KB11. standard tolerance levels in reinforcement works KB12. conversion of linear units KB13. how to check the quality of cutting blade by visual inspection KB14. how to check the quality of accessories which are used for cutting & bending of rebars KB15. electrical safety of powers tools and equipments used in bar bending works KB16. different types of rebars KB17. different types and thickness of binding wire KB18. different types of cover blocks available KB19. basics of concreting works KB20. basics of shuttering works
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	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
	Reading Skills

CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read in one or more language, preferably the local language at the site read one or more language, preferably the local language at the site</p> <p>SA3. read /sketches/Drawing or instructions provided for the work</p> <p>SA4. read bar bending schedule provided by supervisor for the placing and fixing of reinforcement</p> <p>SA5. read various, sign boards, safety rules and safety tags , instruction related to exit routes during emergency at the workplace</p>
	<p>Oral Communication (Listening and Speaking skills)</p>
	<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 the site</p> <p>SA7. listen and follow instructions given by the superior</p>
B. Professional Skills	<p>Decision Making</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. decide whether the work place is safe for working and also relevant task is not creating hazardous condition for others</p> <p>SB2. decide on correct method for insertion/ fixing of rebars for any kind of critical structure or in congested area</p>
	<p>Plan and Organise</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. plan work & organize required resource in coordination with team members and superior</p>
	<p>Customer centricity</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB4. complete work as per agreed time schedule and quality</p>
	<p>Problem solving</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. rectify any problem in related to fixing or insertion of reinforcement in congested area</p> <p>SB6. resolve any conflict within the team</p>
	<p>Analytical Thinking</p>

CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. insert and fix reinforcement in case of critical structures</p> <p>SB8. minimize wastages</p> <p>SB9. optimize resources</p> <p>SB10. revert to superior for selection/sorting of materials</p>
	<p>Critical Thinking</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB11. evaluate the complexity of the task and seek assistance and support wherever required</p> <p>SB12. bring to the notice of the superiors violation of any safety norms which may lead to accidents</p>



CON/N0206

Prepare, fabricate, place and fix reinforcement for RCC structures

NOS Version Control

NOS Code	CON/N0206		
Credits (NSQF)	TBD	Version number	1.0
Industry	Construction	Drafted on	03/07/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Bar Bending & Fixing	Next review date	23/03/2017



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

Unit Code	CON/N8001
Unit Title (Task)	Work effectively in a team to deliver desired results at the workplace
Description	This unit describes the skills and knowledge required to work effectively within a team to achieve the desired results.
Scope	<p>The scope covers the following:</p> <ul style="list-style-type: none"> Interact and communicate effectively with co-workers, superiors and sub-ordinates across different teams Support co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Interact and communicate in effective and conclusive manner	<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>
Support co-workers to execute project requirements	<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>
Knowledge and Understanding (K)	
A. Organizational Context (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. Technical Knowledge	<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>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<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>
	Reading Skills
	<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>
	Oral Communication (Listening and Speaking skills)
	<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. Professional Skills	Decision Making
	<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>
	Plan and Organise
	<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>
	Customer centricity

CON/N8001

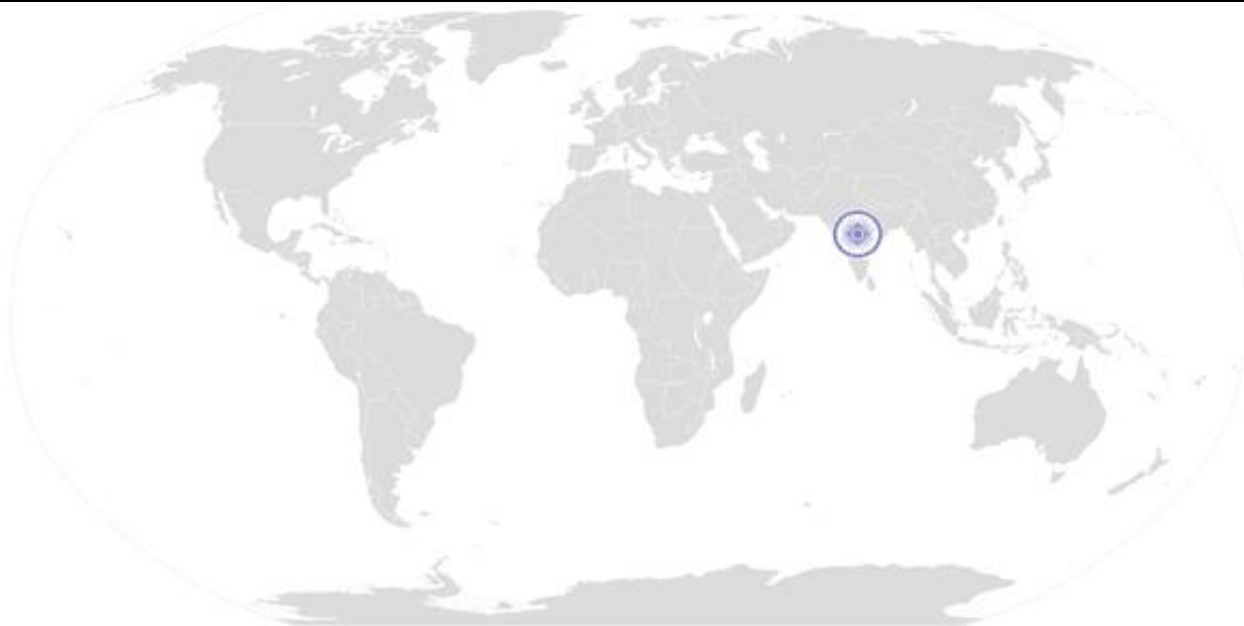
Work effectively in a team to deliver desired results at the workplace

	The user/individual on the job needs to know and understand how to: SB3. complete all assigned task in coordination with team members
	Problem solving
	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
	Analytical Thinking
	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
	Critical Thinking
	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 Code	CON/N8001		
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	Bar Bending & Fixing	Next review date	23/03/2017



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

Unit Code	CON/N8002
Unit Title (Task)	Plan and organize work to meet expected outcomes
Description	This unit describes the knowledge and the skills required for an individual to plan and organize own work in order to meet expected outcome.
Scope	<p>This scope covers the following:</p> <ul style="list-style-type: none"> • Prioritize work activities to achieve desired results • Organize desired resources prior to commencement of work
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Prioritize work activities to achieve desired results	<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>
Organize desired resources prior to commencement of work	<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>
Knowledge and Understanding (K)	
A. Organizational Context (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. Technical Knowledge	<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>
Skills (S)	

CON/N8002

Plan and organize work to meet expected outcomes

A. Core Skills/ Generic Skills	Writing Skills
	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
	Reading Skills
	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
	Oral Communication (Listening and Speaking skills)
B. Professional Skills	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
	Decision Making
	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
	Plan and Organise
	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
	Customer centricity
	The user/individual on the job needs to know and understand how to: SB3. complete all assigned task with proper planning and organizing
	Problem solving
	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
	Analytical Thinking
	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 material or damage to tools and tackles
	Critical Thinking

CON/N8002

Plan and organize work to meet expected outcomes

	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. evaluate potential solutions to minimize avoidable delays and wastages at the construction site</p>
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

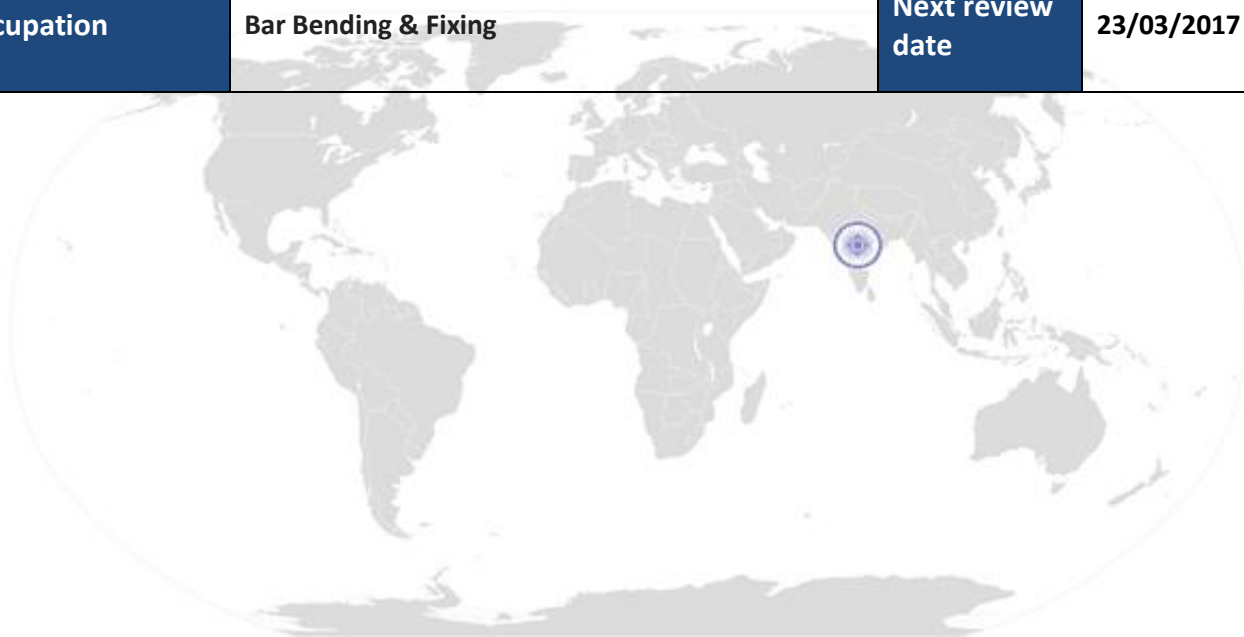


CON/N8002

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	Bar Bending & Fixing	Next review date	23/03/2017



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"> Follow safety norms as defined by organization Adopt healthy & safe work practices Implement good housekeeping and environment protection process and activities
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"> Head Protection (Helmets) Ear protection Fall Protection Foot Protection Face and Eye Protection, Hand and Body Protection Respiratory Protection (if required) <p>PC7. handle all required tools, tackles , materials & 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

Implement good housekeeping practices	<p>PC11. 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>PC12. apply ergonomic principles wherever required</p>
Knowledge and Understanding (K)	
A. Organizational Context (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. Technical Knowledge	<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. appropriate personal protective equipment to used based on various working conditions</p> <p>KB3. importance of handling tools, equipment and materials as per applicable</p> <p>KB4. health and environments 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> <ul style="list-style-type: none"> • non-combustible scrap material and debris • combustible scrap material and debris • general construction waste and trash (non-toxic, non-hazardous) • any other hazardous wastes • any other flammable wastes <p>KB7. how to use hazardous material, in a safe and appropriate manner as per applicability</p> <p>KB8. safety relevant to tools, tackles, & requirement as per applicability</p> <p>KB9. housekeeping activities relevant to task</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. write in one or more language, preferably the local language at the site</p> <p>SA2. fill safety formats for near miss, unsafe conditions and safety suggestions</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. read in one or more language, preferably the local language at 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	Oral Communication (Listening and Speaking skills)
	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.
	Decision Making
	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
	Plan and Organise
	SB3. N.A
	Customer centricity
	SB4. N.A
	Problem solving
	The user/individual on the job needs to know and understand how to:
	SB5. 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
	Analytical Thinking
	The user/individual on the job needs to know and understand how to:
	SB6. assess and analyze areas which may affect health, safety and environment protocol on the site
	Critical Thinking
	The user/individual on the job needs to know and understand how to:
	SB7. ensure personal safety behavior
	SB8. 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	1.0
Industry	Construction	Drafted on	07/03/2015
Industry Sub-sector	Real Estate and Infrastructure Construction	Last reviewed on	23/03/2015
Occupation	Bar Bending & Fixing	Next review date	23/03/2017



Assessment Criteria for Bar Bender and Steel Fixer

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Bar Bender and Steel Fixer

Qualification Pack CON/Q0203

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 70%. To pass the Qualification Pack, every trainee should score a minimum of 70% 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
CON/N0204: Read and understand routine	PC1. read and interpret basic detail from the sketches / drawings	100	10	2	8
	PC2. understand fixing/insertion sequence from the drawings		5	1	4

Assessment Criteria for Bar Bender and Steel Fixer

drawings/sketches and Bar Bending Schedule	PC3. find out the direction and position of rebars from the drawing		5	1	4
	PC4. calculate number of chairs, spacer bars requirement to be used		10	2	8
	PC5. find out the size and type of cover block to be used from the drawing		5	1	4
	PC6. calculate cutting length required for basic works from the sketches		10	2	8
	PC7. plan for cutting of rebars as per instructions		5	1	4
	PC8. read & interpret correct detail from Bar bending schedule including types, diameter, shape, cutting length, number of rebars		10	2	8
	PC9. calculate the cutting length of rebar from the provided BBS		15	3	12
	PC10. understand terms used in bar bending schedule		5	1	4
	PC11. estimate quantities of work from bar bending schedule		15	3	12
	PC12. plan for cutting of rebars as per instructions, considering minimum wastage and cutting length		5	1	4
	Total		100	20	80
CON/N0205: Use hand and power tools for cutting and bending of reinforcement	PC1. select hand tools/power tools for cutting rebars as per requirement / instruction	100	10	2	8
	PC2. select cutting blade for cutting of rebar as per requirement / instruction		5	1	4
	PC3. make use of measurement and marking tool to mark on rebars for cutting as per specified length in the BBS		10	2	8
	PC4. place rebars properly for cutting, as per requirement and instruction		5	1	4
	PC5. ensure adequate number of rods are placed for cutting to avoid damage to machine		5	1	4
	PC6. maintain correct body posture while cutting rebars manually or mechanically		10	2	8
	PC7. tag and stack rebars after cutting as per standards practices		5	1	4

Assessment Criteria for Bar Bender and Steel Fixer

	PC8. select hand/power tools for bending rebars with respect to the work		5	1	4
	PC9. select accessories for bending with respect to the diameter of rebar used & machine used		5	1	4
	PC10. mark on rebar and place & fix rods on correct position for bending		10	2	8
	PC11. maintain correct body posture while bending rebars manually or mechanically		5	1	4
	PC12. bend rebars as per the shape and dimensions given in the BBS, including hooks		10	2	8
	PC13. check for length, shape of rebars to ensure they are within the tolerance limit		10	2	8
	PC14. tag and stack rebars after bending as per standard practices		5	1	4
	Total		100	20	80
CON/N0206: Prepare, fabricate, place and fix reinforcement for R.C.C structures	PC1. read & understand relevant specification given in the sketches/drawing	100	5	1	4
	PC2. follow correct method for insertion/fixing of rebars as per the types of structure		5	1	4
	PC3. select rebars for placement as per the drawing		5	1	4
	PC4. mark and place rebars, fabricate cage and fix on its position as per the drawing		10	2	8
	PC5. maintain uniform spacing between the bars, stirrups, link rod as per the drawing		10	2	8
	PC6. stagger the lap to avoid more than 50% of splicing		10	2	8
	PC7. place and fix mechanical coupler in case of higher diameter rebars used		5	1	4
	PC8. tie reinforcement with approved binding wires as per drawing with specified spacing		5	1	4

Assessment Criteria for Bar Bender and Steel Fixer

	PC9. ensure cover blocks and spacers are placed to maintain appropriate covers & spacing		5	1	4
	PC10. place and fix chairs at specified spacing to maintain correct thickness		10	2	8
	PC11. ensure that location and position of reinforcement and fixing ties to reinforcement are checked for accuracy		5	1	4
	PC12. follow sequence of tying as per method statement		10	2	8
	PC13. provide suitable stiffeners for lifting in case of prefabricated cage		5	1	4
	PC14. check quality of reinforcement work with reference to spacing, placement of rebars		5	1	4
	PC15. report to superior for checking of work executed and take corrective action if any error or issue is found		5	1	4
	Total		100	20	80
CON/N8001: Work effectively in a team to deliver desired results at the workplace	PC1. pass on work related information/ requirement clearly to the team members	100	10	2	8
	PC2. inform co-workers and superiors about any kind of deviations from work		5	1	4
	PC3. address the problems effectively and report if required to immediate supervisor appropriately		5	1	4
	PC4. receive instructions clearly from superiors and respond effectively on same		5	1	4
	PC5. communicate to team members/subordinates for appropriate work technique and method		5	1	4
	PC6. seek clarification and advice as per requirement and applicability		10	2	8
	PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams		30	6	24
	PC8. work together with co-workers in a synchronized manner		30	6	24
	Total		100	20	80
CON/N8002: Plan and	PC1. understand clearly the targets and timelines set by superiors	100	10	2	8

Assessment Criteria for Bar Bender and Steel Fixer

organize work to meet expected outcomes	PC2. plan activities as per schedule and sequence		10	2	8	
	PC3. provide guidance to the subordinates to obtain desired outcome		10	2	8	
	PC4. plan housekeeping activities prior to and post completion of work		10	2	8	
	PC5. list and arrange required resources prior to commencement of work		10	2	8	
	PC6. select and employ correct tools, tackles and equipment for completion of desired work		10	2	8	
	PC7. complete the work with allocated resources		10	2	8	
	PC8. engage allocated manpower in an appropriate manner		10	2	8	
	PC9. use resources in an optimum manner to avoid any unnecessary wastage		5	1	4	
	PC10. employ tools, tackles and equipment with care to avoid damage to the same		5	1	4	
	PC11. organize work output, materials used, tools and tackles deployed,		5	1	4	
	PC12. processes adopted to be in line with the specified standards and instructions		5	1	4	
			Total	100	20	80
	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 authoritys	100	5	1
PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities		5	1		4	
PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable		10	2		8	
PC4. participate in safety awareness programs like Tool Box Talks, safety demonstrations, mock drills, conducted at site		5	1		4	
PC5. identify near miss , unsafe condition and unsafe act		5	1		4	

Assessment Criteria for Bar Bender and Steel Fixer

PC6. use appropriate Personal Protective Equipment (PPE) as per work requirements including:		10	2	8
• Head Protection (Helmets)				
• Ear protection				
• Fall Protection				
• Foot Protection				
• Face and Eye Protection				
• Hand and Body Protection				
• Respiratory Protection (if required)				
PC7. handle all required tools, tackles , materials & equipment safely		5	1	4
PC8. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines		5	1	4
PC9. install and apply properly all safety equipment as instructed		15	3	12
PC10. follow safety protocol and practices as laid down by site EHS department		15	3	12
PC11. collect and deposit construction waste into identified containers before disposal, separate containers that may be needed for disposal of toxic or hazardous wastes		10	2	8
PC12. apply ergonomic principles wherever required		10	2	8
	Total	100	20	80