



Model Curriculum

Assistant Bar Bender & Steel Fixer

SECTOR: Construction
SUB-SECTOR: Real Estate and Infrastructure Construction
OCCUPATION: BAR BENDING AND FIXING
REF ID: CON/Q0202, Version 2.0
NSQF LEVEL: 3





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Assistant Bar Bender & Steel Fixer

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Assistant Bar Bender & Steel Fixer”, in the “Construction” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Assistant Bar Bender & Steel Fixer		
Qualification Pack Name & Reference ID. ID	CON/Q0202 Version 2.0		
Version No.	2.0	Version Update Date	24-09-2019
Pre-requisites to Training	NIL		
Training Outcomes	After completing this programme, participants will be able to: <ul style="list-style-type: none">• Interpret reinforcement bar detail from hand sketches• Use materials, tools, and equipment relevant to reinforcement works• Cut reinforcement bars and bend them manually in simple shapes• Fabricate, place and fix reinforcement bar for pre- fabricated and in-situ RCC Structures• Erect and dismantle temporary scaffold up to 3.6 m height• Interact and communicate effectively with co-workers, superiors and sub-ordinates across different teams• Follow safety norms as defined by organization, adopt healthy and safe work practices.		

This course encompasses 7 out of 7 National Occupational Standards (NOS), “Assistant Bar Bender & Steel Fixer” Qualification Pack issued by “Construction skill sector council of India”.

Compulsory NOS

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction to bar bending and steel fixing occupation</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Define the role of an assistant bar bender and steel fixer Explain the personal attributes required to be an assistant bar bender and steel fixer Recall the basic terms used in the occupation of bar bending and steel fixing Discuss future possible progression and career options for assistant bar bender and steel fixer 	
2	<p>Interpret reinforcement bar detail from hand sketches</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 24:00</p> <p>Corresponding NOS Code CON/N0214</p>	<ul style="list-style-type: none"> List different systems of linear measurement Apply the basic knowledge of units, measurement and arithmetic calculation relevant to bar bending work Describe the different types of reinforcement bars, their grade and standard size Determine diameter, cutting length, cover, number and shape of reinforcement bars from hand sketch Determine spacing details for stirrups, chairs, space bars etc. by interpreting hand sketches relevant to bar bending works. 	
3	<p>Use materials, tools, and equipment relevant to reinforcement works</p> <p>Theory Duration (hh:mm) 12:00</p> <p>Practical Duration (hh:mm) 36:00</p> <p>Corresponding NOS Code CON/N0215</p>	<ul style="list-style-type: none"> Classify the reinforcement bar with respect to their grade and size. Differentiate binding wires based on materials and thickness Identify the different types of hand tools and power tools used for steel reinforcement works. Demonstrate the use of hand tools for cutting rebars. Demonstrate the use of power tools like circular cutting machine (handheld and table mounted) and shearing machine for cutting rebar. Describe the process adopted for care and maintenance of hand and power tools used in bar bending works. Demonstrate the use of threading machine for marking threads on reinforcement bars. 	<ul style="list-style-type: none"> 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

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Demonstrate the use of bar bending machine. • Explain use of lifting gears and equipment used in reinforcement work • Demonstrate the use of slings, shackles and lifting belts for lifting and shifting of rebar • State the importance of maintaining proper body postures while using hand and power tools 	<ul style="list-style-type: none"> • 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
4	<p>Cut reinforcement bars and bend them manually in simple shapes</p> <p>Theory Duration (hh:mm) 16:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code CON/N0216</p>	<ul style="list-style-type: none"> • Explain the procedure of measuring, marking and cutting of reinforcement bars into simple shapes. • List the types of stirrups, chairs and hanger bar • Describe tolerance limit for cutting and bending of the reinforcement bar • Explain the importance of maintaining proper body posture while cutting and bending reinforcement bars • Demonstrate marking and cutting of rebar to the specified length using appropriate hand cutting tools. • Demonstrate marking and cutting of rebar to the specified length using appropriate power cutting tools. • Demonstrate bending of reinforcement bar to the specified shape and angle using lever/ pipe. • Apply basic ergonomic principles while cutting and bending of the reinforcement bars • Demonstrate the procedure of making stirrups, chairs and hanger bars 	<ul style="list-style-type: none"> • Hack saw • Rail piece • Pointed chisel • Sledge hammer • Bending lever • Pin plate • Working bench • Measuring Instruments • Measurement tape • Cutting machine • Bending machine • Steel cutting blade • 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
5	<p>Fabricate, place and fix reinforcement bar for pre-fabricated and in-situ RCC Structures</p> <p>Theory Duration</p>	<ul style="list-style-type: none"> • List the different types of ties (Slash tie, ring slash tie, hair-pin tie, ring hair-pin tie, crown tie, lap tie) used in bar bending works 	<ul style="list-style-type: none"> • Hack saw • Rail piece • Pointed chisel • Sledge hammer • Bending lever

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	(hh:mm) 24:00 Practical Duration (hh:mm) 62:00 Corresponding NOS Code CON/N0217	<ul style="list-style-type: none"> Describe the sequence for tying of reinforcement bar in case of in-situ and pre-fabricated cages Explain the importance of lapping and staggering of reinforcement bars Describe the standard method of staggering of reinforcement bars. Explain use of chairs, hanger bar, spacer bar and cover blocks Demonstrate placing and fixing of chairs as per requirement for the slab reinforcement. Describe insertion and fixing sequence for footing, column, wall, beam and slab Demonstrate insertion and fixing of rebar for column, slab, beam and wall. Demonstrate fixing ties using hair pin tie, ring hair pin tie, slash tie, ring slash tie and crown tie. Demonstrate marking, placing, fixing and tying of stirrups for column, beam, wall & slab as per the specified spacing. 	<ul style="list-style-type: none"> Pin plate Working bench Binding hook Measurement tape Chalk piece Cutting machine Bending 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
6	Erect and dismantle temporary scaffold up to 3.6-meter height Theory Duration (hh:mm) 12:00 Practical Duration (hh:mm) 36:00 Corresponding NOS Code CON/N0101	<ul style="list-style-type: none"> Explain scaffolding and its purpose List the common materials and tools used for erection of scaffolding (pipe, cup lock (vertical and ledgers), H- frames, bamboo and balli List the functions of different hand tools like hammer, spanner, pulleys, hooks, ropes, etc., used for erection/ dismantling of scaffolds List the visual checks to be carried out on the scaffolding components to ascertain their usability Identify different components of a temporary scaffolding such as base, toe board, guard rails, platform, walkways, ladder and so on Explain the functions of materials, components and accessories used in scaffolding Demonstrate preparation of scaffolding base 	<ul style="list-style-type: none"> Hammer Spanner (set) Wrench Pulley Rope Nuts and bolts Measuring tape Spirit level Plumb-bob Mason's line Helmet Safety shoes Safety belt Cotton hand gloves Goggles Reflective jackets

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> • Explain the methods adopted for the erection of the scaffold to ensure its safety • Demonstrate erection of a scaffold(up to 3.6 m height)using pipes and couplers/ cup lock system/ H frame using appropriate hand tools • Explain various checks to be done on completion of erection of scaffolds, such as verticality check, stability check etc. • Demonstrate the checks required for verticality, rigidity and stability during erection of scaffold. • Explain the sequence and standard procedure of dismantling and stacking of scaffold • Demonstrate the dismantling of the erected scaffold. • Demonstrate the stacking of material, components, tools and accessories during erection and after dismantling. 	
7	<p>Work effectively in a team to deliver desired results at the workplace</p> <p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 16:00</p> <p>Corresponding NOS Code CON/N8001</p>	<ul style="list-style-type: none"> • Demonstrate effective communication skills while interacting with co-workers, trade seniors and others during the assigned task. • Interpret work sketches, formats, permits, protocols, checklists and other work-related requirements which are to be conveyed to other team members • Demonstrate effective reporting to seniors while performing the assigned work as per applicable organisational norms • Explain effects and benefits of timely actions relevant to bar bending works with examples • Explain importance of team work and its effects relevant to bar bending works with examples • Demonstrate team work skills during assigned task. 	
8	<p>Work according to personal health, safety and environment protocol at construction site</p> <p>Theory Duration (hh:mm) 16:00</p> <p>Practical Duration (hh:mm) 32:00</p> <p>Corresponding NOS Code</p>	<ul style="list-style-type: none"> • Explain the types of hazards at the construction sites • Identify the hazards specific to the bar bending and steel fixing work • Recall the safety control measures and actions to be taken under emergency situation • Explain the classes of fire and types of fire extinguishers • Demonstrate the operation of fire extinguisher. • Demonstrate different methods involved in providing first aid to the affected person. • Explain the importance of worker participation in safety/mock drills 	<ul style="list-style-type: none"> • Safety shoes • Safety Goggles • Safety Helmet • Cotton Hand - Gloves • Tools Bag • Safety Belt • Face Mask • Operator – Leather Apron • Safety Shoes (Assorted Size) • Ear Muff

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	CON/N9001	<ul style="list-style-type: none"> • Demonstrate the use of all Personal Protective Equipment (PPE) like helmet, safety shoe, safety belt, safe jackets and other safety equipment relevant to bar bending work. • Explain the reporting procedure adopted in case of emergency situations • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories • Explain different types of wastes produced at a construction site including their disposal method • Explain the purpose and importance of vertigo test at construction site • Demonstrate vertigo test • List out basic medical tests required for working at construction Site • Explain the types of ergonomic principles adopted while carrying out specific task at the construction • Explain the benefits of basic ergonomic principles used at construction sites. • Explain the importance of housekeeping • Demonstrate housekeeping practice followed after reinforcement works. 	<ul style="list-style-type: none"> • Reflective jackets • Safety message boards • Fire extinguishers • Sand buckets
	<p>Total Duration Theory Duration: 104:00 hours</p> <p>Practical Duration 246:00 hours</p>	<p>Unique Equipment Required:</p> <p><u>Hand Tools</u> Chisel, Hammer, Bar tying hook, Bending lever, Gauge measure, Podger Spanner, Hack saw blade and frame, Hack saw, Rail piece, Pointed chisel, Sledge hammer, Pin plate, Working bench</p> <p>Measuring Instruments Measuring tape, Spirit level, Plumb-bob, Mason's line</p> <p><u>Power Tools</u> Bar cutting machine, Bar bending machine</p> <p>General requirement M.S, TOR steel, TMT steel Binding wires, Steel cutting blade, cover blocks, Wooden planks, Reinforcement bar tying machine, Lifting appliance (Sling, Shackle, Belts)</p> <p><u>Materials</u> Cup-lock scaffolding components (set), 40 NB pipes, Swivel coupler, Fixed clamp, Steel walers, Steel walkways, Aluminium/ GI ladder, Safety net</p> <p><u>PPEs</u> Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit</p> <p><u>Classroom Aids and other requirements</u> Classroom of 30 students capacity, Black/White board, Projector/LED Monitor, Computer, Trade specific charts and other teaching aids</p>	

Grand Total Course Duration: 350 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by [Construction Skill Development Council of India](#))



Trainer Prerequisites for Job role: “Assistant Bar Bender & Steel Fixer” mapped to Qualification Pack: “CON/Q0202, Version 2.0”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “CON/Q0202 Version 2.0”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field
3	Minimum Educational Qualifications	ITI/12th
4a	Domain Certification	Certified for the job role “Assistant Bar Bender & Steel Fixer” mapped to QP:“CON/Q0202 Version 2.0” Minimum accepted score is 80%
4b	Platform Certification	Certified for the job role “Trainer” mapped to QP:“MEP/Q2601” Minimum accepted score is 80%
5	Experience	i. Technical Degree holder with minimum three years of Field experience and preferably two years of teaching experience or, ii. In case of a Diploma Holder five years of field experience and preferably two years of teaching experience or, iii. In case of ITI/12 th pass minimum eight years of field experience and preferably two years of teaching Experience.

Note: For the Assessment Criteria please refer to the QP PDF