

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 Bar Bender & Fixer

SECTOR: CONSTRUCTION

- SUB-SECTOR:** 1. Real Estate (Residential, Factories, Industry, Institutional & Special Economic Zone)
2. Infrastructure (Roads, Railways, Runways & Urban Utilities)
3. Power Generation (Hydro, Thermal & Nuclear)

OCCUPATION: BAR BENDING & STEEL FIXING

JOB ROLE : ASSISTANT BAR BENDER & FIXER

REFERENCE ID: CON/Q 0202

ALIGNED TO : NCO-2004/7214.70

Bar Bending & Steel Fixing Trade in Construction Industry is the basic trade which is Common to all type of reinforced concrete structures and also other various applications with respect to Specialization and specific requirements of the Project.

Brief Job Description of Assistant Bar Bender & Fixer Level-2: Individual in this position need to work as semi-skilled category tradesman and perform tasks under instruction & close supervision of Bar Bender & Fixer Level-3 as Assistant Bar Bender & Fixer. He is expected to read and understand drawings, Bar Bending schedule, fabricate, store, transport and place reinforcement in position while effectively engaging and supervising the Helper under him for all trade relevant tasks. He should ensure trade specific compliance to environment, health and safety aspects **Personal Attributes:** **Assistant Bar Bender & Fixer** should be physically fit and adaptable to work in difficult and tough construction environment while fulfilling all task relevant requirements .



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|--------------------|---------------------------------|---|-------------------------|------------|
| Job Details | Qualifications Pack Code | CON/Q 0202 | | |
| | Job Role | Assistant Bar Bender & Fixer Level-2 | | |
| | Credits(NSQF) [OPTIONAL] | TBD | Version number | 1 |
| | Sector | Construction | Drafted on | 10/03/2014 |
| | Sub-sector | <ol style="list-style-type: none"> 1. Real Estate (Residential, Factories, Industry, Institutional & Special Economic Zone) 2. Infrastructure(Roads, Railways, Runways & Urban Utilities) 3. Power Generation (Hydro, Thermal & Nuclear) | Last reviewed on | |
| | Occupation | Bar Bender & Steel Fixer | Next review date | 10/03/2015 |

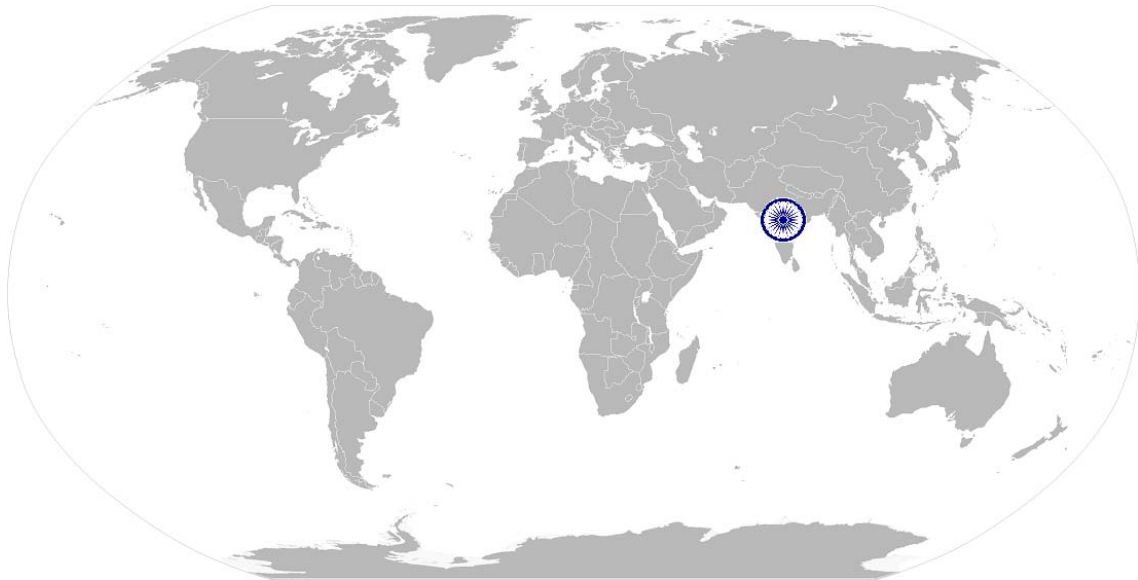
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|---|---|
| Job Role | Assistant Bar Bender & Fixer Level-2 |
| Role Description | To work as Semi-Skilled Bar Bender & Fixer while attending and responding to the needs and requirements of the tasks independently as per given instruction and drawings. He should be able to engage suitably and productively the Helper Bar Bender & Steel fixer under him. |
| NSQF level | 2 |
| Minimum Educational Qualifications* | Equivalent to 5 th Standard / Helper Bar Bender & Fixer Level-I qualified |
| Maximum Educational Qualifications* | 12 th Standard |
| Training (Suggested but not mandatory) | Trained to qualify test & assessment by Authorized agency for Behavior, Knowledge & Skill as per all relevant NOS for Assistant Bar bender & fixer level-2. Recommended training period 12 to 15 weeks for non-trained and non-qualified worker and 6 to 8 weeks for Helper Bar Bender & Fixer level-1 qualified with 9 to 18 months of experience. |
| Experience | <ul style="list-style-type: none"> ➤ Minimum Nine months site experience for Bar Bending & Steel Fixer Level-1 qualified ➤ minimum 18 months site experience for non-trained and non-qualified worker |
| Applicable National Occupational Standards (NOS) | <p>Compulsory</p> <ol style="list-style-type: none"> 1. CON/N0007 : Health, Safety & Environment 2. CON/N0009 : Material Handling & Storing 3. CON/N0006 : Erect and dismantle 3.6 meter temporary Scaffold 4. CON/N0041 : Understand Bar Bending Schedule and drawings 5. CON/N0037 : Identification and use of different type of stirrups and Crank / Shear Bars 6. CON/N0038 : Fabricate reinforcement in lintel, slab and projections 7. CON/N0039 : Fabricate beam reinforcement with & without Shear bar 8. CON/N0040 : Fabricate reinforcement cage for column and base in situ position while incorporating crank bars |
| Performance Criteria | As described in National Occupation Standards given for Assistant Bar Bender & fixer level-2 |

Glossary of Key Terms

| Keywords /Terms | Description |
|---------------------------------------|---|
| Definitions 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 |
| Acronyms CON | Construction |
| NSQF | National Skill Qualification Framework |
| TBD | To be decided |
| OS | Occupational Standards |
| CSDCI | Construction Skill Development Council of India |



National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in Health, Safety & Environment parameters relevant to Bar Bending and Steel Fixing Occupation in construction sector.



CON/ N 0007: Health, Safety & Environment

National Occupational Standard

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|---|---|
| Unit Code | CON / N 0007 |
| Unit Title (Task) | Health, Safety & Environment |
| Description | This unit describes the skill and knowledge required to meet various health, safety and environment parameters relevant to Bar Bending and Steel Fixing Occupation in construction sector. |
| Scope | Health, Safety & Environment |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Health, Safety and Environment | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Demonstrate and use Personal Protective Equipment such as Head Protection, Fall Protection, Foot Protection, Face & eye Protection, Ear Protection, Hand & Body Protection and Respiratory Protection..</p> <p>PC2. Follow the Do's and Don'ts during working at heights</p> <p>PC3. Carry out various safety measures, mock drills, relevant to task during work and evacuation at emergency.</p> <p>PC4. First Aid Practice such as use of basic dressing materials and bandages, resuscitation practices</p> <p>PC5. Follow standard safety practices while cutting, stacking and fabricating reinforcement bars</p> <p>PC6. Practice safety while lifting of materials manually</p> <p>PC7. Practice safety while mechanical operations for lifting, shifting and placing materials</p> <p>PC1 to PC7 assessments based on viva-voce / interview / quiz test / demonstration technique.</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. Process and aim of the safety, health and environment</p> <p>KA2. Procedures and guidelines relevant to task</p> <p>KA3. Selection and visual checking of PPEs and knowledge of indent and return procedures.</p> <p>KA4. Various health and safety hazards at the workplace</p> <p>KA5. Reporting procedures on safety violations..</p> |
| B. Technical Knowledge | <p>The user/individual on the job should know and understand</p> <p>KB1. Procedures for evacuation of workers during emergency</p> <p>KB2. Operation and selection of appropriate PPEs for different working condition.</p> <p>KB3. Health, safety and accident reporting procedures</p> <p>KB4. Identification and use of basic dressing materials and first aid.</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | <p>The user/ individual on the job should know and understand how to:</p> <p>SA1. Make line, sketch and label</p> |

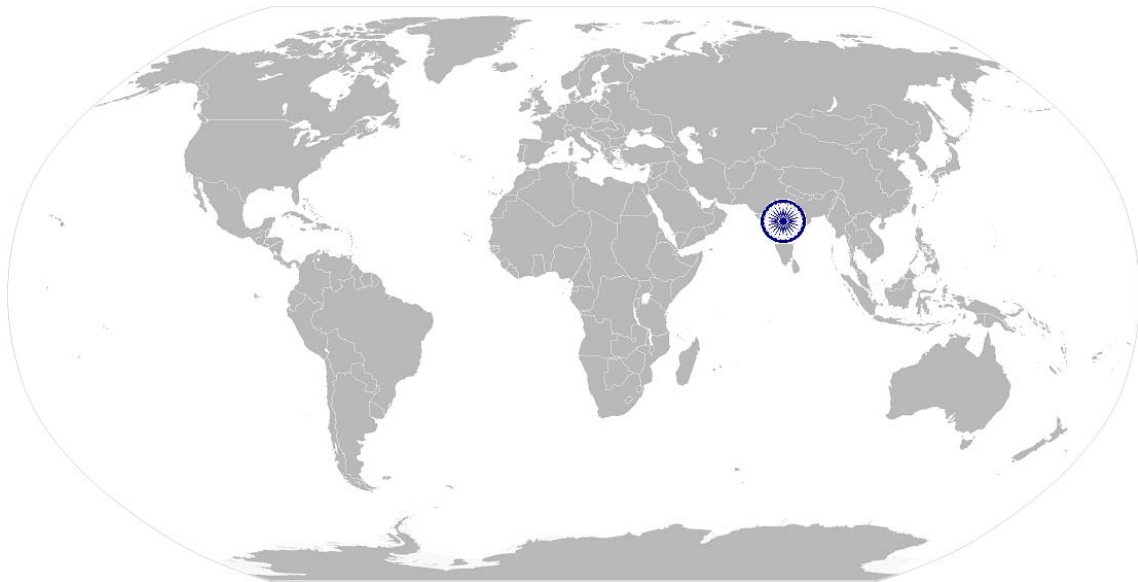


CON/ N 0007: Health, Safety & Environment

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|---|---|
| | Reading Skills |
| | The user / individual on the job should know and understand how to: SA2. Read instructions, guidelines, sign boards, safety rules and safety tags. |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job should do the following: SA3. Listen and follow instruction accurately SA4. Effective oral communication |
| B. Professional Skills | Decision Making |
| | The user/ individual on the job should know and understand how to: SB1. Selection and use of relevant safety equipment |
| | Plan and Organize |
| | The user/ individual on the job should know and understand how to: SB2. Work in unsafe and hazardous working conditions |
| | Customer Centricity |
| | The user/ individual on the job should know and understand how to: SB3. Answerable to Mason level-3 |
| | Problem Solving |
| | The user/ individual on the job should know and understand how to: SB4. Identify breakdown of equipment and arrange it's replacement |
| | Analytical Thinking |
| | The user/ individual on the job should know and understand how to: SB5. Use Personal Protective Equipment under various working environment |
| | Critical Thinking |
| | The user/ individual on the job should know and understand how to: SB6. Arrange all safety equipment and check its serviceability SB7. Locate First Aid Box |
| | Attention to Detail |
| The user / individual should know and understand : SB8. The relevance of performance criteria | |
| Team Working | |
| The user/ individual on the job should know and understand how to: SB9. Work in coordination with trade senior SB10.Look after the interest other in case of emergency & requirement SB11.Distribute work among colleagues | |



National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in Material Handling & Storing practices relevant to bar bending & Fixing occupation in construction industry.



CON/ N 0009: Material Handling & Storing

National Occupational Standard

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| Unit Code | CON / N 0009 |
| Unit Title (Task) | Material Handling & Storing |
| Description | This unit describes the skills and knowledge required for for effective Material Handling & Storing practices relevant to bar bending occupation in construction industry. |
| Scope | Material Handling & Storing |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Material Handling & Storing | <p>To be competent, the user/individual must do the following:</p> <p>PC1.loading, unloading and shifting reinforcement material as per standard procedure.</p> <p>PC2.Storage, stacking and sorting of reinforcement steel per size, length, sequence and as per standard procedure.</p> <p>PC3:Protection of steel from corrosion and weathering action</p> <p>PC3. Arrangement of various slings as per configuration and requirement</p> <p>PC4. Understand identify and use of hooks, rings and shackles</p> <p>The knowledge, skill, performance and efficiency in material handling & storing will be assessed through answers/actions/reactions within stipulated time.</p> |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job should know and understand:</p> <p>KA1. Safety rules and safe working practices</p> <p>KA2. Safe access and storage of materials</p> <p>KA3. Housekeeping activities relevant to task.</p> <p>KA4. Procedure of indent and collection of materials from store.</p> <p>KA5. Procedure for return of surplus materials to the store</p> |
| B. Technical Knowledge | <p>The user/individual on the job should know and understand:</p> <p>KB1. Permissible Stacking heights according to size and length of bars.</p> <p>KB2. Sizing, sorting and identification</p> <p>KB3. Workplace procedures and policies for manual and mechanical handling</p> <p>KB4. Site layout and obstacles during shifting</p> <p>KB5. Housekeeping standards procedures required in the workplace.</p> <p>KB6. Position of overhead electrical wires and cables during shifting / lifting of materials.</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | <p>The user/ individual on the job should know and understand how to:</p> <p>SA1. Make line, sketch, label and list</p> |



CON/ N 0009: Material Handling & Storing

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| | Reading Skills |
| | The user / individual on the job should know and understand how to: SA2. Read instructions, guidelines, sign boards, labels, safety rules and safety tags. |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual should do the following: SA3. Listen carefully SA4. Effective oral communication |
| B. Professional Skills | Decision Making |
| | The user/individual on the job should know and understand how to: SB1. Method of storage, stacking and maintenance of reinforcement materials |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Loading and unloading of material by manual / mechanical SB3. Lifting devices and their uses SB4. Uses and types of slings, hooks, rings and shackles |
| | Customer Centricity |
| | The user/individual will be: SB5. Answerable to Bar bender level-3 |
| | Problem Solving |
| | The user/individual should know and understand: SB6. Under guidance of Bar bender level-3 |
| | Analytical Thinking |
| | The user/individual on the job should know and understand: SB7. Precautions required to eliminate risk while lifting and handling materials. |
| | Critical Thinking |
| | The user/individual SB8. Protect steel from corrosion |
| Attention to Detail | |
| The user/individual on the job should know and understand how to: SB9. Report and/or rectify the identified problems in accordance with regulatory requirements and workplace procedures. | |
| Team Working | |
| The user/individual on the job should know and understand how to: SB10. Work in coordination with Bar bender level-3 SB11. Take care of coworkers as per requirement & in case of emergency SB12. Distribute work among workmates | |



CON/ N 0006: Erect and dismantle 3.6 meter temporary scaffold

National Occupational Standard



Overview

This NOS covers the skills and knowledge required by an individual to proficiently erect and dismantle 3.6 meter temporary scaffold for task relevant to Bar Bending & steel fixing occupation in construction industry.




CON/ N 0006: Erect and dismantle 3.6 meter temporary scaffold

National Occupational Standard

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| Unit Code | CON / N 0006 |
| Unit Title (Task) | Erect and dismantle 3.6 meter temporary scaffold. |
| Description | This unit describes the skill and knowledge required for erection and dismantling of 3.6 meter temporary scaffold. |
| Scope | Erect and dismantle 3.6 meter temporary scaffold |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Erect and dismantle 3.6 meter temporary scaffold | <p>To be competent, the user/individual on the job under close supervision should be able to:</p> <p>PC1: Arrange, shift, and stack the required materials, tools and tackles at the identified location.</p> <p>PC2. Use the required safety gadgets and follow trade safety during erection and dismantling operation.</p> <p>PC3. Erect and dismantle 3.6 meter temporary scaffold within stipulated time.</p> <p>PC4. Maintain tidiness at sites.</p> <p>PC1 To PC4 assessment based on their performance and efficiency through questions & answers and physical performance within the stipulated time.</p> |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job should know and understand:</p> <p>KA1. Use of Safety Gears and Safety equipments relevant to personal protection</p> <p>KA2. Working procedure for scaffolding at Heights</p> <p>KA3. Safe working methods and movements while performing relevant tasks</p> <p>KA4. First Aid, Housekeeping & other relevant environment aspects.</p> |
| B. Technical Knowledge | <p>The user/individual on the job should know and understand:</p> <p>KB1. Safety measures followed while working at height</p> <p>KB2. Tools and equipments used for erecting and dismantling 3.6 meter temporary scaffold</p> <p>KB3. Type of materials used for the task</p> <p>KB4. Process of erecting and dismantling</p> <p>KB5. Process of accessibility & site tidiness.</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The individual on the job should know and understand how to: SA1. Make list of items & materials required |
| | Reading Skills |
| | The individual on the job should know and understand how to: SA2. Read instructions, guidelines, sign boards, safety rules & safety tags. |
| | Oral Communication (Listening and Speaking skills) |
| | The individual on the job should know and understand how to: SA3. Listen and follow instructions. SA4. Communicate effectively |

CON/ N 0006: Erect and dismantle 3.6 meter temporary scaffold

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| B. Professional Skills | Decision Making |
| | The user/individual on the job should know and understand how to: SB1. Identify and estimate and use the required materials for the task |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Identify and Organize right scaffolding materials SB3. Identify and use relevant tools effectively |
| | Customer Centricity |
| | The user/individual on the job should know and understand how to: SB4. Answerable to Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/individual on the job should know and understand how to: SB5. Under guidance of Bar bender & Fixer level-3 |
| | Analytical Thinking |
| | The user/individual on the job should know and understand how to: SB6. Relevant to his performance criteria |
| | Critical Thinking |
| | The user/individual on the job should know and understand how to: SB7. Check the stability, alignment and verticality of the scaffold |
| | Attention to Detail |
| The user/individual on the job should know and understand how to: SB8. Relevant to all performance criteria  | |
| Team Working | |
| The user/individual on the job should know and understand : SB9. Erection and dismantling operation SB10. Involvement during housekeeping activities. SB11. Work in coordination with Bar Bender & Fixer level-3 SB11. Take care of coworkers as per requirement & in case of emergency SB12. Distribute work among workmates | |



CON/ N 0041: Understand Bar Bending Schedule and drawing

National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in understanding Bar Bending Schedule and drawings relevant to Bar Bending & Steel Fixing Occupation in construction industry.



CON/ N 0041: Understand Bar Bending Schedule and drawing

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| National Occupational Standard | Unit Code | CON / N 0041 |
| | Unit Title (Task) | Understand Bar Bending Schedule and drawing |
| | Description | This unit describes the skills and knowledge required to understand Bar Bending Schedule and drawings relevant to the task in bar bending and steel fixing occupation. |
| | Scope | Understand Bar Bending Schedule and drawing |
| | Performance Criteria(PC) w.r.t. the Scope | |
| | Element | Performance Criteria |
| | Understand Bar Bending Schedule and drawing | To be competent, the user/individual on the job must be able to: PC1. Read and understand relevant specification given in drawing PC2. Identify types, grades and shape code of rebar PC3. Understand spacing and length of reinforcement bar PC4. Recognize main bars and distributors PC5. Calculate quantity of additional rebar required PC6. Understand rebar plan and section drawings PC7. Compute cutting length and weight of reinforcement |
| | Knowledge and Understanding (K) | |
| | A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job should know and understand: KA1. Use of safety gears and safety equipments relevant to personal protection KA2. Working procedure for scaffolding at heights KA3. Safe working methods and movements while performing relevant tasks KA4. First Aid, Housekeeping & other relevant environmental aspects |
| | B. Technical Knowledge | The user/individual on the job should know and understand: KB1. Knowledge of North direction KB2. Knowledge of scale used in drawing KB3. Elevation, plan and sectional drawing KB4. Identify structure location as per drawing KB5. Reinforcement specifications for Main bars and distributors KB6. Requirement cover and difference between clear cover and effective cover |
| Skills (S) | | |
| A. Core Skills/ Generic Skills | Writing Skills | |
| | The individual on the job should know and understand: SA1. Make line, sketch, label and list | |
| | Reading Skills | |
| | The user/individual on the job should know and understand: SA2. Reading dimension and use of symbols | |
| B. Professional Skills | Oral Communication (Listening and Speaking skills) | |
| | The user / individual should do the following: SA3. Listen and follow instructions SA4. Effective oral communication | |
| | Decision Making | |
| | The user/individual on the job should know and understand how to: SB1. Read drawing as per priority | |



CON/ N 0041: Understand Bar Bending Schedule and drawing

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| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Organize schedule and drawing for specified locations |
| | Customer Centricity |
| | The user/individual on the job should be: SB3. Satisfying the need of Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/individual on the job should work: SB4. Solve the error against acceptance criteria. |
| | Analytical Thinking |
| | The user/individual on the job should act: SB5. As per the need of day to day functions. |
| | Critical Thinking |
| | The user/individual on the job should know and understand: SB6. Hook and bend allowances as per IS specifications |
| Attention to Detail | |
| The user/individual on the job should know and understand: SB7. Proper dimension, spacing and cover of reinforcement | |
| Team Working | |
| The user/individual on the job needs to know and understand how to: SB8. Work in coordination with Bar Bender & Fixer level-3 SB9. Take care of coworkers as per requirement & in case of emergency SB10. Distribute work among workmates | |





CON/ N 0037: Identification and Use of different type of Stirrups and Cranks / Shear Bars

National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in identification and use of different type of stirrups and Cranks / Shear Bars in construction industry.

CON/ N 0037: Identification and Use of different type of Stirrups and Cranks / Shear Bars

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| National Occupational Standard | Unit Code | CON / N 0037 |
| | Unit Title (Task) | Identification and Use of different kinds of Stirrups and Cranks / Shear Bars |
| | Description | This unit describes the skills and knowledge required to be effective in identification and use of different types of Stirrups and Cranks Bars / Shear Bars relevant in Bar Bending & Steel Fixing Occupation. |
| | Scope | Identification and use of different types of Stirrups and Cranks / Shear Bars |
| | Performance Criteria(PC) w.r.t. the Scope | |
| | Element | Performance Criteria |
| | Identification and Use of different types of Stirrups and Cranks / Shear Bars | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC 1. Selection of right tools, pin plate and its safe use</p> <p>PC 2. Compute length and mark accordingly.</p> <p>PC3. Cut and bend bars, hooks and stirrups as per required shape, size and as per specification</p> <p>PC4. Identify & use various type of rings</p> <p>PC 5. Bundle together same type of bent bars.</p> <p>PC 6. Maintain angle of crank bar as per specification</p> <p>PC 7. Tolerances for task wherever applicable are as given below.</p> <ul style="list-style-type: none"> •Cutting length : Tolerance limit within $\pm 15m$ •Stirrups size – Length, Breadth and Diagonal : $\pm 5mm$ •Hook Length : $\pm 5mm$ •Dia along x axis : $\pm 5mm$ •Dia along y axis : $\pm 5mm$ •End to end after bending : Tolerance limit- $\pm 5mm$ <p>PC8. Follow sequence as per method statement</p> <p>PC9. Safety & Housekeeping as per standard practices</p> |
| | Knowledge and Understanding (K) | |
| | A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job should know and understand: <ul style="list-style-type: none"> KA1. Use of safety gears and safety equipments relevant to personal protection KA2. Working procedure for scaffolding at heights KA3. Safe working methods and movements while performing relevant tasks KA4. First Aid, Housekeeping & other relevant environmental aspects |
| | B. Technical Knowledge | The user/individual on the job should know and understand: <ul style="list-style-type: none"> KB1. Relevant cutting and bending tools KB2. Specifications relevant to cutting & bending of bar KB3. Knowledge of basic calculations. KB4. Detailing of Rings, links and hooks. |
| Skills (S) | | |
| A. Core Skills/ | Writing Skills | |
| | The individual on the job should know and understand how to: <ul style="list-style-type: none"> SA1. Make list of items & materials relevant to task | |



CON/ N 0037: Identification and Use of different type of Stirrups and Cranks / Shear Bars

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| Generic Skills | Reading Skills |
| | The user/individual on the job should know and understand: SA2. Read instructions, guidelines, sign boards, safety rules & safety tags. |
| | Oral Communication (Listening and Speaking skills) |
| | The user / individual should do the following: SA3. Listen and follow instruction carefully SA4. Effective oral communication |
| B. Professional Skills | Decision Making |
| | The user/individual on the job should know and understand how to: SB1. Identify various type of stirrups and their uses in different structural members SB 2. Use the different types of ties for different elements. SB3. Select tools according to the job |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB4. Measure, cut and bend bars SB5. Prepare bends, hooks and overlaps of bars |
| | Customer Centricity |
| | The user/individual on the job should know and understand how to: SB6. Satisfying the need of Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/ individual on the job needs to know and understand how to: SB7. Make alternate arrangements against damaged tools SB8. Arrange for measurement conversions and their equivalent |
| | Analytical Thinking |
| | The user/individual on the job should know and understand: SB9. As per the need of day to day functions |
| | Critical Thinking |
| | The user/individual on the job should know and understand how to: SB10. Check the tolerance limit |
| | Attention to Detail |
| | The user/ individual on the job needs to know and understand how to: SB11. Bend the steel bars as per specification |
| Team Working | |
| The user/individual on the job needs to know and understand how to: SB12. Work in coordination with Bar Bender & Fixer level-3 SB13. Take care of coworkers as per requirement & in case of emergency SB14. Distribute work among workmates | |



CON/ N 0038: Fabricate reinforcement in lintel, slab and projections

National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in fabrication of reinforcement in lintel, slab and projections relevant to Bar Bending & Steel Fixing Occupation in construction sector.

CON/ N 0038: Fabricate reinforcement in lintel, slab and projections

National Occupational Standard

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| Unit Code | CON / N 0038 |
| Unit Title (Task) | Fabricate reinforcement in lintel, slab and projections |
| Description | This unit describes the skills and knowledge required for effective fabrication of reinforcement element lintel, slab and projections relevant for Bar Bending and Steel Fixing occupation. |
| Scope | Fabricate reinforcement in lintel, slab and projections |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Fabricate reinforcement in lintel, slab and projections | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Read and understand drawing and bar bending schedules</p> <p>PC2. Cut and bend rebar as per requirement of Bar Bending Schedule</p> <p>PC3. Mark rebar for bending as per specification</p> <p>PC4. Measures and set out rebar mesh as per given drawing and specifications</p> <p>PC5. Use correct ties at correct place</p> <p>PC6. For lintel size 2400 x 230 mm and depth 150 mm. The tolerance shall be as given below:</p> <ul style="list-style-type: none"> ➤ Top bar length (-) 5 mm / + 3mm ➤ Bottom bar length (-) 5 mm / + 3mm ➤ Top bar bent length (-) 5 mm / + 3mm ➤ Bottom bent length (-) 5 mm / + 3mm ➤ Ring Size ±5mm ➤ Ring Spacing ±10mm / 5 spacing <p>PC7. For slab size 3500 x 2600 mm and thickness 150 mm. The tolerance shall as given below:</p> <ul style="list-style-type: none"> ➤ Squareness of mat ±5mm ➤ Spacing of rebar ±10mm/5 spacings ➤ Level of mat (planeness) ±5mm ➤ Length of slab ±5mm ➤ Width of slab ±5mm ➤ Diagonal of slab ±5mm ➤ Cut length of main / secondary bars ±5mm <p>PC8. Place & tie stirrups, cover blocks appropriately</p> <p>PC9. The sequence of task should be as per method statement</p> <p>PC10. Follow safety and housekeeping procedures</p> |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job should know and understand:</p> <p>KA1. Use of safety gears and safety equipments relevant to personal protection</p> <p>KA2. Working procedure for scaffolding at heights</p> <p>KA3. Safe working methods and movements while performing relevant tasks</p> <p>KA4. First Aid, Housekeeping & other relevant environmental aspects</p> |
| B. Technical Knowledge | <p>The user/individual on the job should know and understand:</p> <p>KB1. Main and distribution of reinforcement bar</p> <p>KB2. Indian Standard Specification for slab and lintel</p> |



CON/ N 0038: Fabricate reinforcement in lintel, slab and projections

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| | <p>KB3. Physical properties of binding wire</p> <p>KB4. Compute cutting length for rebar as per specification</p> <p>KB5. Sequence of fabrication for slab and lintel reinforcement</p> <p>KB6. Use of tie bars</p> <p>KB7. Tolerance limit for dimensional checking</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The individual on the job should know and understand how to: SA1. Basic geometric applications |
| | Reading Skills |
| | The user/individual on the job should know and understand: SA2. Read dimension, spacing and symbols relevant to task |
| | Oral Communication (Listening and Speaking skills) |
| | The user / individual should do the following: SA3. Listen and follow instruction carefully SA4. Effective oral communication |
| B. Professional Skills | Decision Making |
| | The user/individual on the job should know and understand how to: SB1. Identify and use right material for task |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Store requisition and information sheets |
| | Customer Centricity |
| | The user/individual on the job should know and understand how to: SB3. Answerable to Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/individual on the job should know and understand how to: SB4. Under guidance of Bar Bender & Fixer level-3 |
| | Analytical Thinking |
| | The user/individual on the job should act: SB5. As per performance criteria |
| | Critical Thinking |
| | The user/individual on the job should know and understand how to: SB6. Check the tolerance limit |
| | Attention to Detail |
| | The user/individual on the job should know and understand how to: SB7. Dimension and spacing of bars and maintain proper cover |
| | Team Working |
| The user/individual on the job needs to know and understand how to: SB8. Work in coordination with Bar Bender & Fixer level-3 SB9. Take care of coworkers as per requirement & in case of emergency SB10. Distribute work among workmates | |



CON/ N 0039: Fabricate beam reinforcement with & without Shear bar

National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in fabrication of beam reinforcement with and without Shear Bar relevant to Bar Bending & Steel Fixing Occupation in construction industry.

CON/ N 0039: Fabricate beam reinforcement with & without Shear bar

National Occupational Standard

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| Unit Code | CON / N 0039 |
| Unit Title (Task) | Fabricate beam reinforcement with & without Shear Bar |
| Description | This unit describes the skills and knowledge required for effective use in fabrication of beam reinforcement with and without Shear Bar relevant to Bar Bending & Steel Fixing Occupation in construction sector. |
| Scope | Fabricate beam reinforcement with and without Shear Bar |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Fabricate beam reinforcement with and without Shear Bar | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Read and understand drawing and Bar Bending Schedule.</p> <p>PC2. Mark and bend the bar as per schedule</p> <p>PC3. Mark, Set out cage as per spacing and as per drawing</p> <p>PC4. Use proper ties at proper places</p> <p>PC5. Bend Stirrups keeping specified hook length and place stirrups hooks in alternate position</p> <p>PC6. For beam without and with Shear the tolerance given below shall govern :</p> <ul style="list-style-type: none"> ➤ Top bar length (-) 5mm / +3mm ➤ Bottom bar length (-) 5 mm / + 3mm ➤ Top bent length (-) 5 mm / + 3mm ➤ Bottom bent length (-) 5 mm / + 3mm ➤ Ring Size ±5mm ➤ Ring Spacing ±10mm / 5 spacings ➤ Cage Squareness ±5mm <p>PC7. Place cover blocks properly</p> <p>PC8. Follow sequence as per method statement</p> <p>PC10. Maintain safety norms and housekeeping practices</p> |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job should know and understand:</p> <p>KA1. Use of safety gears and safety equipments relevant to personal protection</p> <p>KA2. Working procedure for scaffolding at heights</p> <p>KA3. Safe working methods and movements while performing relevant tasks</p> <p>KA4. First Aid, Housekeeping & other relevant environmental aspects</p> |
| B. Technical Knowledge | <p>The user/individual on the job should know and understand:</p> <p>KB1. Lap length and lapping position</p> <p>KB2. Placing of stirrups in a critical/ shear points</p> <p>KB3. Indian Standard Specification for beam reinforcement</p> <p>KB4. Calculation of cutting length from sketches</p> <p>KB5. Shifting of prefabricated cage for beams</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The individual on the job should know and understand how to: |
| | SA1. Make line, sketch, label and list |
| | Reading Skills |
| | The user/individual on the job should know and understand: |
| | SA2. Read instructions, guidelines, sign boards, safety rules & safety tags. |



CON/ N 0039: Fabricate beam reinforcement with & without Shear bar

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| | Oral Communication (Listening and Speaking skills) |
| | The user / individual should do the following: SA3. Listen and follow instruction accurately SA4. Effective oral communication |
| B. Professional Skills | Decision Making |
| | The user/individual on the job should know and understand how to: SB1. Identify and use right material and tools. |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Raise the Store requisition and fill the regular store formats. |
| | Customer Centricity |
| | The user/individual on the job should know and understand how to: SB3. Satisfying the need of Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/individual on the job should know and understand how to: SB4. Solve the error against acceptance criteria. |
| | Analytical Thinking |
| | The user/individual on the job should act: SB5. As per the need of day to day functions. |
| | Critical Thinking |
| | The user/individual on the job should know and understand how to: SB6. Check the tolerance limit |
| Attention to Detail | |
| The user/individual on the job should know and understand how to: SB7. Cut bend reinforcement exactly SB8. Maintain task as per tolerance | |
| Team Working | |
| The user/individual on the job needs to know and understand how to: SB9. Work in coordination with Bar Bender & Fixer level-3 SB10. Take care of coworkers as per requirement & in case of emergency SB11. Distribute work among workmates | |



CON/ N 0040: Fabricate reinforcement cage of column and base in situ position while incorporating crank bars

National Occupational Standard



Overview

This NOS covers the skill and knowledge required by an individual to be proficient in fabrication of reinforcement cage for column and base in situ position while incorporating crank bars relevant to Bar Bending & Steel Fixing Occupation in construction industry.

CON/ N 0040: Fabricate reinforcement cage of column and base in situ position while incorporating crank bars

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| National Occupational Standard | Unit Code | CON / N 0040 |
| | Unit Title (Task) | Fabricate reinforcement cage of column and base in situ position while incorporating crank bars |
| | Description | This unit describes the skills and knowledge required to effectively fabricate reinforcement cage of column and base in situ position while incorporating crank bars. |
| | Scope | Fabricate reinforcement cage of column and base in situ position while incorporating crank bars |
| | Performance Criteria(PC) w.r.t. the Scope | |
| | Element | Performance Criteria |
| | Fabricate reinforcement cage of column and base in situ position while incorporating crank bars | <p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Read and understand drawing and Bar Bending Schedule.</p> <p>PC2. Mark rebar for bending</p> <p>PC3. Cut and bend rebar as per requirement of the schedule.</p> <p>PC4. Bend Stirrups keeping specified hook length and spacing</p> <p>PC5. Place cover block as specified</p> <p>PC6. Position rebar cage for column & base as per spacing given in drawing</p> <p>PC7. For column the tolerance is as given below:</p> <ul style="list-style-type: none"> ➤ Column bar length (-) 5 mm / + 3mm ➤ Ring Size ± 5mm ➤ Ring Spacing ± 10mm / 5 Spacing ➤ Corbel bar length (-) 5mm / +3mm ➤ Corbel bar spacing ± 10mm / 5 spacing ➤ Corbel ring size ± 5mm ➤ Corbel bar tapering ± 5mm <p>PC8. Follow sequence of task as per method statement</p> <p>PC9. Follow safety procedure and housekeeping relevant to the task</p> |
| | Knowledge and Understanding (K) | |
| | A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job should know and understand:</p> <p>KA1. Use of safety gears and safety equipments relevant to personal protection</p> <p>KA2. Working procedure for scaffolding at heights</p> <p>KA3. Safe working methods and movements while performing relevant tasks</p> <p>KA4. First Aid, Housekeeping & other relevant environmental aspects</p> |
| | B. Technical Knowledge | <p>The user/individual on the job should know and understand:</p> <p>KB1. Functional knowledge of column & footing</p> <p>KB2. Classification of footing</p> <p>KB3. Difference between long column, short column and pedestal</p> <p>KB4. Indian Standard Specification for column and footing reinforcement</p> <p>KB5. Calculation of cutting length form sketch</p> <p>KB6. Type of load</p> |
| Skills (S) | | |
| A. Core Skills/ Generic Skills | Writing Skills | |
| | The individual on the job should know and understand how to: | |
| | SA1. Make line, sketch, label and list | |
| Reading Skills | | |
| The user/individual on the job should know and understand: | | |
| SA2. Read instructions, guidelines, sign boards, safety rules & safety tags. | | |

CON/ N 0040: Fabricate reinforcement cage of column and base in situ position while incorporating crank bars

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| B. Professional Skills | Oral Communication (Listening and Speaking skills) |
| | The user / individual should do the following: SA3. Listen and follow instruction accurately SA4. Effective oral communication |
| | Decision Making |
| | The user/individual on the job should know and understand: SB1. Right allocation of task to the workmen |
| | Plan and Organize |
| | The user/individual on the job should know and understand how to: SB2. Raise the Store requisition and fill the regular store formats |
| | Customer Centricity |
| | The user/individual on the job should know and understand how to: SB3. Satisfying the need of Bar Bender & Fixer level-3 |
| | Problem Solving |
| | The user/individual on the job should know and understand how to: SB4. Solve the error against acceptance criteria |
| | Analytical Thinking |
| | The user/individual on the job should know and understand: SB5. As per the need of day to day functions. |
| | Critical Thinking |
| | The user/individual on the job should know and understand how to: SB6. Check tolerance requirement |
| | Attention to Detail |
| The user/individual on the job should know and understand how to: SB7. Cut bend reinforcement exactly SB8. Maintain task as per tolerance | |
| Team Working | |
| The user/individual on the job needs to know and understand how to: SB9. Work in coordination with bar bender fixer level-3 SB10. Take care of coworkers as per requirement & in case of emergency SB11. Distribute work among workmates | |

Assessment Criteria for Assistant Bar Bender & Fixer

Job Role Assistant Bar Bender & Fixer

Qualification Pack CON/Q0202

Sector Skill Council Construction

Guidelines for Assessment

1. Criteria for assessment for Qualification Pack has been created based on the NOSs and performance criteria by CSDCI. Each Performance Criteria (PC) has been assigned marks proportional to its importance within NOS and weightages have also been given among the NOSs accordingly. CSDCI has laid down the proportion of marks for Skills, Theory/Knowledge and Behaviour / Attitudes for each PC.
2. The assessment of the theory/knowledge will be based on written test/viva-voce or both while skill test shall be hands on practical. Behaviour and attitude will be assessed while performing the task.
3. The assessment shall be done as per the assessment sheets devised by CSDCI and accordingly the assessment agencies in consultation with CSDCI will create unique question papers for theory/knowledge and attitude for each candidate at each CSDCI accredited testing centres (as per assessment criteria below).
4. The assessment agencies will conduct the assessment as per the guidelines given by CSDCI giving unique evaluations for skill & knowledge for every student at each CSDCI accredited testing centre.
5. To pass the Qualification Pack, every trainee should score a minimum of **80% in Skill, 50% in Knowledge & Behaviour and 50% in Written test** separately in each attribute. In addition he should pass in each **NOS with minimum 40% marks**.
6. Each student at Level-2 has to pass in Skill, Knowledge and Behaviour as per the percentage given below in totality while individual failing to score **minimum pass marks of 40% in any one of the NOS** then he will have to **re-appear for that one NOS only within 60 days** of his test for final certification. After 60 days he will have to appear in all NOSs.

| S. No. | NOS No. | NOS Name | Total Marks | Marks Allocation | | |
|----------------------------------|-----------|--|-------------|--------------------|-----------------------------------|------------------|
| | | | | Skills (Practical) | Knowledge & Behaviour (Viva Voce) | Theory (Written) |
| 1 | CON/N0007 | Health, Safety & Environment | 23 | 16 | 5 | 2 |
| 2 | CON/N0009 | Material Handling & Storing | 23 | 17 | 3 | 3 |
| 3 | CON/N0006 | Erect and dismantle 3.6 meter temporary scaffold | 23 | 17 | 3 | 3 |
| 4 | CON/N0041 | Understand Bar Bending Schedule and drawings | 30 | 22 | 5 | 3 |
| 5 | CON/N0037 | Identification and use of different type of stirrups and Crank / Shear Bars | 30 | 23 | 4 | 3 |
| 6 | CON/N0038 | Fabricate reinforcement in lintel, slab and projections | 31 | 24 | 4 | 3 |
| 7 | CON/N0039 | Fabricate beam reinforcement with & without Shear Bear | 32 | 25 | 4 | 3 |
| 8 | CON/N0040 | Fabricate reinforcement cage for column and base in situ position while incorporating crank bars | 31 | 24 | 4 | 3 |
| Total | | | 223 | 168 | 32 | 23 |
| Percentage weightage | | | | 75% | 15% | 10% |
| Minimum Pass % to qualify | | | | 80% | 50% | 50% |

Note: Minimum 40% marks mandatory to pass in individual NOSs.