Model Curriculum

QP Name: Shuttering Carpenter

Elective 1: System Formwork
Elective 2: Conventional Formwork

QP Code: CON/Q3001

Version: 4.0

NSQF Level: 4

Model Curriculum Version: 4.0

Construction Skill Development Council of India|| 201 and 202, Tower 4B, DLF Corporate Park, Mehrauli-Gurgaon Rd, DLF Phase 3, Gurugram, Haryana, 122002

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Training Parameters

Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Shuttering Carpentry
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7115.0300
Minimum Educational Qualification and Experience	12th grade pass OR Completed 2nd year of 3-year diploma after 10th (in Civil Engineering) OR 11th grade pass with 1-year relevant experience OR 10th grade pass with 2-year relevant experience OR 8th grade pass with 4-year relevant experience OR Previous relevant qualification of NSQF Level 3 (Assistant Shuttering Carpenter) with 3-year relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	30/04/2025
Next Review Date	30/04/2028
NSQC Approval Date	08/05/2025
QP Version	4.0
Model Curriculum Creation Date	30/04/2025
Model Curriculum Valid Up to Date	30/04/2028
Model Curriculum Version	4.0
Minimum Duration of the Course	420 Hours
Maximum Duration of the Course	570 Hours

Program Overview

This section summarises 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 to:

- Explain how to make wooden shutters used in shuttering carpentry**.**
- Show how to carry out quality checks for the shuttering works.
- Explain the importance of working effectively in a team to deliver desired results at the workplace.
- Elucidate ways to plan and organize work to meet expected outcomes.
- Elucidate ways to work according to personal health, safety and environment protocols at the construction site.
- Discuss the applicable employability skills.
- Demonstrate how to assemble and dismantle system formwork for RCC structures.
- Demonstrate how to assemble and dismantle conventional shuttering/formwork for RCC structures.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
CON/N0302: Make wooden shutters used in shuttering carpentry **NOS Version- 4.0** **NSQF Level- 4**	**15:00**	**30:00**	**15:00**	**00:00**	**60:00**
Module 1: Introduction to the Role of a Shuttering Carpenter	05:00	00:00	0:00	00:00	05:00
Module 2: Making wooden shutters used in shuttering carpentry	10:00	30:00	15:00	00:00	55:00
CON/N0304: Carry out quality check for shuttering works **NOS Version- 4.0** **NSQF Level- 4**	**30:00**	**45:00**	**15:00**	**00:00**	**90:00**
Module 3: Quality check for shuttering works	30:00	45:00	15:00	00:00	90:00
CON/N9001: Work according to personal health, safety and	**05:00**	**25:00**	**00:00**	**00:00**	**30:00**

environment protocols at the construction site **NOS Version-3.0** **NSQF Level- 4**					
Module 4: Follow safety norms as defined by the organization, adopt healthy and safe work practices	05:00	25:00	00:00	00:00	30:00
CON/N8001: Work effectively in a team to deliver desired results at the workplace **NOS Version- 3.0** **NSQF Level- 4**	**05:00**	**25:00**	**00:00**	**00:00**	**30:00**
Module 5: Work according to personal health, safety and environment protocols at the construction site	05:00	25:00	00:00	00:00	30:00
CON/N8002: Plan and organize work to meet expected outcomes **NOS Version- 4.0** **NSQF Level- 4**	**05:00**	**25:00**	**00:00**	**00:00**	**30:00**
Module 6: Plan and organize work to meet expected outcomes	05:00	25:00	00:00	00:00	30:00
DGT/VSQ/N0101: Employability Skills **NOS Version- 1.0** **NSQF Level- 2**	**30:00**	**00:00**	**00:00**	**00:00**	**30:00**
Module 7: Employability Skills	30:00	00:00	0:00	00:00	30:00
Total Duration	**90:00**	**150:00**	**30:00**	**00:00**	**270:00**

Electives Modules

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

Elective 1: System Formwork

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
CON/N0303: Assemble and dismantle system formwork for R.C.C structures **NOS Version- 4.0** **NSQF Level- 4**	**30:00**	**90:00**	**30:00**	**00:00**	**150:00**
Module 8: Assembling and dismantling system formwork for R.C.C structures	30:00	90:00	30:00	00:00	150:00
Total Duration	**30:00**	**90:00**	**30:00**	**00:00**	**150:00**

Elective 2: Conventional Formwork

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
CON/N0315: Assemble and dismantle conventional shuttering / formwork for RCC structures **NOS Version- 4.0** **NSQF Level- 4**	**30:00**	**90:00**	**30:00**	**00:00**	**150:00**
Module 9: Assembling and dismantling conventional shuttering / formwork for RCC structures	30:00	90:00	30:00	00:00	150:00
Total Duration	**30:00**	**90:00**	**30:00**	**00:00**	**150:00**

Module Details

Module 1: Introduction to the Role of a Shuttering Carpenter

Mapped to CON/N0302, v4.0

Terminal Outcomes:

- Discuss the job role of a Shuttering Carpenter.

Duration: 05:00	**Duration**: 00:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the size and scope of the Construction industry and its sub-sectors. • Discuss the role and responsibilities of a Shuttering Carpenter. • Identify various employment opportunities for a Shuttering Carpenter.	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Making wooden shutters used in shuttering carpentry

Mapped to CON/N0302, v4.0

Terminal Outcomes:

- Demonstrate the Cutting, sizing, and planing of timber and plywood using appropriate tools.
- Show how to make wooden shutter panel board.

Duration: 10:00	Duration: 30:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the use of different tools used for carpentry work. • Explain the handling and maintenance procedure of hand and power tools. • Explain the various features of different types of timber used in shuttering works. • Discuss about the seasoning of timber and common defects in timber. • Explain the methods to select quality materials and tools as per requirement in carpentry work. • Describe the sequence and standard practice of marking, laying out and cutting of form sheathing and stiffeners as per requirement for carpentry works. • Explain the importance of using different types of joints such as dovetail joint, Tenon and mortise and lap joints. • Discuss the steps for the preparation of different types of joints used in wooden shutters. List the safety precautions followed while using power tools for the preparation of shutters/ frames.	• Show how to Interpret sketches and working drawings used for shuttering work. • Demonstrate the visual checks to determine the quality of timber, plywood and other materials used for preparation of shutters. • Show how to prepare cutting plan for the plywood/ timber as per the shape and size of the shuttering components. • Show how to measure and mark plywood and timber using measuring and marking tools. • Show how to measure and mark sheathing and stiffeners at sketched location. • Demonstrate the cutting of sheathing material within the tolerance limit using various hand and power tools as per instructions /specifications. • Demonstrate making the wooden shutter panels using different types of joints such as dovetail, tenon and mortise, and lap joints as per specifications. • Show how to repair defects on the prepared shutters as per instructions.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop.	
Tools, Equipment and Other Requirements	
Claw Hammer, Handsaw, Tenon saw, Iron Jack Planner , Wooden Marking Gauge , Wooden Mortise Gauge, Spirit Level , Tri-Square, Auger , Steel Measuring Tape, Farmer Chisel , Farmer Chisel , Mortise Chisel , Cutting Player, Screw Driver 10", Marking Knife / Scribe , Wooden Mallet, Oil Stone (Rough / Smooth), Center Punch , Bench Vice, Hacksaw Frame with blade, Triangle file - 6mm (Medium) , Half Round File and Rasp cut file, Drill Bit, Plumb Bob, Ring Spanner , Double End Spanner, Screw Spanner 12" LM, Carpenter Working Table, Nail Bar, Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line, Lifting appliance (Sling, Shackle, Belts), Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention Kit.	

Module 3: Quality check for shuttering works

Mapped to CON/N0304, v4.0

Terminal Outcomes:

- Show how to check the quality of shuttering works for proper functioning.

Duration: 30:00	**Duration: 45:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain different types of system formwork/ conventional formwork. • Describe the different types of material and components used in system formwork/ conventional formwork with specification • Explain the various checks for plumb, level and alignment of the formwork. • Describe the importance of Indian Standard / International codes and maximum tolerance limits for key quality checks of shuttering works. • Discuss the sequence followed for quality checks in shuttering works. • State the do's and don'ts required during rectification of shuttering works. • Explain the basics and fundamentals of reinforcement work, shuttering work and concreting works. • Discuss the application of release agent on shuttering panels. • Explain the process of obtaining approval for the assembled formwork.	• Show how to interpret of the rough sketches / schematic working drawings/ cutting plans used in shuttering carpentry work. • Demonstrate the scope for covers to the reinforcement steel in shuttering works as per the given sketches. • Show how to check for the location, dimensions, rigidity of joints of plywood and timber. • Show how to check for verticality, position and spacing of props as per the load bearing capacity and support. • Demonstrate the corrective measure to be taken if twist is observed in alignment of the formwork. • Demonstrate the rectification measures of formwork boards / plates after their removal. • Perform checks to ensure the line, level and alignment of the shuttering woks with in tolerance limit and according to sketches / instructions. • Demonstrate the use of different type of support for formwork to ensure its stability. • Demonstrate procedure of obtaining approval for the assembled formwork.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Claw Hammer, Handsaw, Tenon saw, Iron Jack Planner , Wooden Marking Gauge , Wooden Mortise Gauge, Spirit Level , Tri-Square, Auger , Steel Measuring Tape, Farmer Chisel , Farmer Chisel , Mortise Chisel , Cutting Player, Screw Driver 10", Marking Knife / Scribe , Wooden Mallet, Oil Stone (Rough / Smooth), Center Punch , Bench Vice, Hacksaw Frame with blade, Triangle file - 6mm (Medium) , Half Round File and Rasp cut file, Drill Bit, Plumb Bob, Ring Spanner , Double End Spanner, Screw Spanner 12" LM, Carpenter Working Table, Nail Bar, Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line, Lifting appliance (Sling, Shackle, Belts), Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention kit	

Module 4: Work according to personal health, safety and environment protocols at the construction site

Mapped to CON/N9001, v3.0

Terminal Outcomes:

- Explain the importance of following safety norms as defined by the organization.
- Explain the need to adopt healthy & safe work practices.
- Describe the process of implementing good housekeeping and environment protection process and activities.
- Explain the importance of following infection control guidelines as per applicability.

Duration: 05:00	Duration: 25:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the reporting procedures in cases of breaches or hazards for site safety, accidents, and emergency situations as per guidelines. • Explain different types of safety hazards at construction sites. • Discuss basic ergonomic principles as per applicability. • Describe the procedure for responding to accidents and other emergencies at the site. • Explain the importance of handling tools, equipment, and materials as per applicable norms. • Explain the effect of construction material on health and environments as per applicability. • Describe various environmental protection methods as per applicability. • Explain the storage requirement of waste including non-combustible scrap material and debris, combustible scrap material and debris, general construction waste and trash (non-toxic, non-hazardous), any other hazardous wastes and any other flammable wastes at the appropriate location. • Explain how to use hazardous material in a safe and appropriate manner as per applicability. • Explain types of fire. • Describe the procedure of operating different types of fire extinguishers. • State safety relevant to tools, tackles, and equipment as per applicability.	• Demonstrate how to follow emergency and evacuation procedures in case of accidents, fires, or natural calamities. • Show how to operate different types of fire extinguishers corresponding to various types of fires as per EHS guidelines. • Demonstrate the use of appropriate Personal Protective Equipment (PPE) as per work requirements for Head Protection, Ear Protection, Fall Protection, Foot Protection, Face and Eye Protection, Hand and Body Protection, and Respiratory Protection (if required). • Demonstrate how to check and install all safety equipment as per standard guidelines. • Show how to collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature. • Show how to clean and disinfect all materials, tools and supplies before and after use.

• List housekeeping activities relevant to the task. • Elucidate ways of transmission of infection • Explain the ways to manage infectious risks at the workplace. • Describe different methods of cleaning, disinfection, sterilization, and sanitization. • List the symptoms of infection like fever, cough, redness, swelling, and inflammation.	
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety Tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
Leather Hand Gloves, Jumpsuit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety Tags, Safety Notice board	

Module 5: Work effectively in a team to deliver desired results at the workplace

Mapped to CON/N8001, v3.0

Terminal Outcomes:

- Explain the importance of interacting and communicating in an effective manner.
- Elucidate ways to support co-workers to execute the project requirements.
- Elucidate ways to practice inclusion at the workplace.

Duration: 05:00	Duration: 25:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Elucidate own roles and responsibilities. • Explain the importance of effective communication. • Elucidate the consequence of poor teamwork on project outcomes, timelines, safety at the construction site, etc. • Explain different modes of communication used at the workplace. • Explain the importance of creating healthy and cooperative work environment among the gangs of workers. • Elucidate applicable techniques of work, properties of materials used, tools and tackles used, safety standards that co-workers might need as per the requirement. • Explain the importance of proper and effective communication and the expected adverse effects in case of failure relating to quality, timeliness, safety, risks at the construction project site. • Explain the importance and need of supporting co-workers facing problems for the smooth functioning of work. • Discuss the fundamental concept of gender equality. • Explain how to recognise and be sensitive to issues of disability, culture and gender. • Discuss legislation, policies, and procedures relating to gender sensitivity and cultural diversity including their impact on the area of operation.	• Demonstrate how to pass on work-related information/requirements clearly to the team members. • Show how to report any unresolved problem to the supervisor immediately. • Demonstrate ways to hand over the required material, tools, tackles, equipment and work fronts timely to interfacing teams. • Demonstrate ways to work together with co-workers in a synchronized manner. • Demonstrate effective implementation of gender-neutral practices at the workplace. • Demonstrate ways to address discriminatory and offensive behaviour in a professional manner as per organizational policy.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 6: Plan and Organize Work to meet Expected Outcomes

Mapped to CON/N8002, v4.0

Terminal Outcomes:

- Elucidate ways to plan and prepare for work.
- Explain the importance of organising required resources as per the work plan.
- Explain the importance of completing work as per the plan.

Duration: 05:00	**Duration: 25:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of proper housekeeping including safe waste disposal. • Discuss policies, procedures and work targets set by superiors. • Explain how to identify work activities that need to be planned and organized. • Explain how to determine the task requirements. • Explain how to determine the quality requirements related to the task. • Elucidate how to undertake all aspects of planning and organizing the task, including interpretation of task, reading drawings/schedules, arranging resources, reporting problems etc. • Explain how to implement the planned activities.	• Demonstrate ways to determine the work requirements corresponding to the task (drawings/schedules/instructions/methodology), safety, tools and equipment prior to the commencement of the task. • Show how to prepare the work areas in coordination with team members. • Demonstrate the procedures for organizing the required materials, tools and tackles required for the task. • Demonstrate how to use resources in an optimum manner to avoid any unnecessary wastage. • Demonstrate the practices to use tools, tackles and equipment carefully to avoid damage. • Show how to clean and organise the workplace after completion of tasks.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 7: 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 a 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 the internet for browsing, and 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 **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

Elective 1: System Formwork

Module 8: Assembling and dismantling system formwork for R.C.C structures

Mapped to CON/N0303, v4.0

Terminal Outcomes:

- Explain how to assemble and dismantle system formwork for RCC structures.

Duration: 30:00	Duration: 90:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain how to interpret the sketches/ schematic working drawing relevant to system formwork. • Discuss about system formwork and its types. • Describe the difference between conventional and system formwork. • List the various types of shuttering material with their specifications. • Discuss about consumables used in shuttering work. • Explain different types of releasing agents (shuttering oil, cream emulsions, chemical release agents). • Discuss the standard procedure for assembling and dismantling of system formwork for R.C.C footing, column, wall, beam, slab. • State general tolerance limit for shuttering works. • Discuss the standard procedure for dismantling of system formwork for R.C.C footing, column, wall, slab, beam etc. • Explain the importance of stripping time for removing shuttering of various R.C.C structural elements. • Describe the procedure for repairing the formwork. • Discuss the use of lifting gears for shifting and fixing of formwork components. • Explain the standard procedure for stacking and storing of formwork components.	• Demonstrate reading of schematic working drawing for shuttering works. • Show how to perform checks to ensure cleanliness of shutters, suitability of supporting base, availability of tools, availability of components, availability of fixtures prior to erection/use of system formwork. • Determine shuttering materials required for work. • Demonstrate assembling of system formwork for R.C.C footing, column, wall, beam and slab. • Demonstrate methods to check the erected formwork for line, level, alignment and plumb within tolerance limit. • Demonstrate dismantling of system formwork for R.C.C footing, column, wall, beam and slab. • Show how to check the quality of formwork materials for reusability after dismantling. • Demonstrate stacking of formwork components.
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Claw Hammer, Handsaw, Tenon saw, Iron Jack Planner , Wooden Marking Gauge , Wooden Mortise Gauge, Spirit Level , Tri-Square, Auger , Steel Measuring Tape, Farmer Chisel , Farmer Chisel , Mortise Chisel , Cutting Player, Screw Driver 10", Marking Knife / Scribe , Wooden Mallet, Oil Stone (Rough / Smooth), Center Punch , Bench Vice, Hacksaw Frame with blade, Triangle file - 6mm	

(Medium) , Half Round File and Rasp cut file, Drill Bit, Plumb Bob, Ring Spanner , Double End Spanner, Screw Spanner 12" LM, Carpenter Working Table, Nail Bar, Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line, Lifting appliance (Sling, Shackle, Belts), Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention Kit.

Elective 2: Conventional Formwork

Module 9: Assembling and dismantling conventional shuttering / formwork for RCC structures

Mapped to CON/N0315, v4.0

Terminal Outcomes:

- Explain how to assemble and dismantle conventional shuttering /formwork for RCC structures.

Duration: 30:00	Duration: 90:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain how to interpret sketches / schematic working drawing/ cutting plan relevant to shuttering work. • Discuss about conventional formworks. • Discuss the importance of handling of hand and power tools and their basic maintenance. • Discuss the defects in bamboo, ballies, timber and plywood etc. • Explain the application of different types of timber and non-timber materials used in different shuttering works. • Discuss the standard shape and size of carpentry tools. • Discuss the use different types of material used in conventional shuttering works. • Explain the importance of tying knots and different type of knots used for connection of bamboos and ballies. • Discuss the various components of the conventional formwork such as pipes, coupler, tying thread and other fixtures. • Discuss the sequential steps for erection and bracing of formwork, as per standard procedure. • Explain the method statement used for the erection of conventional staging using bamboo, ballies, pipe and coupler. • List the do's and don'ts applicable for erection of conventional staging either using bracings or bamboo and ballies or pipe and coupler. • Explain the importance of checks with respect to plumb, level and alignment for the formwork. • Discuss the different type of shuttering required for various structures with its applicable limits of tolerances.	• Show how to perform check to ensure cleanliness of shutters, suitability of supporting base, availability of tools, availability of components, availability of fixtures prior to erection/use of conventional formwork. • Demonstrate the application of releasing agent to sheathing materials as per the specification. • Demonstrate how to position and strike box-outs and bolt boxes, grout checks, level controls, angle fillets and features • Show how to use the supports such as runner pieces, timber, props, tie systems appropriately for positioning and providing support. • Show how to provide the braces for formwork support as per the specification and requirement. • Show how to use form sheet or other appropriate packing material for ensuring the water tightness of form. • Demonstrate how to fix tie rods, supports, bracings after erection of formwork shutters. • Show how to perform checks for line, level and alignment of the erected formwork as per permissible tolerance limits. • Show how to perform checks for dimensional accuracy and right angle, and take necessary corrective action if required. • Demonstrate the standard procedure for dismantling of formwork shutters manually or by mechanical means as per the requirements

• Describe the procedure for positioning or attaching tie systems, soldiers and walling. • Explain the properties and method of application of release agents. • Explain the sequential step for dismantling of conventional formwork shutters.	• Show how to check the quality of formwork materials for reusability after dismantling. • Demonstrate proper storing, stacking and cleaning of formwork materials after dismantling
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Claw Hammer, Handsaw, Tenon saw, Iron Jack Planner , Wooden Marking Gauge , Wooden Mortise Gauge, Spirit Level , Tri-Square, Auger , Steel Measuring Tape, Farmer Chisel , Farmer Chisel , Mortise Chisel , Cutting Player, Screw Driver 10", Marking Knife / Scribe , Wooden Mallet, Oil Stone (Rough / Smooth), Center Punch , Bench Vice, Hacksaw Frame with blade, Triangle file - 6mm (Medium) , Half Round File and Rasp cut file, Drill Bit, Plumb Bob, Ring Spanner , Double End Spanner, Screw Spanner 12" LM, Carpenter Working Table, Nail Bar, Measuring tape, Spirit level, Water level tube, Plumb-bob, Mason's line, Lifting appliance (Sling, Shackle, Belts), Safety Helmet, Safety goggles, Safety shoes, Safety belt, Cotton gloves, Ear plugs , Reflective jackets, Dust mask, Fire Prevention Kit.	

On-the-Job Training

Mapped to Shuttering Carpenter, V 4.0

CON/N0302: Making wooden shutters used in shuttering carpentry, v 4.0
Mandatory Duration: 15:00 Hours
Location: On-Site
Terminal Outcomes • Show how to interpret sketches and working drawings used for shuttering work. • Demonstrate the visual checks to determine the quality of timber, plywood and other materials used for preparation of shutters. • Show how to prepare cutting plan for the plywood/ timber as per the shape and size of the shuttering components. • Show how to measure and mark plywood and timber using measuring and marking tools. • Show how to measure and mark sheathing and stiffeners at sketched location. • Demonstrate the cutting of sheathing material within the tolerance limit using various hand and power tools as per instructions /specifications. • Demonstrate making the wooden shutter panels using different types of joints such as dovetail, tenon and mortise, and lap joints as per specifications. • Show how to repair defects on the prepared shutters as per instructions.

CON/N0304: Making wooden shutters used in shuttering carpentry, v 15.0
Mandatory Duration: 15:00 Hours
Location: On-Site
Terminal Outcomes • Show how to interpret of the rough sketches / schematic working drawings/ cutting plans used in shuttering carpentry work. • Demonstrate the scope for covers to the reinforcement steel in shuttering works as per the given sketches. • Show how to check for the location, dimensions, rigidity of joints of plywood and timber. • Show how to check for verticality, position and spacing of props as per the load bearing capacity and support. • Demonstrate the corrective measure to be taken if twist is observed in alignment of the formwork. • Demonstrate the rectification measures of formwork boards / plates after their removal. • Perform checks to ensure the line, level and alignment of the shuttering woks with in tolerance limit and according to sketches / instructions. • Demonstrate the use of different type of support for formwork to ensure its stability. • Demonstrate procedure of obtaining approval for the assembled formwork.

CON/N0303: Assembling and dismantling system formwork for R.C.C structures, v 4.0

Mandatory Duration: 30:00 Hours
Location: On-Site
Terminal Outcomes • Demonstrate reading of schematic working drawing for shuttering works. • Show how to perform checks to ensure cleanliness of shutters, suitability of supporting base, availability of tools, availability of components, availability of fixtures prior to erection/use of system formwork. • Determine shuttering materials required for work. • Demonstrate assembling of system formwork for R.C.C footing, column, wall, beam and slab. • Demonstrate methods to check the erected formwork for line, level, alignment and plumb within tolerance limit. • Demonstrate dismantling of system formwork for R.C.C footing, column, wall, beam and slab. • Show how to check the quality of formwork materials for reusability after dismantling. • Demonstrate stacking of formwork components.

CON/N0315: Assembling and dismantling conventional shuttering / formwork for RCC structures, v 4.0
Mandatory Duration: 30:00 Hours
Location: On-Site
Terminal Outcomes • Show how to perform check to ensure cleanliness of shutters, suitability of supporting base, availability of tools, availability of components, availability of fixtures prior to erection/use of conventional formwork. • Demonstrate the application of releasing agent to sheathing materials as per the specification. • Demonstrate how to position and strike box-outs and bolt boxes, grout checks, level controls, angle fillets and features • Show how to use the supports such as runner pieces, timber, props, tie systems appropriately for positioning and providing support. • Show how to provide the braces for formwork support as per the specification and requirement. • Show how to use form sheet or other appropriate packing material for ensuring the water tightness of form. • Demonstrate how to fix tie rods, supports, bracings after erection of formwork shutters. • Show how to perform checks for line, level and alignment of the erected formwork as per permissible tolerance limits. • Show how to perform checks for dimensional accuracy and right angle, and take necessary corrective action if required. • Demonstrate the standard procedure for dismantling of formwork shutters manually or by mechanical means as per the requirements • Show how to check the quality of formwork materials for reusability after dismantling. • Demonstrate proper storing, stacking and cleaning of formwork materials after dismantling.

Annexure

Trainer Requirements

Trainer Prerequisites					
Minimum Educational Qualification	**Specialisation**	**Relevant Industry Experience**		**Preferable Training Experience**	
		Years	***Specialization***	***Years***	***Specialization***
B.E./B. Tech	Civil / Mechanical Engineering	2	Site Execution (Civil Work)	1	Shuttering Carpentry Work
OR					
Diploma	Civil Engineering	3	Site Execution (Civil Work)	1	Shuttering Carpentry Work
OR					
ITI	Relevant Trade	6	Site Execution (Civil Work)	1	Shuttering Carpentry Work
OR					
Graduation	in any Stream	6	Site Execution (Civil Work)	1	Shuttering Carpentry Work
OR					
Ex-Army Graduate	in any Stream	6	Site Execution (Civil Work)	1	Shuttering Carpentry Work

Trainer Certification	
Domain Certification	**Platform Certification**
Recommended that the Trainer is certified for the Job Role: "Shuttering Carpenter", mapped to the Qualification Pack: "CON/Q3001, v4.0". 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%.

Assessor Requirements

Assessor Prerequisites			
Minimum Educational Qualification	**Specialisation**	**Relevant Industry Experience**	
		Years	***Specialization***
B.E. / B.Tech	Civil / Mechanical Engineering	2	Site Execution (Civil Work)
OR			
Diploma	Civil 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: "Shuttering Carpenter", mapped to the Qualification Pack: "CON/Q3001, v4.0". 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%.

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 is 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 **Shuttering Carpenter** 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 is 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)

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 **Shuttering Carpenter** 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 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 leaning 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.

References

Glossary

Term	Description
Declarative Knowledge	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.
Key Learning Outcome	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).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	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.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do it upon the completion of the training.
Terminal Outcome	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.

Acronyms and Abbreviations

Term	Description
MSDE	Ministry of Skill Development and Entrepreneurship
NCVET	National Council for Vocational Education and Training
NSDC	National Skill Development Corporation
SIDH	Skill India Digital Hub
CSDCI	Constriction Skill Development Council of India
AB	Awarding Body
SSC	Sector Skill Council
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
DDU-GKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
SANKALP	Skill Acquisition and Knowledge Awareness for Livelihood Promotion
STRIVE	Skills Strengthening for Industrial Value Enhancement
JSS	Jan Shikshan Sansthan
STT	Short Term Training
RPL	Recognition of Prior Learning
NAPS	National Apprenticeship Promotion Scheme
AA	Assessment Agency
TP	Training Provider / Training Partner
TC	Training Centre
ITI	Industrial Training Institute
NSQC	National Skill Qualification Committee
NSQF	National Skills Qualification Framework
Q-File	Qualification File
QP	Qualification Pack
MC	Model Curriculum
NOS	National Occupational Standards
PC	Performance Criteria
KU	Knowledge and Understanding
GS	Generic Skills
MCQ	Multiple Choice Question
EHS	Environment Health and Safety
PPE	Personal Protective Equipment
QA/QC	Quality Assurance / Quality Control
SCW	Shuttering Carpentry Work
SCC	Shuttering & Centering Carpentry
FCS	Formwork Carpentry Services
CFS	Concrete Formwork Specialist
FC	Formwork Carpentry
TCS	Timber & Concrete Shuttering
CFW	Concrete Formwork & Woodwork
SCF	Shuttering & Concrete Formwork