



# Model Curriculum

QP Name: Bar Bender & Steel Fixer

QP Code: CON/Q0203

QP Version: 5.0

NSQF Level: 4

Model Curriculum Version: 5.0

Construction Skill Development Council of India || 201 and 202, Tower 4B, DLF Corporate Park,  
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## Training Parameters

<b>Sector</b>	Construction
<b>Sub-Sector</b>	Real Estate and Infrastructure Construction
<b>Occupation</b>	Bar Bending & Fixing
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/7214.1101
<b>Minimum Educational Qualification and Experience</b>	12th grade pass or Completed 2nd year of 3-year diploma after 10 <sup>th</sup> (in Civil Engineering) or 11th grade pass with 1 years of relevant industry experience or 10 <sup>th</sup> grade pass with 2 years of relevant industry experience or 8 <sup>h</sup> grade pass with 4 years of relevant industry experience or Previous relevant Qualification of NSQF Level 3 (Assistant Bar Bender and Steel Fixer) with 3 years of relevant industry experience
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	30/04/2025
<b>Next Review Date</b>	30/04/2028
<b>NSQC Approval Date</b>	08/05/2025
<b>QP Version</b>	5.0
<b>Model Curriculum Creation Date</b>	30/04/2025
<b>Model Curriculum Valid Up to Date</b>	30/04/2028
<b>Model Curriculum Version</b>	5.0
<b>Minimum Duration of the Course</b>	450 hours
<b>Maximum Duration of the Course</b>	450 hours



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## Program Overview

This section summarizes the end objectives of the program along with its duration.

### Training Outcomes

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

- Explain the role and responsibilities of bar bender and steel fixer.
- Discuss the career progression for the bar bender and steel fixer.
- Interpret reinforcement drawings and sketches, and Bar Bending Schedule (BBS).
- Explain the fixing sequence of reinforcement bars.
- Identify hand and power tools used for marking, cutting and bending of reinforcement bars.
- Demonstrate the use of hand and power tools for cutting of reinforcement bars.
- Demonstrate the use of hand and power tools for bending of reinforcement bars.
- Prepare different reinforcement components required for the cage/ mesh fabrication.
- Demonstrate placement and installation of mechanical couplers.
- Erect temporary supports required to fabricate various RCC structure
- Demonstrate insertion and fixing of the reinforcement bars as per the standard sequence.
- Demonstrate fixing of hanger bars, spacers and chairs as per drawing.
- Demonstrate fixing of pre-fabricated cages.
- Explain different types of stirrups and ties used in bar bending works.
- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.
- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.
- Identify various hazards at construction site.
- Use PPE's relevant to bar bending and steel fixing task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.



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## Compulsory Modules

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

NOS and Module Details	Theory Duration (Hours)	Practical Duration (Hours)	On-the-Job Training Duration (Mandatory) (Hours)	Total Duration (Hours)
<b>CON/N0204: Read and understand routine drawings / sketches and Bar Bending Schedule (BBS)</b> NOS Version No.: 5.0 NSQF Level: 3.5	20:00	30:00	10:00	60:00
Module 1: Introduction to the job role of Bar bender and steel fixer	05:00	00:00	00:00	05:00
Module 2: Demonstrate the reading of drawing / sketches and Bar Bending Schedule	15:00	30:00	10:00	55:00
<b>CON/N0205: Use hand and power tools for cutting and bending of reinforcement</b> NOS Version No.: 5.0 NSQF Level: 3.5	15:00	65:00	10:00	90:00
Module 3: Demonstrate the use of hand and power tools for cutting and bending of reinforcement	15:00	65:00	10:00	60:00
<b>CON/N0206: Prepare, fabricate, place and fix reinforcement for R.C.C structures</b> NOS Version No.: 5.0 NSQF Level: 3.5	70:00	100:00	10:00	180:00
Module 4: Prepare reinforcement components for cage/ mesh fabrication of the R.C.C structures	15:00	25:00	00:00	40:00
Module 5: Fixing reinforcement components to fabricate cage/ mesh for the R.C.C structures	55:00	75:00	10:00	140:00
<b>CON/N9001: Work according to personal health, safety and environment protocol at construction site</b> NOS Version No.: 3.0 NSQF Level: 4	05:00	25:00	00:00	30:00
Module 6: Follow safety norms as defined by organization, adopt healthy and safe work practices	05:00	25:00	00:00	30:00





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<b>CON/N8001: Work effectively in a team to deliver results at a construction site</b> <b>NOS Version No.: 3.0</b> <b>NSQF Level: 4</b>	<b>05:00</b>	<b>25:00</b>	<b>00:00</b>	<b>30:00</b>
Module 7: Communicate effectively at workplace	05:00	25:00	00:00	30:00
<b>CON/N8002: Plan and organize work to meet expected outcomes</b> <b>NOS Version No.: 4.0</b> <b>NSQF Level: 4</b>	<b>05:00</b>	<b>25:00</b>	<b>00:00</b>	<b>30:00</b>
Module 8: Prioritize activities and organize resources	05:00	25:00	00:00	30:00
<b>DGT/VSQ/N0101: Employability Skills (30 Hours)</b> <b>NOS Version No.1.0</b> <b>NSQF Level: 2</b>	<b>30:00</b>	<b>00:00</b>	<b>00:00</b>	<b>30:00</b>
Module 9: Employability Skills	30:00	00:00	00:00	30:00
<b>Total Duration</b>	<b>150:00</b>	<b>270:00</b>	<b>30:00</b>	<b>450:00</b>



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## Module Details

### Module 1: Introduction to the job role of Bar Bender and Steel Fixer

Mapped to CON/N0204, v5.0

#### Terminal Outcomes:

- Explain the role and responsibilities of Bar Bender and Steel Fixer.
- Discuss the career progression for the Bar Bender and Steel Fixer.

<b>Duration: 05:00</b>	<b>Duration: 00:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Describe the role and responsibilities of a bar bender and steel fixer.</li> <li>• Define the personal attributes required in bar bending and steel fixing occupation.</li> <li>• Explain the future possible progression and career development options of a Bar Bender and Steel Fixer.</li> </ul>	
<b>Classroom Aids:</b>	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
N/A	



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## Module 2: Read drawings /sketches and Bar Bending Schedule (BBS)

Mapped to CON/N0204, v5.0

### Terminal Outcomes:

- Interpret reinforcement drawings and sketches, and Bar Bending Schedule (BBS).
- Explain the fixing sequence of reinforcement bars.

Duration: 15:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"><li>• Recognize the details in a reinforcement drawing, such as type and size of reinforcement bar, cover to reinforcement, spacing, chairs requirement etc.</li><li>• Discuss different grades and diameters of reinforcement bars and binding wires used in construction work.</li><li>• Convert given units of measurement in the metric system to the imperial system and vice versa relevant to bar bending and steel fixing.</li><li>• Explain insertion and fixing sequence for different types of R.C.C structures such as slab, beam, column, footing, wall, staircase etc.</li><li>• Calculate the number of bars, chair and spacer from drawing and bar bending schedule.</li><li>• Calculate the cutting length for various shapes of reinforcement bars (L-shape, U-Shape) from sketches, drawing and bar bending schedule.</li><li>• Calculate the deduction for bends.</li><li>• Calculate the cutting length for Stirrups of various shape (Square, Rectangle, Circle).</li><li>• Discuss ways to minimize wastage of reinforcement steel.</li></ul>	<ul style="list-style-type: none"><li>• Interpret routine drawings and sketches to confirm the details such as diameter, shape, and location of reinforcement bar, cutting length, cover to reinforcement bar, bar description, number of bars, bend of reinforcement bar, etc., within the allotted time.</li><li>• Interpret bar bending schedule to confirm details such as diameter, shape, and location of reinforcement bar, cutting length, cover to reinforcement bar, bar description, number of bars, bend of reinforcement bar, etc., within the allotted time.</li><li>• Interpret the BBS and estimate quantity of reinforcement work for relevant RCC structure within the allotted time.</li></ul>
<b>Classroom Aids:</b>	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
Drawings of various types of structures and structural elements, Bar bending schedule sample, Model room	





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## Module 3: Using hand and power tools for cutting and bending of reinforcement

Mapped to CON/N0205, v5.0

### Terminal Outcomes:

- Identify hand and power tools used for marking, cutting and bending of reinforcement bars.
- Demonstrate the use of hand and power tools for cutting of reinforcement bars.
- Demonstrate the use of hand and power tools for bending of reinforcement bars.

Duration: 15:00	Duration: 35:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• List the hand and power tools used for measuring, marking, cutting, and bending of reinforcement bars.</li> <li>• Explain the use of CNC machine for reinforcement works.</li> <li>• Recognize accessories used for reinforcement cutting and bending machine.</li> <li>• Describe the method of placing reinforcement bars in different types of machine, for cutting and bending.</li> <li>• Explain the importance of maintaining correct body posture while cutting and bending the reinforcement bars.</li> <li>• Describe the standard procedure for tagging and stacking of reinforcement bars.</li> <li>• List the electrical safety measures to be adopted while working with power tools.</li> </ul>	<ul style="list-style-type: none"> <li>• Arrange the tools and required material resources.</li> <li>• Select accessories to be fixed on the bending machine based on the diameter of reinforcement bar, shape and angle of the bend etc.</li> <li>• Demonstrate the use of marking tools to mark cutting length on reinforcement bars.</li> <li>• Demonstrate the use of hammer and chisel, cutting machine, and other cutting tools to cut reinforcement.</li> <li>• Demonstrate the use of bending lever and bending machine to bend reinforcement bar as per shape and dimension given in BBS.</li> <li>• Demonstrate tagging and stacking of reinforcement bars as per standard procedure.</li> </ul>
<b>Classroom Aids:</b>	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
Chisel, Hammer, Bar tying hook, Bending lever, Gauge measure, Podger Spanner, Hack saw blade and frame, Steel scale, Try Scale, Spirit level, Plumb bob, Measurement tape, Cutting machine, Bending machine, Threading machine, Reinforcement steel bar, Binding wires, Cover blocks, Wooden planks, Reinforcement bar tying machine, Lifting appliance (Sling, Shackle, Belts), Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs, Reflective jackets, Dust mask, Fire Prevention kit	



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## Module 4: Prepare reinforcement components for cage/ mesh fabrication of the R.C.C structures

*Mapped to CON/N0206, v5.0*

### Terminal Outcomes:

- Prepare different reinforcement components required for the cage/ mesh fabrication.
- Demonstrate placement and installation of mechanical couplers.

<i>Duration: 15:00</i>	<i>Duration: 25:00</i>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Distinguish between the different type of reinforcement bars based on type of materials/ range of strength such as Mild Steel, TOR steel, TMT steel, and their application.</li> <li>• Discuss various features of One-way slab and Two-way Slab.</li> <li>• Describe the requirements and methods for providing lap joints to the reinforcement bars.</li> <li>• Calculation of lap length and development length for different diameter of reinforcement bars.</li> <li>• Explain the use and benefits of mechanical couplers.</li> <li>• Explain threading of reinforcement bars for coupler installation.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret drawings, sketches and BBS to get the details of reinforcement components required for the cage fabrication of various RCC structures.</li> <li>• Demonstrate cutting and bending of the reinforcement bar to prepare the materials for the cage fabrication as per the required RCC structure.</li> <li>• Demonstrate lapping of reinforcement for different diameter of reinforcement bars.</li> <li>• Demonstrate fixing of mechanical couplers as per drawing/BBS.</li> <li>• Perform tagging and stacking of prepared reinforcement materials as per the standard procedure.</li> </ul>
<b>Classroom Aids:</b>	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
Bar tying hook, Bending lever, Hack saw blade and frame, Measurement tape, Cutting machine, Bending machine, Threading machine, , M.S, TOR steel, TMT steel Binding wires, Steel cutting blade, Mechanical coupler, Cover blocks, Wooden planks, Reinforcement bar tying machine, Lifting appliance (Sling, Shackle, Belts), Safety Helmet , Safety goggles , Safety shoes , Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit	



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## Module 5: Fixing reinforcement components to fabricate cage/ mesh for the R.C.C structures

Mapped to CON/N0206, v5.0

### Terminal Outcomes:

- Erect temporary supports required to fabricate various RCC structure
- Demonstrate insertion and fixing of the reinforcement bars as per the standard sequence.
- Demonstrate fixing of hanger bars, spacers and chairs as per drawing.
- Demonstrate fixing of pre-fabricated cages.
- Explain different types of stirrups and ties used in bar bending works.

Duration: 55:00	Duration: 75:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Explain the insertion and fixing sequence of different types of R.C.C structural elements such as beam, column, slab, wall, footing, staircase etc.</li> <li>• Classify the different types of ties based on their use and strength.</li> <li>• Explain the importance of chairs, spacer bars, hanger bars, and cover blocks while cage fabrication and concreting operation for various RCC structures.</li> <li>• Discuss the procedure to shift, position and fix the pre-fabricated cage to its designated place.</li> </ul>	<ul style="list-style-type: none"> <li>• Interpret drawings and sketches prior to fabrication and fixing of reinforcements bars</li> <li>• Erect temporary supports/ mark necessary layout required to fabricate cage/ mesh for various RCC structures such as beam, column, slab, wall, footing, staircase etc.</li> <li>• Demonstrate marking procedures, insertion of different reinforcement components (such as bars, stirrups, bent- up bars etc.) and providing initial fixing ties to fabricate the required cage for the various RCC structures such as beam, column, slab, wall, footing, staircase etc. as per the drawing/BBS.</li> <li>• Use different types of ties as per their utilities to fix the different components of the RCC structure.</li> <li>• Demonstrate the shifting, positioning and fixing of pre-fabricated cages as per the requirement.</li> <li>• Demonstrate placing and fixing of chairs, spacers and hanger bars.</li> </ul>
<b>Classroom Aids:</b>	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
Bar tying hook, Bending lever, Hack saw blade and frame, Measurement tape, Cutting machine, Bending machine, Threading machine, , M.S, TOR steel, TMT steel Binding wires, Steel cutting blade, Mechanical coupler, Cover blocks, Wooden planks, Reinforcement bar tying machine, Lifting appliance (Sling, Shackle, Belts), Safety Helmet , Safety goggles , Safety shoes , Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit	



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## Module 6: Follow safety norms as defined by organization, adopt healthy and safe work practices

Mapped to CON/N9001, v 3.0

### Terminal Outcomes:

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

Duration: 05:00	Duration: 25:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works.</li> <li>• Recall the safety control measures and actions to be taken under emergency situation.</li> <li>• Explain the classes of fire and types of fire extinguishers.</li> <li>• Explain the importance of participation of workers in safety drills.</li> <li>• Explain the reporting procedure to the concerned authority in case of emergency situations.</li> <li>• Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories.</li> <li>• Explain different types of waste at construction sites and their disposal method.</li> <li>• Explain the purpose and importance of vertigo test at construction site.</li> <li>• List out basic medical tests required for working at construction site.</li> <li>• Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites.</li> <li>• Explain the importance of housekeeping works.</li> <li>• List different types of infectious diseases that can spread/ originate at a construction site</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate the operating procedure of the fire extinguishers.</li> <li>• Demonstrate use of PPEs as per work requirements.</li> <li>• Demonstrate vertigo test.</li> <li>• Demonstrate safety techniques to be adopted in case of accidents.</li> <li>• Demonstrate safe waste disposal practices followed at construction site.</li> <li>• Demonstrate safe housekeeping practices.</li> <li>• Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization.</li> <li>• Demonstrate the methods to clean and disinfect all materials, tools and supplies before and after use.</li> <li>• Demonstrate the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.</li> </ul>



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<ul style="list-style-type: none"> <li>• Discuss the ways of transmission of the various infectious disease.</li> <li>• Explain the methods to check the spread of the infectious disease.</li> <li>• Describe the symptoms and cure of the various infectious disease.</li> </ul>	
<b>Classroom Aids:</b>	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
Safety Helmets, Face shield, Overalls, Knee pads, Safety shoes, Safety belts, Safety harness, Safety Gloves, Safety goggles, Particle masks, Ear Plugs, Reflective jackets, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board	



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## Module 7: Communicate effectively at workplace

*Mapped to CON/N8001, v3.0*

### Terminal Outcomes:

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.

<i>Duration: 05:00</i>	<i>Duration: 25:00</i>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Explain the effects and benefits of timely actions relevant to the task at hand with examples.</li> <li>• Explain the importance of teamwork and its effects relevant to the task at hand with examples.</li> <li>• Explain the importance of proper and effective communication and its adverse effects in case of failure of proper communication.</li> <li>• Discuss about gender and its related concept: gender equality, gender equity (group work)</li> <li>• Discuss different types of disabilities (physical, mental, intellectual or sensory impairment).</li> <li>• Discuss the activities sensitive to the cultural diversity, disabilities and gender neutrality at the workplace.</li> <li>• Discuss the basic rules and regulations related to gender sensitivity, disabilities, and cultural diversity, with their impact on operations of a workplace.</li> <li>• Discuss how to take initiative in resolving issues among co-workers in a given situation.</li> <li>• Discuss reporting procedure followed at the workplace.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply effective communication skills while interacting with co-workers, trade seniors and others during the assigned task.</li> <li>• Use appropriate writing skills and verbal communication reporting as per commonly applicable organisational norms.</li> <li>• Demonstrate teamwork skills during assigned task.</li> <li>• Demonstrate acceptable interpersonal transactions with individuals having disabilities (physical, mental, intellectual or sensory impairment) or cultural diversity.</li> <li>• Demonstrate the process modifications required to make the workplace free from gender biases.</li> </ul>
<b>Classroom Aids:</b>	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
N/A	





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## Module 8: Prioritize activities and organize resources

*Mapped to CON/N8002, v 4.0*

### Terminal Outcomes:

- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.

<b>Duration: 05:00</b>	<b>Duration: 25:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain methods to upkeep, store and stack tools, materials used for domain specific works.</li> <li>• Explain the process of planning of the given tasks and activities relevant to the trade/job role within defined scope and duration.</li> <li>• Explain the procedure adopted for prioritizing an activity and sequencing of activities.</li> <li>• Explain the work plan and flow of activities in sequence for the assigned work.</li> <li>• Explain basic concept of labour productivity and work productivity.</li> <li>• Explain requisition of resources, reporting for requirement of resources orally and in written to concerned authority.</li> <li>• Explain how to minimise wastage of resources.</li> <li>• Explain the plan for waste collection and disposal after task.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the work target and plan activities to achieve the desired productivity.</li> <li>• Demonstrate requisition of resource citing an example.</li> <li>• Demonstrate the planning for various activities relevant to task as per the scope and schedule.</li> <li>• Demonstrate how to organise the required tool, manpower and material resources for the assigned task.</li> <li>• Select required quantity of materials, tools or devices for defined work activities.</li> <li>• Demonstrate how to prioritize all works/ activities to maximise output.</li> <li>• Demonstrate optimum use of resources while performing domain specific work activities.</li> <li>• Demonstrate waste collection and disposal as per organisational norms.</li> <li>• Demonstrate completion of work within stipulated time and plan.</li> </ul>
<b>Classroom Aids:</b>	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
<b>Tools, Equipment and Other Requirements</b>	
N/A	



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## Module 9: Employability Skills (30 Hours)

Mapped to DGT/VSQ/N0101, v1.0

**Duration: 30:00**

### Key Learning Outcomes

#### Introduction to Employability Skills Duration: 1 Hour

After completing this programme, participants will be able to:

1. Discuss the importance of Employability Skills in meeting the job requirements

#### Constitutional values - Citizenship Duration: 1 Hour

2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices.

#### Becoming a Professional in the 21st Century Duration: 1 Hour

4. Discuss 21st century skills.
5. Display positive attitude, self-motivation, problem solving, time management skills and continuous learning mindset in different situations.

#### Basic English Skills Duration: 2 Hours

6. Use appropriate basic English sentences/phrases while speaking

#### Communication Skills Duration: 4 Hours

7. Demonstrate how to communicate in a well-mannered way with others.
8. Demonstrate working with others in a team

#### Diversity & Inclusion Duration: 1 Hour

9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

#### Financial and Legal Literacy Duration: 4 Hours

11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

#### Essential Digital Skills Duration: 3 Hours

14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely

#### Entrepreneurship Duration: 7 Hours

16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

#### Customer Service Duration: 4 Hours

17. Differentiate between types of customers
18. Explain the significance of identifying customer needs and addressing them
19. Discuss the significance of maintaining hygiene and dressing appropriately



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#### Getting Ready for apprenticeship & Jobs Duration: 2 Hours

20. Create a biodata
21. Use various sources to search and apply for jobs
22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview
23. Discuss how to search and register for apprenticeship opportunities



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## On-the-Job Training

### Mapped to Bar Bender and Steel Fixer, v 5.0

**Mandatory Duration: 30:00**

**Location: On-Site**

**CON/N0204: Read and understand routine drawings / sketches and Bar Bending Schedule (BBS), v 5.0 (Duration: 10:00)**

- Interpret routine drawings and sketches to confirm the details such as diameter, shape, and location of reinforcement bar, cutting length, cover to reinforcement bar, bar description, number of bars, bend of reinforcement bar, etc., within the allotted time.
- Interpret bar bending schedule to confirm details such as diameter, shape, and location of reinforcement bar, cutting length, cover to reinforcement bar, bar description, number of bars, bend of reinforcement bar, etc., within the allotted time.
- Interpret the BBS and estimate quantity of reinforcement work for relevant RCC structure within the allotted time.

**CON/N0205: Use hand and power tools for cutting and bending of reinforcement bars, v 5.0 (Duration: 10:00)**

#### Terminal Outcomes:

- Arrange the tools and required material resources.
- Select accessories to be fixed on the bending machine based on the diameter of reinforcement bar, shape and angle of the bend etc.
- Demonstrate the use of marking tools to mark cutting length on reinforcement bars.
- Demonstrate the use of hammer and chisel, cutting machine, and other cutting tools to cut reinforcement.
- Demonstrate the use of bending lever and bending machine to bend reinforcement bar as per shape and dimension given in BBS.
- Demonstrate tagging and stacking of reinforcement bars as per standard procedure.

**CON/N0206: Prepare, fabricate, place and fix reinforcement bars for RCC structures, v 5.0 (Duration: 10:00)**

- Interpret drawings, sketches and BBS to get the details of reinforcement components required for the cage fabrication of various RCC structures.
- Demonstrate cutting and bending of the reinforcement bar to prepare the materials for the cage fabrication as per the required RCC structure.
- Demonstrate lapping of reinforcement for different diameter of reinforcement bars.
- Demonstrate fixing of mechanical couplers as per drawing/BBS.
- Perform tagging and stacking of prepared reinforcement materials as per the standard procedure.
- Interpret drawings and sketches prior to fabrication and fixing of reinforcements bars
- Erect temporary supports/ mark necessary layout required to fabricate cage/ mesh for various RCC structures such as beam, column, slab, wall, footing, staircase etc.
- Demonstrate marking procedures, insertion of different reinforcement components (such as bars, stirrups, bent- up bars etc.) and providing initial fixing ties to fabricate the required cage for the various RCC structures such as beam, column, slab, wall, footing, staircase etc. as per the drawing/BBS.
- Use different types of ties as per their utilities to fix the different components of the RCC structure.
- Demonstrate the shifting, positioning and fixing of pre-fabricated cages as per the requirement.
- Demonstrate placing and fixing of chairs, spacers and hanger bars.



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## Annexure

### Trainer Requirements

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training Experience	
		Years	Specialization	Years	Specialization
B. Tech	Civil / Mechanical Engineering	2	Site Execution (Civil Work)	1	Bar Bending and Steel Fixing
OR					
Diploma	Civil / Mechanical Engineering	3	Site Execution (Civil Work)	1	Bar Bending and Steel Fixing
OR					
ITI	Relevant Trade	6	Site Execution (Civil Work)	1	Bar Bending and Steel Fixing
OR					
Graduation	in any Stream	6	Site Execution (Civil Work)	1	Bar Bending and Steel Fixing
OR					
Ex-Army Graduate	in any Stream	6	Site Execution (Civil Work)	1	Bar Bending and Steel Fixing

Trainer Certification	
Domain Certification	Platform Certification
Recommended that the Trainer is certified for the Job Role: "Bar Bender and Steel Fixer", mapped to the Qualification Pack: "CON/Q0203, v5.0". The minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer (VET and skills)", mapped to the Qualification Pack: "MEP/Q2601, v3.0". The minimum accepted score is 80%.



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## Assessor Requirements

Assessor Prerequisites			
Minimum Educational Qualification	Specialization	Relevant Industry Experience	
		Years	Specialization
B.E. / B.Tech	Civil / Mechanical Engineering	2	Site Execution (Civil Work)
OR			
Diploma	Civil / Mechanical Engineering	5	Site Execution (Civil Work)
OR			
ITI	Relevant Trade	7	Site Execution (Civil Work)

Assessor Certification	
Domain Certification	Platform Certification
Recommended that the Assessor is certified for the Job Role: "Bar Bender and Steel Fixer", mapped to the Qualification Pack: "CON/Q0203, v5.0". The minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor (VET and skills)", mapped to the Qualification Pack: "MEP/Q2701, v3.0". The minimum accepted score is 80%.





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## Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the Candidate on the required competencies of the program.

### 1. Assessment system Overview:

Assessment is done through CSDCI affiliated Assessment Agencies. Assessors are trained & certified by CSDCI after Training Of Assessor (TOA) program. Assessments are conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas. The assessment will have both theory and practical components in 30:70 ratio for **Bar Bender and Steel Fixer** job role.

During the practical task, trainees are assessed on their workmanship, quality of finished product and time management. They will be graded for all their assessments based on the approved assessment strategy which is signed off by CSDCI. The Assessor submits an assessment plan to CSDCI prior to assessments.

The assessment plan contains the following information:

- What will be assessed, i.e. the competency based on each NOS based on theory and practical questions
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- Duration of assessment
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- The criteria for decision making i.e. those aspects that will guide judgments
- Where appropriate, any supplementary criteria used to make a judgment on the level of performance.

### 2. Testing Environment:

- Training partner shares the batch start date and end date, number of trainees and the job role.
- Assessment will be fixed for a day after the end date of training. It could be next day or later. Assessment will be conducted at the training venue/test center.
- The knowledge/theory assessments are conducted with proper seating arrangements with enough space between the candidates to prevent mal-practicing.
- Question set for theory and practical will be distributed to each candidate by the Assessor. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject. The skill /practical assessments will be conducted in the approved test centers. The training provider will ensure adequate tools and materials are available to conduct the practical test.
- If number of candidates are more than 30, more assessors will be organized on same day to complete the assessment.
- The assessment has to comprise of two components, namely:
  - Knowledge assessment (theory/viva assessment)
  - Skill assessment (practical/hands-on skill assessment)



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### 3. Mode of assessment:

- Demonstration/Practical for Performance /Skill Assessment
- Synoptic multiple-choice question test
- Viva for Knowledge Assessment

### 4. Performance/skill assessment:

- The performance/skill assessment will be conducted through demonstration/practical
- For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.
- The assessment is conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

### 5. Knowledge Assessment:

- The knowledge assessments are conducted through written test/ viva.
- Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which are prepared externally and externally marked, meaning by agency having no link with training partners. The test may be conducted by the assessor in the oral mode, if required, considering the lack of reading and comprehending acumen (skills) of trainees. In such cases, the assessor will mention it on top of the MCQ submitted to CSDCI.
- The assessment strategy, weightage and duration of assessment for **Bar Bender and Steel Fixer** is summarized below

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ/Viva	30	1.5
skill	Summative	Structured Practical Task	70	5.5

### 6. Assessment Quality Assurance framework:

- CSDCI has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criterion under knowledge and skill. The criteria ensure quality assurance as it ensures valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment body develop questions based on CSDCI issued assessment criteria.
- Evidences in the form of answer sheets in case of knowledge assessments are collected. For skill assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. CSDCI does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.
- The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit is conducted by CSDCI to monitor assessment.

### 7. Methods of Validation:

- Unless the trainee is registered, the person cannot undergo assessment. To further ensure that the person registered is the person appearing for assessment, ID verification is carried out. Aadhar card number is part of registering the candidate for training. This forms the basis of further verification during the assessment.
- Assessor conducts the assessment through theory and practical questions developed in



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accordance with the assessment criteria and guidelines issued by CSDCI. This too is verified by random audits carried out by CSDCI.

- Evidences for assessments are to be collected and submitted to CSDCI for verification as per demand.
- Assessment agency is responsible to put details in SIP. CSDCI will also validate the data and result received from the assessment agency.

#### 8. Method of assessment documentation and access:

- The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by CSDCI assessment team. After upload, only CSDCI can access this data.
- CSDCI approves the results within five days after which results are uploaded on SIDH by Assessment Agency.

#### 9. On the Job:

- On job training (OJT), candidates undergo training and learning at actual workplace for a fixed period of time and a certain weightage of assessment is allocated out of total skill weightage of Qualification Pack for undergoing OJT as stipulated by CSDCI. This OJT score and assessors' end point score are combined to arrive at final Marking/grading of trainees' skill test. The OJT score is determined by Supervisor of company under which candidates undergo on job training.



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## References

### Glossary

Term	Description
<b>Declarative Knowledge</b>	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.



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## Acronyms and Abbreviations

Term	Description
<b>MSDE</b>	Ministry of Skill Development and Entrepreneurship
<b>NCVET</b>	National Council for Vocational Education and Training
<b>NSDC</b>	National Skill Development Corporation
<b>SIDH</b>	Skill India Digital Hub
<b>CSDCI</b>	Construction Skill Development Council of India
<b>AB</b>	Awarding Body
<b>SSC</b>	Sector Skill Council
<b>PMKVY</b>	Pradhan Mantri Kaushal Vikas Yojana
<b>DDU-GKY</b>	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
<b>SANKALP</b>	Skill Acquisition and Knowledge Awareness for Livelihood Promotion
<b>STRIVE</b>	Skills Strengthening for Industrial Value Enhancement
<b>JSS</b>	Jan Shikshan Sansthan
<b>STT</b>	Short Term Training
<b>RPL</b>	Recognition of Prior Learning
<b>NAPS</b>	National Apprenticeship Promotion Scheme
<b>AA</b>	Assessment Agency
<b>TP</b>	Training Provider / Training Partner
<b>TC</b>	Training Centre
<b>ITI</b>	Industrial Training Institute
<b>NSQC</b>	National Skill Qualification Committee
<b>NSQF</b>	National Skills Qualification Framework
<b>Q-File</b>	Qualification File
<b>QP</b>	Qualification Pack
<b>MC</b>	Model Curriculum
<b>NOS</b>	National Occupational Standards
<b>PC</b>	Performance Criteria
<b>KU</b>	Knowledge and Understanding
<b>GS</b>	Generic Skills
<b>MCQ</b>	Multiple Choice Question
<b>EHS</b>	Environment Health and Safety
<b>PPE</b>	Personal Protective Equipment
<b>QA/QC</b>	Quality Assurance / Quality Control
<b>BBW</b>	Bar Bending Work
<b>SFW</b>	Steel Fixing Work
<b>BBS</b>	Bar Bending Schedule
<b>RCC</b>	Reinforced Cement Concrete
<b>TMT</b>	Thermo-Mechanically Treated (Steel Bars)
<b>MSB</b>	Mild Steel Bars
<b>RRB</b>	Ribbed Reinforcement Bars
<b>RCW</b>	Reinforcement Construction Work
<b>SBF</b>	Steel Bending and Fixing
<b>RBW</b>	Rebar Bending Work