

Objective, Learning Outcomes, Modules, Assessments and Material List

**ASSISTANT SHUTTERING CARPENTER:**

<b>Submitted to:- Bihar Skill Development Mission, Labour Resources Department, GoB</b>	<b>Submitted By:- Simplex Infrastructures Ltd</b>
	<b>Session : 01</b>

Course name: Assistant Shuttering Carpenter

- Course Id- Aligned to CON/Q0302
- Candidate Eligibility: 18 years of Age
- Course Duration: 254 Hours

**CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE**

**Name and address of submitting body:**

**Consortium Led by Simplex Infrastructures Ltd**

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## List of documents submitted in support of the Qualifications File

1. Curriculum Document

### SUMMARY

<b>Qualification Title</b>	<b>Certificate in Assistant Shuttering Carpenter</b>
<b>Qualification Code</b>	<b>CON/Q0312</b>
<b>Nature and purpose of the qualification</b>	<b>Nature</b>  <b>254 Hours (32 days) Certificate Course for Assistant Shuttering Carpenter</b>  <b>Purpose</b>  Assistant shuttering carpenter is responsible for identification, handle and use of tools and tackles, materials and equipment. The responsibilities also include use of power tools/equipment for cutting and sizing of timber and plywood, providing support in assembling and dismantling of conventional and system formwork for R.C.C structures to complete work within specified time and tolerance.
<b>Body/bodies which will award the qualification</b>	<b>Consortium Led by Simplex and BSDM</b>
<b>Occupation(s) to which the qualification gives access</b>	<b>Shuttering Carpenter System</b>
<b>Entry requirements and / or recommendations</b>	<b>5<sup>th</sup> Standard Pass</b>

**1. OBJECTIVE OF THE COURSE: -**

This person at the end of the program should be able to identify, handle and use of tools and tackles, materials and equipment related to Shuttering Carpentry in which he should be able to use power tools/equipment for cutting and sizing of timber and plywood, provide support in assembling and dismantling of conventional and system formwork for R.C.C structures to complete work within specified time and tolerance.

**2. LEARNING OUTCOMES :-**

1. Use and maintain tools and equipment relevant to shuttering carpentry
2. Assist in making wooden shutters boards using in shuttering carpentry
3. Assist in assembling and dismantling conventional and system formwork for R.C.C structures
4. Erect and dismantle temporary scaffold up to 3.6 meter height
5. Work effectively in a team to deliver desired results at the workplace
6. Work according to personal health, safety and environment protocol at construction site

**3. MODULE- 254 Hours (32 Days) (CERTIFICATE PROGRAM IN ASSISTANT SHUTTERING CARPENTER)**

<b>DURATION :- 32 DAYS</b>	
<b><u>CERTIFICATE PROGRAM IN ASSISTANT SHUTTERING CARPENTER</u></b>	
<b>MODULE CODE &amp; NAMES</b>	
<b>1</b>	<b>Code :- CON/N0312</b> <b>Module :-</b> Use and maintain tools and equipment relevant to shuttering carpentry
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	This unit describes the skills and knowledge required to use and maintain tools, components, equipment and materials relevant to shuttering carpentry under instructions and close supervision
<b>MODULE COMPETENCE</b>	The user/individual on the job should know and understand: <ul style="list-style-type: none"><li>• Use hand tools such as claw hammer, hand saw, hack saw wooden planners, measuring tape, nailing hammer, try square, plumb bob and other relevant tools</li><li>• Use power tools for cutting, planeing and drilling of timber/plywood</li></ul>

	<ul style="list-style-type: none"> <li>• Use materials such as timbers, plywood, runner pieces of different size, wooden battens for shuttering work</li> <li>• Use bamboos &amp; ballis, props, acrow span, H-beam, shuttering sheets, foot plates, U head and other relevant components for shuttering works</li> </ul>
<b>2</b>	<p><b>Code :- CON/N0313</b></p> <p><b>Module :-</b> Assist in making wooden shutters boards using in shuttering carpentry</p>
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	This unit describes the skills and knowledge required to assist in making wooden shutters by cutting, sizing, planing and drilling of timber, plywood using power tools/equipment and making timber joints
<b>MODULE COMPETENCE</b>	<p>The user/individual on the job should know and understand:</p> <ul style="list-style-type: none"> <li>• Select circular saw blade based on thickness and type of wood to be cut and cut timber and plywood of different types and thickness using table mounted saw</li> <li>• Use measurement and marking tools for correct sizing of timber/plywood</li> <li>• Safely feed timber/ plywood to the table mounted saw</li> <li>• Make timber joint such as lap joint, mortis and tenon joints, dovetail joints and housing joints using appropriate hand tools</li> <li>• Assist in making shutter boards as per instructions</li> </ul>
<b>3</b>	<p><b>Code :- CON/N0314</b></p> <p><b>Module :-</b> Assist in assembling and dismantling conventional and system formwork for R.C.C structures</p>
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	This unit describes the skills and knowledge required to provide support in assembling and dismantling conventional and system formwork for R.C.C structures under instructions and close supervision
<b>MODULE COMPETENCE</b>	<p>The user/individual on the job should know and understand:</p> <ul style="list-style-type: none"> <li>• Assemble and dismantle conventional formwork for R.C.C structures and provide necessary assistance</li> <li>• Assemble and dismantle system formwork for R.C.C structures and provide necessary assistance</li> </ul>
<b>4</b>	<p><b>Code :- CON/N0101</b></p> <p><b>Module :-</b> Erect and dismantle temporary scaffold up to 3.6 meter height</p>
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	This unit describes the skills and knowledge required to erect and dismantle 3.6 meter temporary scaffold

<b>MODULE COMPETENCE</b>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> <li>• Level area where scaffold need to be erected and check for ground compactness if required</li> <li>• Place base plates and sole boards on the ground as per markings and instructions PC5. use proper components and follow standard procedure for erecting temporary scaffold up to 3.6m.</li> <li>• Fix walk-boards, guard rails, toe-boards and other components on working platform</li> <li>• Follow standard procedure for dismantling of temporary scaffold up to 3.6m.</li> </ul>
<b>5</b>	<p><b>Code :- CON/N8001</b></p> <p><b>Module :-</b> Work effectively in a team to deliver desired results at the workplace</p>
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	<p>This unit describes the skills and knowledge required to work effectively within a team to achieve the desired results.</p>
<b>MODULE COMPETENCE</b>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> <li>• Address the problems effectively and report if required to immediate supervisor appropriately and work cohesively as a team</li> <li>• Receive instructions clearly from superiors and respond effectively on same</li> <li>• Communicate to team members/subordinates for appropriate work technique and method</li> <li>• Sclarification and advice as per requirement and applicability</li> </ul>
<b>6</b>	<p><b>Code :- CON/N9001</b></p> <p><b>Module :-</b> Work according to personal health, safety and environment protocol at construction site</p>
<b>RATIONALE &amp; OBJECTIVE OF THE MODULES</b>	<p>This unit covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocol at construction site</p>
<b>MODULE COMPETENCE</b>	<p>The user/individual on the job should know and understand:</p> <ul style="list-style-type: none"> <li>• Follow safety norms as defined by organization</li> <li>• Adopt healthy &amp; safe work practices</li> <li>• Implement good housekeeping practices</li> </ul>
<b>MODE OF DELIVERY</b>	<p>Practical and theoretical</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p data-bbox="284 450 571 566"><b>Operate tools and equipment relevant to shuttering carpentry work</b></p> <p data-bbox="284 600 496 689"><b>Theory Duration</b> (hh:mm) 02:00</p> <p data-bbox="284 696 517 786"><b>Practical Duration</b> (hh:mm) 36:00</p> <p data-bbox="284 813 547 902"><b>Corresponding NOS Code</b> CON/N0312</p>	<ul data-bbox="603 450 1262 1379" style="list-style-type: none"> <li>• List the different types of hand and power tools used in shuttering works along with their storing and stacking technique</li> <li>• Describe the process adopted for care and maintenance of hand and power tools used in shuttering carpentry works</li> <li>• Demonstrate operation of hand tools for cutting, planning and drilling of timber/ plywood.</li> <li>• Demonstrate operation of power tools for cutting, planning and drilling of timber/ plywood.</li> <li>• List the different types of woods used in shuttering carpentry works</li> <li>• Explain the common defects in wood</li> <li>• Identify common defects in wood visually</li> <li>• List the different types of plywood and their thickness</li> <li>• Describe the various type of slings, shackles and lifting belts</li> <li>• Demonstrate by using slings, shackles and lifting belt for lifting operation of shuttering components.</li> <li>• Demonstrate by</li> <li>• Explain the standard procedure adopted for shifting and stacking of various shuttering carpentry and scaffolding materials</li> <li>• Describe ways to optimize use of consumables</li> <li>• Recognize importance of housekeeping and various procedures involved in it</li> </ul>	<ul data-bbox="1305 450 1528 1581" style="list-style-type: none"> <li>• Claw Hammer</li> <li>• Ball Pin Hammer</li> <li>• Handsaw</li> <li>• Tenon saw</li> <li>• Wooden Jack Planner</li> <li>• Iron Jack Planner</li> <li>• Wooden Marking Gauge</li> <li>• Wooden Mortise Gauge</li> <li>• Auger</li> <li>• Farmer Chisel</li> <li>• Mortise Chisel</li> <li>• Cutting Player</li> <li>• Screw Driver</li> <li>• Star Screw Driver</li> <li>• Marking Knife / Scribe</li> <li>• Wooden Mallet</li> <li>• Oil Stone (Rough / Smooth)</li> <li>• Cutting Chisel</li> <li>• Center Punch</li> <li>• Bench Vice</li> <li>• Hacksaw Frame with blade</li> <li>• Triangle file</li> <li>• Drill Bit</li> <li>• Ring Spanner</li> <li>• Double End Spanner</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			<ul style="list-style-type: none"> <li>• Flat File</li> <li>• Half Round File</li> <li>• hand held circular saw</li> <li>• hand held zig saw</li> <li>• hand drill machine</li> <li>• table mounted saw</li> <li>• planing machine</li> <li>• power drilling machine</li> <li>• Masking tape</li> <li>• Nylon line thread</li> <li>• Nails</li> <li>• Spirit Level</li> <li>• Steel Measuring Tape</li> <li>• Plumb Bob</li> <li>• water level tube</li> <li>• Tri-Square</li> </ul>
2	<p><b>Make wooden shutter boards used in shuttering carpentry works</b></p> <p><b>Theory Duration</b> (hh:mm) 02:00</p> <p><b>Practical Duration</b> (hh:mm) 36:00</p> <p><b>Corresponding NOS Code</b> CON/N0313</p>	<ul style="list-style-type: none"> <li>• Demonstrate marking and measurement on shutter board, cutting to the specified size, planing and drilling of holes of required diameter.</li> <li>• Operate hand and power tools used for making shutter boards applying safe work practices</li> <li>• Describe the procedure for making shuttering boards</li> <li>• Describe different types of timber joints and their areas of applications</li> <li>• Explain the process and importance of wood seasoning</li> <li>• Demonstrate use of table mounted saw for cutting shutter boards.</li> <li>• Demonstrate the use of planing machine for planing shutter boards.</li> <li>• Demonstrate making of lap joint, mortis and tenon, dovetail and housing joints.</li> </ul>	<ul style="list-style-type: none"> <li>• hand held circular saw</li> <li>• hand held zig saw</li> <li>• hand drill machine</li> <li>• table mounted saw</li> <li>• planing machine</li> <li>• Claw Hammer</li> <li>• Ball Pin Hammer</li> <li>• Handsaw</li> <li>• Tenon saw</li> <li>• Wooden Jack Planner</li> <li>• Iron Jack Planner</li> <li>• Wooden Marking Gauge</li> <li>• Farmer Chisel</li> <li>• Mortise Chisel</li> <li>• Marking Knife / Scribe</li> <li>• Wooden Mallet</li> <li>• Cutting Chisel</li> <li>• Bench Vice</li> <li>• Hacksaw Frame with blade</li> <li>• Flat File</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	1120:00		<ul style="list-style-type: none"> <li>• Half Round File</li> <li>• Spirit Level</li> <li>• Steel Measuring Tape</li> <li>• Plumb Bob</li> <li>• Tri-Square</li> </ul>
3	<p><b>Assist in assembling and dismantling conventional formwork for RCC structures</b></p> <p><b>Theory Duration</b> (hh:mm) 11:00</p> <p><b>Practical Duration</b> (hh:mm) 52:00</p> <p><b>Corresponding NOS Code</b> CON/N0314</p>	<ul style="list-style-type: none"> <li>• Apply the basic knowledge of units, measurement and arithmetic calculation relevant to shuttering work</li> <li>• Describe standard procedure for assembling and dismantling conventional formwork</li> <li>• Describe the procedure to provide staging support in shuttering works using bamboos, ballis, wooden channels, wedge, base plate etc.</li> <li>• Explain procedure for erection and dismantling of conventional formwork</li> <li>• Explain the checks required for line, level and alignment</li> <li>• Explain the various ties used in conventional shuttering</li> <li>• Demonstrate transfer of level from reference point</li> <li>• Demonstrate erection of staging for conventional shuttering</li> <li>• Demonstrate aligning and supporting of shutter boards as per instruction</li> <li>• Demonstrate erection of aluminium and steel formwork as per instructions.</li> <li>• Demonstrate the various checks conducted in erection and dismantling of conventional formwork</li> <li>• Demonstrate tying of different types of knots</li> <li>• Describe the corrective actions required for maintaining line, level and alignment</li> <li>• Demonstrate shifting of materials and tools required for assembling conventional scaffolding</li> <li>• Demonstrate safe de-shuttering of shuttering boards and other components as per instruction.</li> </ul>	<ul style="list-style-type: none"> <li>• Claw Hammer</li> <li>• Ball Pin Hammer</li> <li>• Handsaw</li> <li>• Tenon saw</li> <li>• Wooden Jack Planner</li> <li>• Iron Jack Planner</li> <li>• Wooden Marking Gauge</li> <li>• Wooden Mortise Gauge</li> <li>• Auger</li> <li>• Farmer Chisel</li> <li>• Mortise Chisel</li> <li>• Cutting Player</li> <li>• Screw Driver</li> <li>• Star Screw Driver</li> <li>• Marking Knife / Scribe</li> <li>• Wooden Mallet</li> <li>• Oil Stone (Rough / Smooth)</li> <li>• Cutting Chisel</li> <li>• Center Punch</li> <li>• Bench Vice</li> <li>• Hacksaw Frame with blade</li> <li>• Triangle file</li> <li>• Drill Bit</li> <li>• Ring Spanner</li> <li>• Double End Spanner</li> <li>• Flat File</li> <li>• Half Round File</li> <li>• Spirit Level</li> <li>• Steel Measuring Tape</li> <li>• Plumb Bob</li> <li>• water level tube</li> <li>• Tri-Square</li> </ul>
4	<p><b>Assist in assembling and dismantling</b></p>	<ul style="list-style-type: none"> <li>• Describe standard procedure for assembling and dismantling system formwork</li> </ul>	<ul style="list-style-type: none"> <li>• Claw Hammer</li> <li>• Ball Pin Hammer</li> </ul>



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>system formwork for RCC structures</b></p> <p><b>Theory Duration</b> (hh:mm) 11:00</p> <p><b>Practical Duration</b> (hh:mm) 52:00</p> <p><b>Corresponding NOS Code</b> CON/N0314</p>	<ul style="list-style-type: none"> <li>• Describe the procedure to provide support in shuttering works</li> <li>• Explain procedure for erection and dismantling of system formwork</li> <li>• Explain the checks required for line, level and alignment.</li> <li>• Demonstrate erection of staging/ shuttering for system form works as per instruction.</li> <li>• Demonstrate the various checks conducted in erection and dismantling of system formwork</li> <li>• Describe the corrective actions required for maintaining line, level and alignment</li> <li>• Demonstrate safe de-shuttering of shutter boards and components as per instruction</li> <li>• Demonstrate shifting of materials and tools required for assembling system scaffolding</li> </ul>	<ul style="list-style-type: none"> <li>• Handsaw</li> <li>• Tenon saw</li> <li>• Wooden Jack Planner</li> <li>• Iron Jack Planner</li> <li>• Wooden Marking Gauge</li> <li>• Wooden Mortise Gauge</li> <li>• Auger</li> <li>• Farmer Chisel</li> <li>• Mortise Chisel</li> <li>• Cutting Player</li> <li>• Screw Driver</li> <li>• Star Screw Driver</li> <li>• Marking Knife / Scribe</li> <li>• Wooden Mallet</li> <li>• Oil Stone (Rough / Smooth)</li> <li>• Cutting Chisel</li> <li>• Center Punch</li> <li>• Bench Vice</li> <li>• Hacksaw Frame with blade</li> <li>• Triangle file</li> <li>• Drill Bit</li> <li>• Ring Spanner</li> <li>• Double End Spanner</li> <li>• Flat File</li> <li>• Half Round File</li> <li>• Spirit Level</li> <li>• Steel Measuring Tape</li> <li>• Plumb Bob</li> <li>• water level tube</li> <li>• Tri-Square</li> </ul>
5	<p><b>Erect and dismantle temporary scaffold up to 3.6-meter height</b></p> <p><b>Theory Duration</b> (hh:mm) 02:00</p> <p><b>Practical Duration</b> (hh:mm)</p>	<ul style="list-style-type: none"> <li>• Explain scaffolding and its purpose</li> <li>• List the common materials and tools used for erection of scaffolding (pipe, cup lock (vertical and ledgers), H-frames, bamboo and balli</li> <li>• List the functions of different hand tools like hammer, spanner, pulleys, hooks, ropes, etc., used for erection/ dismantling of scaffolds</li> <li>• List the visual checks to be carried out on the scaffolding components to ascertain their usability</li> <li>• Identify different components of a temporary scaffolding such as base, toe board, guard rails, platform, walkways, ladder and so on</li> </ul>	<ul style="list-style-type: none"> <li>• Hammer</li> <li>• Spanner (set)</li> <li>• Wrench</li> <li>• Pulley</li> <li>• Rope</li> <li>• Nuts and bolts</li> <li>• Measuring tape</li> <li>• Spirit level</li> <li>• Plumb-bob</li> <li>• Mason's line</li> <li>• Helmet</li> <li>• Safety shoes</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	28:00 <b>Corresponding NOS Code</b> CON/N0101	<ul style="list-style-type: none"> <li>• Explain the functions of materials, components and accessories used in scaffolding</li> <li>• Demonstrate preparation of scaffolding base</li> <li>• Explain the methods adopted for the erection of the scaffold to ensure its safety</li> <li>• Demonstrate erection of a scaffold up to 3.6 m height using pipes and couplers/ cup lock system/ H frame employing appropriate hand tools</li> <li>• Explain various checks to be done on completion of erection of scaffolds, such as verticality check, stability check etc.</li> <li>• Demonstrate the checks required for verticality, rigidity and stability during erection of scaffold.</li> <li>• Explain the sequence and standard procedure of dismantling and stacking of scaffold</li> <li>• Demonstrate the dismantling of the erected scaffold.</li> <li>• Demonstrate the stacking of material, components, tools and accessories during erection and after dismantling.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety belt</li> <li>• Cotton hand gloves</li> <li>• Goggles</li> <li>• Reflective jackets</li> </ul>
6	<b>Describe the benefits of working effectively in a team to deliver desired results at the workplace</b>  <b>Theory Duration</b> (hh:mm) 02:00  <b>Practical Duration</b> (hh:mm) 08:00  <b>Corresponding NOS Code</b> CON/N8001	<ul style="list-style-type: none"> <li>• Demonstrate effective communication skills while interacting with co-workers, trade seniors and others during the assigned task.</li> <li>• Interpret work sketches, formats, permits, protocols, checklists and other work-related requirements which are to be conveyed to other team members</li> <li>• Demonstrate effective reporting to seniors as per applicable organisational norms.</li> <li>• Explain effects and benefits of timely actions relevant to bar bending works with examples</li> <li>• Explain importance of team work and its effects relevant to bar bending works with examples</li> <li>• Demonstrate team work skills during assigned task.</li> </ul>	
7	<b>Work according to personal health, safety and environment protocol at construction site</b>  <b>Theory Duration</b> (hh:mm) 02:00  <b>Practical Duration</b> (hh:mm) 10:00  <b>Corresponding NOS Code</b> CON/N9001	<ul style="list-style-type: none"> <li>• Explain the types of hazards at the construction sites</li> <li>• Identify the hazards specific to the shuttering work</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>• Demonstrate the operation of fire extinguisher.</li> <li>• Demonstrate different methods involved in providing first aid to the affected person.</li> <li>• Explain the importance of worker participation in safety/mock drills</li> <li>• Demonstrate the use of all Personal Protective Equipment (PPE) like helmet, safety shoe, safety belt, safe jackets and other safety equipment relevant to shuttering work.</li> </ul>	<ul style="list-style-type: none"> <li>• Safety PPE</li> <li>• Safety shoes</li> <li>• Safety Goggles</li> <li>• Safety Helmet</li> <li>• Cotton Hand - Gloves</li> <li>• Tools Bag</li> <li>• Safety Belt</li> <li>• Face Mask</li> <li>• Operator – Leather Apron</li> <li>• Safety Shoes (Assorted Size)</li> <li>• Ear Muff</li> <li>• Reflective jackets</li> <li>• Safety message boards</li> </ul>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Explain the reporting procedure adopted 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 wastes produced at a construction site including their disposal method</li> <li>• Explain the purpose and importance of vertigo test at construction site</li> <li>• Demonstrate vertigo test</li> <li>• List out basic medical tests required for working at construction Site</li> <li>• Explain the types of ergonomic principles adopted while carrying out specific task at the construction</li> <li>• Explain the benefits of basic ergonomic principles used at construction sites.</li> <li>• Explain the importance of housekeeping</li> <li>• Demonstrate housekeeping practice followed after shuttering works.</li> </ul>	<ul style="list-style-type: none"> <li>• Fire extinguishers</li> <li>• Sand buckets</li> </ul>
		<p><b>Total Duration</b> <b>254:00 hours</b></p> <p><b>Theory Duration</b> <b>32:00 hours</b></p> <p><b>Practical Duration</b> <b>222:00 hours</b></p>	