Model Curriculum

QP Name: Chargehand Shuttering Carpenter (Elective: System Formwork / Conventional Formwork)
QP Code: CON/Q3002

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Construction Skill Development Council of India|| Construction Skill Development Council of India (CSDCCI), CPB – 201 & 202, Block-4B, DLF corporate Park, Phase – III, MG Road Gurugram – 122002
Near Guru Dronacharya Metro Station

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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-2015/9313.99
Minimum Educational Qualification and Experience	8th Class with 9 Years of experience (a non-trained worker should have minimum 9 years site experience in the Shuttering Carpentry occupation), OR 8th Class with 3 Years of experience (should have minimum 3 years' site experience as a NSQF Level 4 certified Shuttering Carpenter – System)
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	31/03/2022
Next Review Date	31/03/2025
NSQC Approval Date	31/03/2022
QP Version	Version number 1.0
Model Curriculum Creation Date	12/07/2021
Model Curriculum Valid Up to Date	31/03/2025
Model Curriculum Version	Version number 1.0
Minimum Duration of the Course	810 hrs
Maximum Duration of the Course	450 hrs

Program Overview

This section summarizes 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.

- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.
- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.
- Identify various hazards at construction site.
- Use PPE's relevant to shuttering carpentry task.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.
- Demonstrate how to assemble system formwork for complex RCC structures (Staircase, landing, ramps, inclined structures, curved or circular structures).
- Demonstrate how to dismantle the erected system formwork after the casting for the complex RCC structures.
- Interpret shop drawing and other drawings (Plan, Elevation and Sectional drawings) for assembling of precast and form finished structures.
- Ensure the assembling and dismantling of moulds/ frames for precast structures.
- Ensure the assembling and dismantling of formwork for form finished structures.
- Interpret assembling/ shop drawings and work method statement for the installation of jump form system
- Ensure assembling and dismantling of jump form system as per standard procedure
- Interpret drawings, schedules and work method statement to carry out the shuttering work (conventional formwork) for heavy civil construction work
- Ensure the assembling and dismantling of conventional formwork for heavy civil construction work using steel beams, channel sections/ truss and steel shuttering sheets
- Perform all the checks on the erected formwork to determine its quality with respect to line, level and alignment

Compulsory Modules

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

NOS and Module Details	Theory Duration (Hrs.)	Practical Duration (Hrs.)	On-the-Job Training Duration (Mandatory) (Hrs.)	On-the-Job Training Duration (Recommended) (Hrs.)	Total Duration (Hrs.)
Bridge Module	8:00	00:00	00:00	00:00	**8:00**
CON/N8001 Work effectively in a team to deliver desired results at the workplace	**07:30**	**22:30**	**00:00**	**00:00**	**30:00**

NOS Version No.6.0 NSQF Level 4					
Communicate effectively at workplace	07:30	22:30	00:00	00:00	30:00
CON/N8002 Plan and organize work to meet expected outcomes NOS Version No. 5.0 NSQF Level 4	**07:30**	**22:30**	**00:00**	**00:00**	**30:00**
Prioritise activities and organise resources	07:30	22:30	00:00	00:00	30:00
CON/N9001 Work according to personal health, safety and environment protocol at construction site NOS Version No.6.0 NSQF Level 4	**07:30**	**22:30**	**00:00**	**00:00**	**30:00**
Follow safety norms as defined by organization, adopt healthy and safe work practices	07:30	22:30	00:00	00:00	30:00
Total Duration	**22:30**	**67:30**	**00:00**	**00:00**	**90:00**

Elective Modules

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

Elective 1: System Formwork

NOS and Module Details	Theory Duration (Hrs.)	Practical Duration (Hrs.)	On-the-Job Training Duration (Mandatory) (Hrs.)	On-the-Job Training Duration (Recommended) (Hrs.)	Total Duration (Hrs.)
CON/N0316 - Assemble & dismantle system formwork for complex RCC structure NOS Version No. 1.0 NSQF Level 4	**29:30**	**82:30**	**00:00**	**00:00**	**112:00**
Assemble & dismantle system formwork for complex RCC structure	29:30	82:30	00:00	00:00	112:00
CON/N0317: Assemble & dismantle system formwork for Pre-cast segments & form finished R.C.C structures NOS Version No. 1.0	**37:30**	**82:30**	**00:00**	**00:00**	**120:00**

NSQF Level 4					
Assemble & dismantle system formwork for Pre-cast segments & form finished R.C.C structures	37:30	82:30	00:00	00:00	120:00
CON/N0318: Erect & dismantle jump form system NOS Version No. 1.0 NSQF Level 4	**37:30**	**82:30**	**00:00**	**00:00**	**120:00**
Erect & dismantle jump form system	37:30	82:30	00:00	00:00	120:00
Total Duration	**104:30**	**247:30**	**00:00**	**00:00**	**352:00**

Elective 2: Conventional Formwork

NOS and Module Details	Theory Duration (Hrs.)	Practical Duration (Hrs.)	On-the-Job Training Duration (Mandatory) (Hrs.)	On-the-Job Training Duration (Recommended) (Hrs.)	Total Duration (Hrs.)
CON/N0319: Erect and dismantle conventional formwork for heavy civil construction works NOS Version No. 1.0 NSQF Level 4	**112:30**	**247:30**	**00:00**	**00:00**	**360:00**
Erect and dismantle conventional formwork for heavy civil construction works	112:30	247:30	00:00	00:00	360:00
Total Duration	**112:30**	**247:30**	**00:00**	**00:00**	**360:00**

Module Details

Module 1: Introduction to job role of Chargehand shuttering carpenter (Elective: system formwork/ conventional formwork)

Bridge Module

Terminal Outcomes:

- Identify roles and responsibilities of a chargehand shuttering carpenter.
- Differentiate between system formwork and conventional formwork.
- Discuss the career progression for the chargehand shuttering carpenter.

Duration: *08:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the difference between system and conventional shuttering. • Discuss the roles and responsibilities of chargehand shuttering carpenter (system formwork / conventional formwork). • Explain the personal attributes required for the shuttering carpentry occupation. • Explain the future possible progression and career development options of a chargehand shuttering carpenter (system formwork / conventional formwork).	
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	

Module 2: Communicate effectively at workplace

Mapped to CON/N8001, v.6.0

Terminal Outcomes:

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
  Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.

Duration: *07:30*	**Duration**: *22:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the effects and benefits of timely actions relevant to the task at hand with examples. • Explain the importance of teamwork and its effects relevant to the task at hand with examples. • Explain the importance of proper and effective communication and its adverse effects in case of failure of proper communication. • Discuss about gender and its related concept: gender equality, gender equity (group work) • Discuss different types of disabilities (physical, mental, intellectual or sensory impairment). • Discuss the activities sensitive to the cultural diversity, disabilities and gender neutrality at the workplace. • Discuss the basic rules and regulations related to gender sensitivity, disabilities, and cultural diversity, with their impact on operations of a workplace. • Discuss how to take initiative in resolving issues among co-workers in a given situation. • Discuss reporting procedure followed at the workplace.	• Apply effective communication skills while interacting with co-workers, trade seniors and others during the assigned task. • Use appropriate writing skills and verbal communication reporting as per commonly applicable organisational norms. • Demonstrate teamwork skills during assigned task. • Demonstrate acceptable interpersonal transactions with individuals having disabilities (physical, mental, intellectual or sensory impairment) or cultural diversity. • Demonstrate the process modifications required to make the workplace free from gender biases.
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	
N/A	

Module 3: Prioritise activities and organise resources

Mapped to CON/N8002, v.5.0

Terminal Outcomes:

- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.

Duration: *07:30*	**Duration**: *22:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain methods to upkeep, store and stack tools, materials used for domain specific works. • Explain the process of planning of the given tasks and activities relevant to the trade/job role within defined scope and duration. • Explain the procedure adopted for prioritizing an activity and sequencing of activities. • Explain the work plan and flow of activities in sequence for the assigned work. • Explain basic concept of labour productivity and work productivity. • Explain requisition of resources, reporting for requirement of resources orally and in written to concerned authority. • Explain how to minimise wastage of resources. • Explain the plan for waste collection and disposal after task.	• Identify the work target and plan activities to achieve the desired productivity. • Demonstrate requisition of resource citing an example. • Demonstrate the planning for various activities relevant to task as per the scope and schedule. • Demonstrate how to organise the required tool, manpower and material resources for the assigned task. • Select required quantity of materials, tools or devices for defined work activities. • Demonstrate how to prioritize all works/ activities to maximise output. • Demonstrate optimum use of resources while performing domain specific work activities. • Demonstrate waste collection and disposal as per organisational norms. • Demonstrate completion of work within stipulated time and plan.
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	
N/A	

Module 4: Follow safety norms as defined by organization, adopt healthy and safe work practices

Mapped to CON/N9001, v.6.0

Terminal Outcome:

- Identify various hazards at construction site.
- Use PPE's relevant to shuttering carpentry task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Duration: *07:30*	**Duration**: *22:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works. • Recall the safety control measures and actions to be taken under emergency situation. • Explain the classes of fire and types of fire extinguishers. • Explain the importance of participation of workers in safety drills. • Explain the reporting procedure to the concerned authority in case of emergency situations. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories. • Explain different types of waste at construction sites and their disposal method. • Explain the purpose and importance of vertigo test at construction site. • List out basic medical tests required for working at construction site. • Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites. • Explain the importance of housekeeping works. • List different types of infectious disease that can spread/ originate at a construction site. • Discuss the ways of transmission of the various infectious disease. • Explain the methods to check the spread of the infectious disease.	• Demonstrate the operating procedure of the fire extinguishers. • Demonstrate use of PPEs as per work requirements. • Demonstrate vertigo test. • Demonstrate safety techniques to be adopted in case of accidents. • Demonstrate safe waste disposal practices followed at construction site. • Demonstrate safe housekeeping practices. • Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization. • Demonstrate the methods to clean and disinfect all materials, tools and supplies before and after use. • Demonstrate the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.

• Describe the symptoms and cure of the various infectious disease.	
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, Jump suit, Wire brush, Hand & 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	

Elective 1: System Formwork

Module 5: Assemble and dismantle system formwork for complex RCC structures

Mapped to CON/N0316, v 3.0

Terminal Outcome:

- Interpret drawings, schedule and work method statement to perform shuttering work as per the instruction.
- Demonstrate how to assemble system formwork for complex RCC structures (Staircase, landing, ramps, inclined structures, curved or circular structures).
- Demonstrate how to dismantle the erected system formwork after the casting for the complex RCC structures.

Duration: *29:30*	**Duration**: *82:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Apply the basic principles of measurement, geometry and arithmetic calculation relevant to shuttering carpenter's work. • Interpret sketches and working drawings used for shuttering work. • Discuss about types of formwork (Conventional and System). • Explain different types of system formworks. • State standard size of all formwork tools, material and components. • Explain the use of hand and power tools used for shuttering carpentry works. • List the types of release agents (shuttering oil, cream emulsions, chemical release agents) with their application. • Discuss the standard procedure for assembling and dismantling system formwork for R.C.C structures (Staircase, landing, ramps, inclined structures, curved or circular structures). • Describe the general tolerance for shuttering works. • Explain the concept of stripping time for removing shuttering of various R.C.C structural element. • Explain the productivity norms for shuttering of various R.C.C structural element. • Explain the use of lifting gears for shifting, fixing and removing of heavy shutter panel • Discuss about stacking and storing of formwork components based on size, type and uses.	• Read drawings, schedule and work method statement relevant to shuttering work • Prepare a sample estimate for the quantity of formwork material from the drawing. • Prepare a sample estimate for the manpower requirement for various types of shuttering works. • Demonstrate the procedure of layout for the shuttering work by using relevant drawings. • Demonstrate assembling and dismantling of system formwork for R.C.C structures (Staircase, landing, ramps, inclined structures, curved or circular structures) • Demonstrate the checks to ensure that the line, level, alignment, dimension and right angle of the erected formwork are within the tolerance limit.

• Describe about repair of formwork components and housekeeping. • Explain the sequence of activity followed for R.C.C work. • Discuss the basics of reinforcement works, concreting works and scaffolding works. • List the steps of reporting to the superior after the completion of the given shuttering work.	
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer system, Trade specific charts and other teaching aids	
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), 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, Measuring tape, Spirit level, Water level tube, dumpy level, auto level/ laser levelling machine, 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, System formwork components and fixtures (for Staircase, landing, ramps, inclined structures, curved or circular structures), Hand held timber Cutting machine (Circular saw, Zig-jack saw), Drilling machine, Table mounted circular saw, planing machine	

Module 6: Assemble and dismantle system formwork for pre-cast segments and form finished RCC structures

Mapped to CON/N0317, v 2.0

Terminal Outcome:

- Interpret shop drawing and other drawings (Plan, Elevation and sectional drawings) for assembling of precast and form finished structures
- Ensure the assembling and dismantling of moulds/ frames for precast structures.
- Ensure the assembling and dismantling of formwork for form finished structures.

Duration: *37:30*	**Duration**: *82:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss about the construction of pre-cast and form finished structures. • Explain the use of shop drawing and other drawings (Plan, Elevation and sectional drawings) for assembling of precast segments moulds/frames. • Describe the preparatory activities for assembling and dismantling of precast moulds/frames and form finished formwork. • Discuss the different types of tools, materials and components specific to pre-cast moulds/ frames and form finished formwork. • Discuss the sequence of activities adopted for precast construction (reinforcement work, fixing of block out, cast-in-services, assembling of components). • Describe the standard procedure adopted for assembling and dismantling of moulds/frames for pre-cast segments. • Describe the standard procedure adopted for assembling and dismantling formwork for form finished structures.	• Demonstrate reading of shop drawings for assembling of pre-cast moulds/frames for pre-cast structures. • Demonstrate assembling and dismantling of moulds/frames for pre-cast segments. • Demonstrate assembling and dismantling of formwork for form finished structures. • Demonstrate the procedure to report to the superior after the completion of the given formwork for pre-cast segments/ form finished RCC structures.
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer system, Trade specific charts and other teaching aids	
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), 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, Measuring tape, Spirit level, Water level tube, dumpy level, auto level/ laser levelling machine, 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, System formwork components and fixtures , cup-lock scaffolding components (set)/ frame scaffold components, 40	

NB pipes, swivel coupler, fixed clamp, steel walkways, Aluminium/ GI ladder, safety net, Hand held timber Cutting machine (Circular saw, Zig-jack saw), Drilling machine, Table mounted circular saw, planing machine

Module 7: Erect and dismantle jump form system

Mapped to CON/N0318, v 2.0

Terminal Outcome:

- Interpret assembling/ shop drawings and work method statement for the installation of jump form system
- Perform assembling and dismantling of jump form system as per standard procedure

Duration: *37:30*	**Duration**: *82:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss about the specialized formwork – climbing formwork (jumpform system and slip formwork). • Read assembling/ shop drawings and work method statement for installation of jumpform system. • Explain all the preparatory works involved in the installation of jumpform system. • Discuss the types of cranes and hydraulic jacks used for lifting of jumpform system. • Identify potential hazards associated with the jumpform system and suggest their preventive measures. • Explain the use of tools and tackles, components and equipment required for installation of Jump form system. • Discuss the use of fixtures and connection for the installation of jumpform system. • Explain the standard procedure for profiling of formwork. • Explain the standard procedure for assembling and dismantling of jumpform system.	• Demonstrate reading of assembling/ shop drawing and work method statement for installation of jumpform system. • Demonstrate profiling of formwork as per required shape. • Demonstrate assembling and dismantling of jumpform system as per standard procedure • Demonstrate fixing of anchor cones, ties, sleeves, shear key, etc.
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer system, Trade specific charts and other teaching aids	
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 & 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, dumpy level, auto level/ laser levelling machine, 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, System formwork components and fixtures , cup-lock scaffolding components (set)/ frame scaffold components, 40 NB pipes, swivel coupler, fixed clamp, steel walkways, Aluminum/ GI ladder, safety net, Hand held timber Cutting machine (Circular saw, Zig-jack saw), Drilling machine, Table mounted circular saw, planing machine	

Elective 2: Conventional Formwork

Module 8: Erect and dismantle conventional formwork for heavy civil construction works

Mapped to CON/N0319, v 2.0

Terminal Outcome:

- Interpret drawings, schedules and work method statement to carry out the shuttering work (conventional formwork) for heavy civil construction work
- Perform the assembling and dismantling of conventional formwork for heavy civil construction work using steel beams, channel sections/ truss and steel shuttering sheets
- Perform all the checks on the erected formwork to determine its quality with respect to line, level and alignment

Duration: *112:30*	**Duration**: *247:30*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the types of drawings (plan, elevation and sectional drawings etc.) used for the conventional formwork. • Discuss the use of standard tools and tackles for carrying out the shuttering work. • Explain the procedure of layout for shuttering work as per the drawing of heavy civil construction works. • Discuss about the different types of formwork (Conventional & System). • Discuss the basics of tack welding and bolting procedures. • Explain the procedure to check for levels physically/ visually and also compaction of ground surface. • Discuss the standard size of all formwork tools, material and components. • Explain the sequence for assembling, dismantling and stacking of form work materials. • Discuss all the safety measures taken during the shuttering work such as barricading work area, fire protection etc. • Explain the checks that ensure that the line, level, alignment and quality of the formwork are within the standard tolerance limit. • Explain the basic of reinforcement work, concreting works, scaffolding works and earthwork .	• Interpret drawings, schedule and work method statement to obtain relevant details for shuttering work. • Classify different types of plywood and timber which are used during shuttering (conventional formwork) work as per specifications and quality checks. • Demonstrate the checks for the completion of all the preparatory works prior to the assembling work of the formwork (using steel beams, channel section/ truss and steel shuttering sheets). • Demonstrate how to erect/ dismantle staging using steel trestle for carrying out formwork for heavy civil construction. • Demonstrate assembling and dismantling of conventional formwork for heavy civil construction work using steel beams, channel sections/ truss and steel shuttering sheets. • Demonstrate the checks that ensure that line, level, alignment, dimension and support of the erected formwork are within tolerance limit. • Demonstrate the procedure to report to the superior/ engineer in-charge after the completion of the given shuttering work. • Demonstrate the proper procedure for stacking and storing staging materials/ shuttering materials.
Classroom Aids:	

Classroom of 30 student capacity, Black/White board, Projector/LED Monitor, Computer system, Trade specific charts and other teaching aids
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 & 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, Conventional formwork for Footing, column, wall, beam, slab, Conventional scaffolding components (set)/bamboo, bellies, pipe & coupler scaffold components , 40 NB pipes, Swivel coupler, Fixed clamp, Steel walkways, Aluminum/ GI ladder, Safety net, Tying thread

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
M. Tech/B. Tech	Civil Engineering	Two	Civil Engineering	0		As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory. However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience
Diploma	Civil Engineering	Three	Civil Engineering	0		
Graduation/ Ex. Army /ITI /12th pass	Any graduate, Graduation certificate from Army/ITI certificate in relevant trade/12th pas	Six	Working experience as Chargehand Shuttering Carpenter/ supervisory work experience in shuttering carpentry work	0		

Trainer Certification	
Domain Certification	**Platform Certification**
Trainer- 80 % in each NOS of Qualification Pack "Chargehand shuttering Carpenter (System or Conventional), v1.0" and 80% overall	Trainers - 80% in each NOS of Qualification Pack "Trainer MEP/Q2601, v1.0"and 80% overall.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
M. Tech/B. Tech	Civil Engineering	Two	Civil Engineering	0		As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory. However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience
Diploma	Diploma in Civil	Five	Civil Engineering	0		
Graduation/ Ex. Army /ITI /12th pass	Any graduate, Graduation certificate from Army/ITI certificate in relevant trade/12th pas	Seven	Working experience as Chargehand Shuttering Carpenter/ supervisory work experience in shuttering carpentry work	0		

Assessor Certification	
Domain Certification	**Platform Certification**
Assessor- 80 % in each NOS of Qualification Pack "Chargehand shuttering Carpenter (System or Conventional), v1.0" and 80% overall	Assessors- 80% in each NOS of Qualification Pack "Assessor MEP/Q2701, v1.0"and overall 80%.

Assessment strategy

Assessment system Overview

Assessment is done through CSDCI affiliated Assessment Body. Assessors are trained & certified by CSDCI after training of assessor's 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 ratios for Chargehand Shuttering Carpenter V1.0 (Elective: System/ Conventional formwork) 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 and
- Where appropriate, any supplementary criteria used to make a judgment on the level of performance.

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 are conducted with proper seating arrangements with enough space between the candidates to prevent copying.

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 Assessment agency/ Assessor will ensure adequate tools and materials are available to conduct the practical test.

The theory and practical assessments will be carried out on same day. If number of candidates are more than 20, more assessors will be organized on same day to complete the assessment.
The assessment has to comprise of two components, namely:
1. Knowledge assessment (theory/viva assessment)
2. Skill assessment (practical/hands-on skill assessment)

Mode of assessment

1. Demonstration/Practical for Performance /Skill Assessment
1. Synoptic multiple-choice question test
2. Viva

} for Knowledge Assessment

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**.**

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 Chargehand Shuttering Carpenter V1.0 (Elective: System/ Conventional formwork) is summarized below:

Assessment				
Assessment Type	**Formative or Summative**	**Strategies**	**Weightage**	**Duration (hours)**
Knowledge	Summative	MCQ/ Viva	30	1.5
Skill	Summative	Structured practical tasks	70	5.5

Assessment Quality Assurance framework

CSDCI has developed assessment criteria framework for each Qualification pack as per National Occupational Standards (NOS). 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.

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.

Video of the practical session is prepared 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.

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 a week and uploads it on SIP.

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 **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
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
CSDCI	Construction Skill development Council of India
MCQ	Multiple Choice Question
EHS	Environment Health and Safety