RPL

RECOGONITION OF PRIOR LEARNING

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TRAINING PARTNER

INDIA VISION REALTY AND INFRASTRUCTURE PVT LTD

In consortium with

PK ENTERPRISES

Approved Curriculum 120 Hours

Assistant Bar Bender & Steel Fixer (NSQF Level – 3)

SECTOR:	**CONSTRUCTION**
SUB-SECTOR:	**REAL ESTATE AND INFRASTRUCTURE CONSTRUCTION**
OCCUPATION:	**BAR BENDING & FIXING**
REF. ID:	**CON/Q0202, VERSION 1.0**
NSQF LEVEL:	3

Arunachal Pradesh Building & Other's Construction workers welfare board
(APB&OCWWB)
ESS Sector, Itanagar-791110

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.	Assistant Bar Bender & Steel Fixer CON/Q0202		
Version No.	1.0	**Version Update Date**	01-08-2022
Pre-requisites to Training	Preferably 5th Standards		
Training Outcomes	**After completing this program, participants will be able to:** • **Read and understand reinforcement bar detail from hand sketches:-** Basic concepts of drawings/sketches used in reinforcement steel works • **Use and maintain materials, tools, and equipment relevant to reinforcement works :** Introduction to tools, their selection and uses use of hand tools for reinforcement steel works • **Perform cutting and manual bending of rebar for simple shapes:** -Basic concepts of drawings/sketches and Bar Bending Schedule used in routine works • **Assist in fabrication, placing and fixing of rebar for pre- fabricated and in-situ RCC Structures :-** Introduction to structural components , Insertion, placing and fixing of rebar for footing, column, beam and slab • **Erect and dismantle temporary scaffold of 3.6 m height:-**Standard procedure for erection and dismantling of temporary scaffold of 3.6m height**.** • **Work effectively in a team to deliver desired results at the workplace** : Organised working procedure within a team at site • **Work according to personal health, safety and environment protocol at construction site:-** Importance of Health & Safety aspects & measures to be followed while working.		

This course encompasses 7 out of 7 National Occupational Standards (NOS) of "Assistant Bar Bender & Steel Fixer" Qualification Pack issued by "Construction Skill Development Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction to the job role - (Lecture/ description by concerned trainer)** **Theory Duration** (hh:mm) 01:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code**	**Theory:** • Role description/ functions of the job role • Expected personal attributes from the job role • Brief description about course content, mode of learning and duration of course • Future possible progression and career development provisions on completion of the course	Classroom Requirement 1. Classroom of 30 students capacity 2. Black/White board 3. Projector/LED Monitor 4. Computer 5. Trade specific charts and other teaching aids
2	**Read and understand reinforcement bar detail from hand sketches** **Theory Duration** (hh:mm) 02:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CON/N0214	**Theory:** • Unit of linear measurement and their conversion • Types of drawings (Numeration/General arrangement, R.C.C detail drawing) • Importance of drawings • Different components of structures • Unit weight of steel • Calculation of cutting length for stirrups, hanger bars, chairs and for simpler shapes **Demonstration/Practical:** • Demonstrate to detail out information about bar diameter, shape, spacing • Demonstrate measurement conversion • Demonstrate calculation for stirrups, hanger bars, chairs and simpler shapes	Drawings/Sketches 1. Drawings of various types of structures and structural elements 2. Bar bending schedule sample 3. Model room
3	**Use and maintain materials, tools, and equipment relevant to reinforcement works** **Theory Duration** (hh:mm) 02:00	**Theory:** • Different hand tools for reinforcement steel works • Different types of rebar, their grade and size • Types and thickness of binding wire • Different power tools for reinforcement steel works • Lifting gears and equipments	**Hand Tools** 1. Chisel 2. Hammer 3. Bar tying hook 4. Bending lever 5. Podger Spanner 6. Hack saw blade and frame

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 10:00 **Corresponding NOS Code** CON/N0215	• Personal protective equipments • Basic maintenance of hand and power tools • Visual checks to identify working condition of hand tools • Importance of body postures while using hand and power tools **Demonstration/Practical:** • Demonstrate application of hand tools • Demonstrate selection of hand tools and PPE based on work requirement • Identify rebar's based on their type, grade • Demonstrate how to check thickness of binding wire using wire gauge • Demonstrate fixing of cutting blade to cutting machine	**Measuring Instruments** 7. Plumb bob 8. Measurement tape **Power Tools** 9. Cutting machine 10. Bending machine **General requirement** 11. Reinforcement steel bar 12. Binding wires 13. Cover blocks 14. Rebar tying machine 15. Lifting appliance (Sling, Shackle, Belts) **PPEs** 16. Safety Helmet 17. Safety goggles 18. Safety shoes 19. Safety belt 20. Cotton gloves 21. Ear plugs 22. Reflective jackets 23. Dust mask
4	**Perform cutting and manual bending of rebar for simple shapes** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** CON/N0216	**Theory:** • Measurement and marking method for cutting and bending • Types of stirrups • Hand tools for cutting and bending rebar manually • Power tools for cutting rebar • Tolerance for cutting and bending of rebar **Demonstration/Practical:** • Demonstrate cutting of rebar for a smaller diameter rebar using hand tool • Demonstrate cutting of rebar using power tools • Demonstrate making of stirrups, chairs and hanger bar • Demonstrate bending of rebar for simpler shape such as L, U shape	Hand Tools 1. Hack saw 2. Rail piece 3. Pointed chisel 4. Sledge hammer 5. Bending lever 6. Pin plate 7. Working bench Measuring Instruments 8. Measurement tape Power Tools 9. Cutting machine 10. Bending machine General requirement 11. M.S, TOR steel, TMT steel Binding wires 12. Steel cutting blade 13. Cover blocks 14. Rebar tying machine 15. Lifting appliance

Sr. No.	Module	Key Learning Outcomes	Equipment Required
5	**Assist in fabrication, placing and fixing of rebar for pre-fabricated and in-situ RCC Structures** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** CON/N0217	**Theory:** • Different types of ties (Slash tie, ring slash tie, hair-pin tie, ring hair- pin tie, crown tie, lap tie) • Sequence for tying of rebar for in-situ and pre-fabricated cages for footing , column, wall, beam and slab • Lapping of rebar and staggering • Use of chairs, hanger bar, spacer bar **Demonstration/Practical:** • Describe insertion and fixing sequence for footing, column, wall, beam and slab • Demonstrate tying of rebar using different ties • Demonstrate marking, placing, fixing and tying of stirrups for column, beam as per specified spacing • Demonstrate marking, placing, fixing and tying of rebar for wall and slab as per specified spacing	Hand Tools 1. Hack saw 2. Rail piece 3. Pointed chisel 4. Sledge hammer 5. Bending lever 6. Pin plate 7. Working bench 8. Binding hook 9. Hammer Measuring Instruments 10. Measurement tape 11. Chalk piece Power Tools 12. Cutting machine 13. Bending machine General requirement 14. M.S, TOR steel, TMT steel Binding wires 15. Steel cutting blade 16. Mechanical coupler 17. Cover blocks 18. Rebar tying machine 19. Lifting appliance (Sling, Shackle, Belts) PPEs 21. Safety Helmet 22. Safety goggles 23. Safety shoes 24. Safety belt 25. Cotton gloves 26. Ear plugs 27. Reflective jackets 28. Dust mask 29. Fire Prevention kit

Sr. No.	Module	Key Learning Outcomes	Equipment Required
5	**Erect and dismantle temporary scaffold of 3.6 m height** **Theory Duration** (hh:mm) 02:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CON/N0101	**Theory:** • What is scaffolding and its purpose of its erection • Common materials and tools used for erection of scaffolds (Pipe & coupler, Frame scaffold/Bamboo and ballies) • Characteristics of ideal base of scaffolding and its preparation • Visual checks to be carried out on the scaffolding components to ascertain their usability • Different components of a temporary scaffolding such as base, toe board, guard rails, platform, walkways, ladder etc., their function and placing • Spacing/ height to be provided among different components of a temporary scaffold • Safety measures to be followed while tightening, fixing/ assembling different part of scaffold together • Use of different scaffolding accessories like different kind of clamps, washers, props, bracings and other supporting members • Standard method of erecting & dismantling 3.6 m temporary scaffold. • Material handling and shifting methods while scaffolding erection/ dismantling is under process • Checks to be done on completion of erection of scaffolds, such as verticality check, stability check **Demonstration/ practical:** • Sort and shift scaffolding material from stock yard to space of erection • Clean the area of the scaffolding and prepare the base • Erect scaffolds of 3.6 Mtr. height using pipes and cup locks using appropriate hand tools • Use clamp and other supporting members to ensure stability and verticality of the scaffolds	Hand tools 1. Hammer 2. Spanner (set) 3. Wrench 4. Pulley 5. Rope 6. Nuts and bolts Measuring Instruments 7. Measuring tape 8. Plumb-bob 9. Mason's line Materials 10. Cup-lock scaffolding components (set) 11. 40 NB pipes 12. Swivel coupler 13. Fixed clamp 14. Steel walers 15. Steel walkways 16. Aluminium/ GI ladder 17. Safety net PPEs & safety equipment's 18. Helmet 19. Safety shoes 20. Safety belt 21. Cotton hand gloves 22. Goggles 23. Reflective jackets 24. Safety message boards

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Place different components of scaffolds such as base plate, vertical/ horizontal members, toe boards, guard rails, platforms/ walkways, ladder etc. as per standard practice • Use PPEs as per necessity of the task • Dismantle the whole scaffold and stack their components as per standard practice	
6	**Work effectively in a team to deliver desired results at the workplace** **Theory Duration** (hh:mm) 01:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CON/N8001	**Theory:-** • Understanding of oral and written communication skills with co-workers related to cutting, bending and tying works • procedure of oral and written communication skills for informing trade senior about any lack of information in the drawing/sketches or deviation from the work • Reading and interpretation of sketches • Method of providing instruction to subordinates or reporting to seniors clearly and promptly • Seek necessary support and complete assigned tasks within stipulated time duration • Keep good relation and maintain well behavior with co-workers **Demonstration/ Practical :-** The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition 1. Selection of materials, tools or devices for defined purpose 2. Handling material, tools and equipments relevant to reinforcement works	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		3. Carrying out cutting and bending of rebar 4. Carrying out fabrication, placing and fixing of reinforcement for R.C.C structures 5. Selection and handing over of desired/ appropriate tools/ materials while assisting trade senior	
7	**Work according to personal health, safety and environment protocol at construction site** **Theory Duration** (hh:mm) 02:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** CON/N9001	**Theory:-** • Types of hazards involved in construction sites • Types of hazards involved in reinforcement works • Emergency safety control measures and actions to be taken under emergency situation • Identification of unsafe act and unsafe condition • **Concept of :-** First Aid process Use of fire extinguisher Classification of fires and fire extinguisher Safety drills • Types and use of PPEs required for reinforcement works • Reporting procedure to the concerned authority in emergency situations • Standard procedure of handling, storing and stacking material • What is safe disposal of waste, type of waste and their disposal • Basic ergonomic principles as per applicability **Demonstration/ Practical :-** The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition.	PPEs 1. Safety Helmet 2. Safety goggles 3. Safety shoes 4. Safety belt 5. Cotton gloves 6. Ear plugs 7. Reflective jackets 8. Dust mask 9. Fire Prevention kit

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		1. Selection of PPEs and use them appropriately as per working need of reinforcement works, handling, storing, stacking and shifting of reinforcement material, tools and equipments 2. Selection of PPEs and use them appropriately as per working need of cutting, bending , placing and fixing of rebar 3. Identification of locations, situations/ circumstances, malpractices which can be hazardous for general or reinforcement works 5. Disposal of waste materials as per their nature and effects on weather	
	Total Duration: 120:00 **Theory Duration 20:00** **Practical Duration 100:00**	**Unique Equipment Required:** Classroom Requirement Classroom of 30 students capacity, Black/White board, Projector/LED Monitor, Computer, Trade specific charts and other teaching aids Hand Tools 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 Measuring Instruments Measuring tape, Spirit level, Plumb-bob, Mason's line Power Tools Bar cutting machine, Bar bending machine General requirement M.S, TOR steel, TMT steel Binding wires, Steel cutting blade, Cover blocks, Wooden planks, Rebar tying machine, Lifting appliance (Sling, Shackle, Belts) Materials Cup-lock scaffolding components (set), 40 NB pipes, Swivel coupler, Fixed clamp, Steel walers, Steel walkways, Aluminium/ GI ladder, Safety net PPEs Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit	

Grand Total Course Duration: 120 Hours 00 Minutes
This syllabus/ curriculum has been approved by Construction Skill Development Council of India