

SHUTTERING CARPENTER - NSQF LEVEL: 4

CURRICULUM / SYLLABUS - Course Duration: 68 Hours Bridge Course

Qualification Pack Name & Reference ID. - CON/Q0304

Aim: This program is aimed at training candidates for the job of a “Shuttering Carpentry-System” in the “Construction” Sector/Industry and aims at building the following key competencies amongst the learner

Training Outcomes

After completing this programme, participants will be able to:

- Make wooden shutters used in shuttering carpentry: - Use of hand and power tools for making wooden shutter boards.
- Assemble and dismantle System formwork for RCC structures :- Standard methods for carrying out shuttering of R.C.C structural elements
- Carry out quality checks for shuttering works: - Concepts of quality checking for shuttering works for various R.C.C structural elements
- Work effectively in a team to deliver desired results at the workplace :- Organised working procedure within a team at site
- Plan and organize work to meet expected outcomes: - Prioritizing activities and organising resources to meet desired outcome.
- Work according to personal health, safety and environment protocol at construction site: - Importance of Health & Safety aspects & measures to be followed while working.
- Work effectively in a team to deliver desired results at the workplace :- Organised working procedure within a team at site

S.No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction to Shuttering Carpenter job role Theory Duration (hh:mm) 01:00 Practical Duration (hh:mm) 00:00	<ul style="list-style-type: none"> • 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 	<u>Classroom Requirement</u> 1. Trade specific charts and other teaching aid 2. Projector LED & Black/ White Board
2	Make wooden shutters used in shuttering carpentry Theory Duration (hh:mm) 03:00 Practical Duration (hh:mm) 20:00	Theory:- <ul style="list-style-type: none"> • Use of hand tools such as hand saw, different types of chisel, jack hammer, nailing hammer, hand drill • Use of power tools such as circular saw, hand drill machine, table mounted saw, planning machine and power drilling machine • Importance of correct body postures • Handling and maintenance of tools • Types of timber, plywood 	1. Claw Hammer 2. Handsaw 3. Tenon saw 4. Iron Jack Planner 5. Wooden Marking Gauge 6. Wooden Mortise Gauge 7. Spirit Level 8. Tri-Square 9. Auger 10. Steel Measuring Tape 11. Farmer Chisel

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	<p>Corresponding NOS Code CON/N0302</p>	<ul style="list-style-type: none"> Standard size of timber and plywood for shutter making purpose Seasoning of timber, common defects in timber and visual checks Measurement and marking tools Types of joints – Dovetail, Tenon & Mortise, Lap joints, Half joints Tolerance limit for wooden shutters Repair of wooden shutters Electrical safety for using of power tools Demonstration/ Practical : - Demonstrate cutting of timber and plywood as per measurement and marking Demonstrate use of hand saw, chisel, jack hammer, hand auger Demonstrate use of power tools for cutting, sizing, planing and drilling of timber Demonstrate making of Dovetail joints, tenon mortise joint, Lap joints Demonstrate making of wooden shutter boards as per specified size Demonstrate the fixtures and consumables required for shutter making. 	<ol style="list-style-type: none"> Mortise Chisel Cutting Plane Screw Driver 10" Oil Stone (Rough / Smooth) Centre Punch Bench Vice Hacksaw Frame with blade Triangle file - 6mm (Medium) Half Round File & Rasp cutfile Drill Bit Plumb Bob Ring Spanner Double End Spanner Screw Spanner 12" LM Carpenter Working Table Nail Bar Water level tube Materials System formwork for Footing, column, wall, beam, slab Cup-lock scaffolding components (set)/Frame scaffold components 40 NB pipes Swivel coupler Fixed clamp Steel walkways Aluminium/ GI ladder Safety net <p><u>Power tools</u></p> <ol style="list-style-type: none"> Hand held timber Cutting machine (Circular saw, Zig-jack saw) Drilling machine Table mounted circular saw Planer machine <p><u>PPEs & safety equipment's</u></p> <ol style="list-style-type: none"> Helmet Safety shoes Safety belt Cotton hand gloves Nose mask Safety apron Ear plugs Goggles Reflective jackets Safety message boards
3.	<p>Assemble and dismantle System formwork for RCC structures</p> <p>Theory Duration (hh:mm) 3:00</p> <p>Practical Duration (hh:mm) 12:00</p>	<p>Theory:-</p> <ul style="list-style-type: none"> Introduction to schematic working drawing Introduction to System formwork Difference between conventional and system formwork Advantage of system formwork over conventional formwork Types of shuttering material and their standard size 	<p>Tools same as above listed</p>

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	<p>Corresponding NOS Code CON/N0303</p>	<ul style="list-style-type: none"> • Consumables used in shuttering work • Types of system formwork and their application • Standard size of formwork components and their unit weight • Different types of releasing agents (shuttering oil, cream emulsions, chemical release agents) • Standard procedure assembling and dismantling system formwork for R.C.C footing, column, wall, beam, slab • General tolerance for shuttering works • Standard procedure for dismantling system formwork for R.C.C footing, column, wall, slab, beam etc. • Stripping time for removing shuttering of various R.C.C structural elements • Repairing of formwork and housekeeping • Use of lifting gears for shifting and fixing of formwork components • Standard procedure for stacking and storing of formwork component <p>Demonstration/ Practical :-</p> <ul style="list-style-type: none"> • Demonstrate reading of schematic working drawing for carrying out shuttering work • Practice how to determine shuttering material requirement • Demonstrate assembling and dismantling of system formwork for R.C.C footing, column, wall, beam and slab • Demonstrate staking of formwork components • Demonstrate checking procedure of erected formwork for line, level, alignment and plumb within limit. 	
4	<p>Carry out quality check for shuttering works</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 04:00 Corresponding NOS Code CON/N0304</p>	<p>Theory:-</p> <ul style="list-style-type: none"> • Importance of quality checks in shuttering works • Maximum tolerance limits for key quality checks for shuttering works • Rectification of shuttering works • Basic fundamentals of reinforcement and concreting works • Process for carrying out quality checks for shuttering works <p>Demonstration/ Practical :-</p> <ul style="list-style-type: none"> • Demonstrate checking of column shutters for line, plumb, alignment, support and dimensional accuracy • Demonstrate checking of wall shutters for line, level, alignment, plumb, support and dimensional accuracy 	Tools same as above listed

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		<ul style="list-style-type: none"> • Demonstrate checking of footing shutters for line, position, alignment, support and dimensional accuracy • Demonstrate checking of beam shutters line, level, alignment, plumb, support and dimensional accuracy • Demonstrate checking of slab shutters for bottom support, level, dimensional accuracy, slab depth 	
5.	<p>Work effectively in a team to deliver desired results at the workplace</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 04:00</p> <p>Corresponding NOS Code CON/N8001</p>	<p>Theory:-</p> <ul style="list-style-type: none"> • Method of oral and written communication skills with co-workers, trade seniors while handling and carrying out visual checks on materials, tools and tackles, equipment • How to interpret scope of shuttering work, material/ tools handling by adhering to instructions or consulting with seniors • 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 behaviour with co-workers <p>Demonstration/ Practical :-</p> <ul style="list-style-type: none"> • The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition • Handling formwork materials, tools and equipment • Ensuring erection and dismantling of formwork as per formwork drawings and specifications • Inspecting quality of shuttering works with the help of team members for line, level, alignment, support, rigidity etc. 	<ol style="list-style-type: none"> 1. Classroom having seating requirement for 30 people 2. Toilet/Urinals (Separate for gents and Ladies) 3. Projector Blackboard
6.	<p>Plan and organize work to meet expected outcomes</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 06:00</p> <p>Corresponding NOS Code CON/N8002</p>	<p>Theory:-</p> <ul style="list-style-type: none"> • Basic concept of productivity, sequence of working and implementation of safety and organizational norms while working • Optimization of resources • To plan shuttering work within defined scope of work • Upkeep, storing and stacking methods of tools, materials used for domain specific works • Importance of housekeeping <p>Demonstration/ Practical :-</p> <ul style="list-style-type: none"> • The skills will be developed and practiced while carrying out following trade related 	

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		<p>activities in a predictable and familiar working condition</p> <ul style="list-style-type: none"> • Selection of materials, tools or devices for defined purpose in an optimum manner • Handling material, tools and equipment relevant to reinforcements works • Planning cutting, sizing and planning of timber activities • Carrying out erection and dismantling of formwork as per formwork drawings • Adherence to stipulated timelines for completion of shuttering work 	
7.	<p>Work according to personal health, safety and environment protocol at construction site</p> <p>Theory Duration (hh:mm) 01:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code CON/N9001</p>	<p>Theory:-</p> <ul style="list-style-type: none"> • 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 :- <ul style="list-style-type: none"> ○ 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 <p>Demonstration/ Practical :-</p> <ul style="list-style-type: none"> • The skills will be developed and practiced while carrying out following trade related activities in a predictable and familiar working condition. • Selection of PPEs and use them appropriately as per working need of reinforcement works, handling, storing, stacking and shifting of reinforcement material, tools and equipment • Selection of PPEs and use them appropriately as per working need of cutting, sizing and planning of timber and assembling and dismantling of formwork • Identification of locations, situations/ circumstances, malpractices which can be hazardous for general or shuttering works • Selection of fire extinguisher based on classification of fire, standard practice of storing & stacking firefighting equipment/ materials at work locations 	<p><u>PPEs</u></p> <ol style="list-style-type: none"> 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

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		<ul style="list-style-type: none"> Disposal of waste materials as per their nature and effects on weather
<p>Total Duration 68:00 hrs</p> <p>Theory Duration 12:00 hrs</p> <p>Practical Duration 56:00 hrs</p>	<p>Unique Equipment Required:</p> <ul style="list-style-type: none"> Classroom Requirement Classroom of 35 students capacity, Black/White board, Projector/LED Monitor, Computer, Trade specific charts and other teaching accessories <p><u>Hand Tools</u></p> <ul style="list-style-type: none"> Claw Hammer, Handsaw, Tenon saw, Iron Jack Planner, Wooden Marking Gauge, Wooden Mortise Gauge, Tri-Square, Auger, Farmer Chisel, Farmer Chisel, Mortise Chisel, Cutting Plane, Screw Driver 10", Marking Knife/Scribe, Wooden Mallet, Oil Stone (Rough / Smooth), Centre Punch, Bench Vice, Hacksaw Frame with blade, Triangle file - 6mm (Medium), Half Round File & Rasp cut file, Drill Bit, Plumb Bob, Ring Spanner, Double End Spanner, Screw Spanner 12" LM, Carpenter Working Table, Nail Bar <p><u>Measuring Instruments</u></p> <ul style="list-style-type: none"> Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line <p><u>General requirement</u></p> <ul style="list-style-type: none"> Lifting appliance (Sling, Shackle, Belts) <p><u>Materials</u></p> <ul style="list-style-type: none"> System formwork components and fixtures (for Footing, column, wall, beam, slab) Cup-lock scaffolding components (set)/Frame scaffold components, Staircase tower components with fixtures, Castor wheels, 40 NB pipes, Swivel coupler, Fixed clamp, Steel walkways, Aluminium/ GI ladder, Safety net <p><u>PPEs</u></p> <ul style="list-style-type: none"> Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Earplugs, Reflective jackets, Dust mask, Fire Prevention kit <p><u>Infrastructure</u></p> <ul style="list-style-type: none"> Class room for theory and assessment with 35 study chairs, Workshop/Mock-up yard for practical training and assessment, Toilet/Urinals (Separate for gents and Ladies), Single phase power supply points, Fire extinguishers (mechanical foam, CO2 and sand buckets with stand), First aid kit, Tool box with lock and key 	

Grand Total Course Duration: 68 Hours 0 Minutes