



Chargehand Shuttering Carpenter

Conventional Formwork/ System Formwork

QP Code: CON/Q3002

Version: 2.0

NSQF Level: 3.5

Construction Skill Development Council of India || CPB 103 & 104 (1st Floor), Block 4B, DLF Corporate Park, Phase III, MG Road
Gurgaon-122002 || email:standards@csdcindia.org



Contents

CON/Q3002: Chargehand Shuttering Carpenter	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Elective 1: Conventional Formwork</i>	3
<i>Elective 2: System Formwork</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
DGT/VSQ/N0101: Employability Skills (30 Hours)	5
CON/N0319: Erect and dismantle conventional formwork for heavy civil construction works	11
CON/N0316: Assemble and dismantle system formwork for complex RCC structure	18
CON/N0317: Assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures	24
CON/N0318: Erect and dismantle jump form system	31
Assessment Guidelines and Weightage	35
<i>Assessment Guidelines</i>	35
<i>Assessment Weightage</i>	36
Acronyms	38
Glossary	39



CON/Q3002: Chargehand Shuttering Carpenter

Brief Job Description

A Chargehand shuttering carpenter is responsible for assembling and dismantling formwork for complex and critical works, including staircases, landings, ramps, inclined structures, curved or circular structures, moulds/frames for Pre-cast segments, form finished RCC structures and jump form system and conventional shuttering.

Personal Attributes

The individual should be physically fit to work across varying locations and conditions. The person should be organized, diligent, methodical, and safety-conscious. The individual should have good communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [CON/N8001: Work effectively in a team to deliver desired results at the workplace](#)
2. [CON/N8002: Plan and organize work to meet expected outcomes](#)
3. [CON/N9001: Work according to personal health, safety and environment protocols at construction site](#)
4. [DGT/VSQ/N0101: Employability Skills \(30 Hours\)](#)

Electives (mandatory to select at least one):

Elective 1: Conventional Formwork

1. [CON/N0319: Erect and dismantle conventional formwork for heavy civil construction works](#)

Elective 2: System Formwork

1. [CON/N0316: Assemble and dismantle system formwork for complex RCC structure](#)
2. [CON/N0317: Assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures](#)
3. [CON/N0318: Erect and dismantle jump form system](#)



Qualification Pack



Qualification Pack (QP) Parameters

Sector	Construction
Sub-Sector	
Occupation	Shuttering Carpentry
Country	India
NSQF Level	3.5
Credits	27
Aligned to NCO/ISCO/ISIC Code	NCO-2015/9313.9900
Minimum Educational Qualification & Experience	11th grade pass OR Completed 1st year of 3-year diploma (after 10th) and pursuing regular diploma OR 10th grade pass and pursuing continuous schooling OR 8th grade pass with 3 Years of experience in the relevant field OR Previous relevant Qualification of NSQF Level (2.5) with 3 Years of experience in the relevant field OR Previous relevant Qualification of NSQF Level (3) with 1.5 Years of experience in the relevant field)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NIL
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	30/04/2025
Deactivation Date	30/04/2025
NSQC Approval Date	31/03/2022
Version	2.0
Reference code on NQR	QG-3.5-CO-03375-2024-V1.1-CSDCI
NQR Version	2.0



DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

Communication Skills

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion



Qualification Pack



To be competent, the user/individual on the job must be able to:

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

To be competent, the user/individual on the job must be able to:

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses

KU11. importance of maintaining safety and security in financial transactions



Qualification Pack



- KU12.** different legal rights and laws
- KU13.** how to operate digital devices and applications safely and securely
- KU14.** ways to identify business opportunities
- KU15.** types of customers and their needs
- KU16.** how to apply for a job and prepare for an interview
- KU17.** apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** communicate effectively using appropriate language
- GS2.** behave politely and appropriately with all
- GS3.** perform basic calculations
- GS4.** solve problems effectively
- GS5.** be careful and attentive at work
- GS6.** use time effectively
- GS7.** maintain hygiene and sanitisation to avoid infection



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
<i>Constitutional values – Citizenship</i>	1	1	-	-
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	1	3	-	-
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
<i>Communication Skills</i>	1	1	-	-
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	1	-	-
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
<i>Financial and Legal Literacy</i>	3	4	-	-
PC9. use various financial products and services safely and securely	-	-	-	-
PC10. calculate income, expenses, savings etc.	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
<i>Essential Digital Skills</i>	4	6	-	-
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
<i>Entrepreneurship</i>	3	5	-	-
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
<i>Customer Service</i>	2	2	-	-
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	1	3	-	-
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	20	30	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	08/05/2025
Next Review Date	08/05/2028
NSQC Clearance Date	08/05/2025



CON/N0319: Erect and dismantle conventional formwork for heavy civil construction works

Description

This unit describes the skills and knowledge required to erect and dismantle conventional formwork for heavy civil construction works

Scope

The scope covers the following :

- Erect staging using steel trestles
- Carry out shuttering work using steel beams, channel sections/ truss and steel shuttering sheets
- Dismantle formwork in a safe manner

Elements and Performance Criteria

Erect staging using steel trestles

To be competent, the user/individual on the job must be able to:

- PC1.** interpret drawings, schedule, and work method statements
- PC2.** ensure all tools, materials, components are available as per requirements
- PC3.** identify different types of plywood and timber with their specifications and suitable checks
- PC4.** check to ensure that all preparatory works prior to staging erection such as marking, staging are completed
- PC5.** check that fixing & fasteners are available as per requirement and are fit for use
- PC6.** prepare RCC base/ check base and bolting for erection of trestles
- PC7.** check and confirm suitability/stability of the foundation/structure on which the staging is to be erected
- PC8.** place, position and fix trestle at marked location manually/mechanically as per drawings/working instructions
- PC9.** fix trestle at marked location by providing suitable bolting
- PC10.** check plumb for first level of erection of trestles
- PC11.** place and fix trestle as per marking and fixing method as provided in drawing and provide necessary support
- PC12.** provide horizontal and diagonal bracing by welding or bolting with steel section or any other suitable method as instructed
- PC13.** check for line, level and alignment and support of erected staging

Carry out shuttering work using steel beams, channel sections/ truss and steel shuttering sheets

To be competent, the user/individual on the job must be able to:

- PC14.** place and position steel beam/channel section/ truss as Primary beam for shuttering with the help of crane and fix by tack welding or by bolting
- PC15.** place and position steel beam/channel section/ truss as secondary beam for shuttering with the help of crane and fix by tack welding or by bolting



Qualification Pack



- PC16.** place and fix steel shuttering sheets/ sheeting material as per drawing and working instructions
- PC17.** check for line, level and alignment and support of staging and shuttering
- PC18.** check for dimensional accuracy of shuttering works
- PC19.** complete work within the allocated time , with quality and safety
- PC20.** report to superior for completion and checking of shuttering and carry out suggested rework

Dismantle formwork in a safe manner

To be competent, the user/individual on the job must be able to:

- PC21.** follow dismantling procedure as per working instructions and standard practices
- PC22.** dismantle trestle staging ensuring stripping time as per IS/International code for different types of structures and as per applicability
- PC23.** remove wedge from bottom of shuttering sheets
- PC24.** remove shuttering sheets, channel sections, steel beams, steel truss and other support sequentially and safely as per working instructions
- PC25.** lower down shuttering materials manually/ mechanically with the help of crane as per applicability
- PC26.** dismantle trestle staging by cutting tack welding/unscrewing bolts and nuts
- PC27.** ensure that all the small components are stacked properly for further use
- PC28.** replace damaged material and components if required and ensure cleaning and proper stacking after dismantling

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedures for shuttering and formwork for in-situ and pre-cast construction
- KU2.** safety rules and regulation for handling and storing relevant carpentry tools, equipment and materials
- KU3.** importance of personal protection including the use of relevant safety gears and equipment
- KU4.** service request procedures for tools, materials and equipment as per organizational norms
- KU5.** how to follow proper sequence for dismantling and stacking of form work materials
- KU6.** how to provide facilities like IPs, hooks in the permanent structures for lowering staging and shuttering materials
- KU7.** how to barricade the area properly while carrying out the dismantling operation
- KU8.** adequate safety measures for fire protection while cutting the material and also while working in restricted location
- KU9.** how to use standard tools and tackles for carrying out the dismantling operation
- KU10.** procedure for layout of formwork as per drawing for heavy civil construction works
- KU11.** how to read plan, elevation and sectional drawing relevant to task
- KU12.** basic principles of measurement, conversion of units , basic geometric and arithmetic calculation
- KU13.** different types of measurements and marking tools
- KU14.** how to select and use different types of formwork tools
- KU15.** standard size of all formwork tools, material and components



Qualification Pack



- KU16.** use of water level tube
- KU17.** how to erect and brace steel trestles
- KU18.** procedure for tack welding and bolting
- KU19.** properties and application of release agents
- KU20.** standard tolerance of shuttering works
- KU21.** checklist for shuttering work
- KU22.** how to check for line, level and alignment requirement
- KU23.** preventive and corrective action to ensure formwork meets the required standards of quality
- KU24.** how to physically/ visually check for level, compaction of ground surface
- KU25.** basics of reinforcement work
- KU26.** basics of concreting works
- KU27.** basics of scaffolding works

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively
- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Erect staging using steel trestles</i>	12	28	-	-
PC1. interpret drawings, schedule, and work method statements	-	-	-	-
PC2. ensure all tools, materials, components are available as per requirements	-	-	-	-
PC3. identify different types of plywood and timber with their specifications and suitable checks	-	-	-	-
PC4. check to ensure that all preparatory works prior to staging erection such as marking, staging are completed	-	-	-	-
PC5. check that fixing & fasteners are available as per requirement and are fit for use	-	-	-	-
PC6. prepare RCC base/ check base and bolting for erection of trestles	-	-	-	-
PC7. check and confirm suitability/stability of the foundation/structure on which the staging is to be erected	-	-	-	-
PC8. place, position and fix trestle at marked location manually/mechanically as per drawings/working instructions	-	-	-	-
PC9. fix trestle at marked location by providing suitable bolting	-	-	-	-
PC10. check plumb for first level of erection of trestles	-	-	-	-
PC11. place and fix trestle as per marking and fixing method as provided in drawing and provide necessary support	-	-	-	-
PC12. provide horizontal and diagonal bracing by welding or bolting with steel section or any other suitable method as instructed	-	-	-	-
PC13. check for line, level and alignment and support of erected staging	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out shuttering work using steel beams, channel sections/ truss and steel shuttering sheets</i>	12	28	-	-
PC14. place and position steel beam/channel section/ truss as Primary beam for shuttering with the help of crane and fix by tack welding or by bolting	-	-	-	-
PC15. place and position steel beam/channel section/ truss as secondary beam for shuttering with the help of crane and fix by tack welding or by bolting	-	-	-	-
PC16. place and fix steel shuttering sheets/ sheeting material as per drawing and working instructions	-	-	-	-
PC17. check for line, level and alignment and support of staging and shuttering	-	-	-	-
PC18. check for dimensional accuracy of shuttering works	-	-	-	-
PC19. complete work within the allocated time , with quality and safety	-	-	-	-
PC20. report to superior for completion and checking of shuttering and carry out suggested rework	-	-	-	-
<i>Dismantle formwork in a safe manner</i>	6	14	-	-
PC21. follow dismantling procedure as per working instructions and standard practices	-	-	-	-
PC22. dismantle trestle staging ensuring stripping time as per IS/International code for different types of structures and as per applicability	-	-	-	-
PC23. remove wedge from bottom of shuttering sheets	-	-	-	-
PC24. remove shuttering sheets, channel sections, steel beams, steel truss and other support sequentially and safely as per working instructions	-	-	-	-
PC25. lower down shuttering materials manually/ mechanically with the help of crane as per applicability	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC26. dismantle trestle staging by cutting tack welding/unscrewing bolts and nuts	-	-	-	-
PC27. ensure that all the small components are stacked properly for further use	-	-	-	-
PC28. replace damaged material and components if required and ensure cleaning and proper stacking after dismantling	-	-	-	-
NOS Total	30	70	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N0319
NOS Name	Erect and dismantle conventional formwork for heavy civil construction works
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Shuttering Carpentry
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



CON/N0316: Assemble and dismantle system formwork for complex RCC structure

Description

This unit describes the skills and knowledge required to assemble and dismantle system formwork for complex RCC structure

Scope

The scope covers the following :

- Assemble system formwork for complex RCC structures (Staircase, landing, ramps, inclined structures, curved or circular structures)
- Dismantle system formwork for complex RCC structures

Elements and Performance Criteria

Assemble system formwork for complex RCC structures (Staircase, landing, ramps, inclined structures, curved or circular structures)

To be competent, the user/individual on the job must be able to:

- PC1.** interpret the drawings, schedules, and work method statements
- PC2.** check that different types of plywood and timbers are compliant with the required specifications
- PC3.** check the availability of all the required tools, materials, and components
- PC4.** check for the completion of the preparatory works such as marking, staging, etc.
- PC5.** check the availability of the required fixings and fasteners based on the system formwork used
- PC6.** set up formwork manually or mechanically as per instructions/ specification
- PC7.** check that profile of the shutter panels is as per the required shape of the structure
- PC8.** use appropriate methods/ tools such as water level pipe, dumpy level, auto level or laser levelling machine for levelling of the formwork
- PC9.** provide the necessary support to the formwork using props or other appropriate components based on the type of system used
- PC10.** plug all openings and gaps using foam sheet and adhesive tape or other appropriate materials
- PC11.** check working platform for safety
- PC12.** check that the erected formwork's line, level, and alignment are within the tolerance limits
- PC13.** check the dimensional accuracy and right angle for the shutters and take corrective measures as per requirement
- PC14.** obtain approval from the seniors upon checking and verification of the completed shuttering works and take suggested corrective actions as per requirement

Dismantle system formwork for complex RCC structures

To be competent, the user/individual on the job must be able to:

- PC15.** follow dismantling procedure /standard practice as per system used



Qualification Pack



- PC16.** dismantle system formwork ensuring stripping time as per IS (Indian standard)/international code for different types of structures
- PC17.** remove bracing and all other support sequentially and safely as instructed
- PC18.** remove sheathing material sequentially using proper tools and tackles to avoid damage to structure or sheathing materials
- PC19.** remove formwork shutters manually or by mechanical means as per requirement, basis shutter size
- PC20.** ensure that all the small components are staked properly for further use
- PC21.** replace/repair formwork material if required and ensure cleaning and proper staking after dismantling

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedures for shuttering and formwork for in situ and pre cast construction
- KU2.** safety rules and regulation for handling and storing relevant carpentry tools, equipment and materials
- KU3.** importance of personal protection including the use of relevant safety gears & equipment
- KU4.** service request procedures for tools, materials and equipment
- KU5.** procedure for layout of formwork as per drawing for complex structure such as staircase, landing, ramps, inclined structures, curved or circular structures)
- KU6.** how to read plan, elevation and sectional drawing relevant to task
- KU7.** basic principles of measurement, conversion of units , basic geometric and arithmetic calculation
- KU8.** different types of measurements and marking tools
- KU9.** how to select and use different types of formwork tools
- KU10.** standard size of all formwork tools, material and components
- KU11.** use of water level tube
- KU12.** major types of system formwork and their appropriate applications
- KU13.** how to erect and brace major types of formwork as per site requirements
- KU14.** properties and application of release agents
- KU15.** standard tolerance of shuttering works
- KU16.** checklist for shuttering work
- KU17.** how to check for line, level and alignment requirement
- KU18.** preventive and corrective action to ensure formwork meets the required standard of quality
- KU19.** manufacturer's specification/ instructions for erecting and dismantling formwork
- KU20.** how to physically/ visually check for level, compaction of ground surface
- KU21.** use of tools and equipments required in earthworks
- KU22.** standard practices for housekeeping sequence and prioritizing of activities
- KU23.** basics of reinforcement work
- KU24.** basics of concreting works
- KU25.** basics of scaffolding works



Qualification Pack



Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively
- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assemble system formwork for complex RCC structures (Staircase, landing, ramps, inclined structures, curved or circular structures)</i>	14	25	-	5
PC1. interpret the drawings, schedules, and work method statements	-	-	-	-
PC2. check that different types of plywood and timbers are compliant with the required specifications	-	-	-	-
PC3. check the availability of all the required tools, materials, and components	-	-	-	-
PC4. check for the completion of the preparatory works such as marking, staging, etc.	-	-	-	-
PC5. check the availability of the required fixings and fasteners based on the system formwork used	-	-	-	-
PC6. set up formwork manually or mechanically as per instructions/ specification	-	-	-	-
PC7. check that profile of the shutter panels is as per the required shape of the structure	-	-	-	-
PC8. use appropriate methods/ tools such as water level pipe, dumpy level, auto level or laser levelling machine for levelling of the formwork	-	-	-	-
PC9. provide the necessary support to the formwork using props or other appropriate components based on the type of system used	-	-	-	-
PC10. plug all openings and gaps using foam sheet and adhesive tape or other appropriate materials	-	-	-	-
PC11. check working platform for safety	-	-	-	-
PC12. check that the erected formwork's line, level, and alignment are within the tolerance limits	-	-	-	-
PC13. check the dimensional accuracy and right angle for the shutters and take corrective measures as per requirement	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. obtain approval from the seniors upon checking and verification of the completed shuttering works and take suggested corrective actions as per requirement	-	-	-	-
<i>Dismantle system formwork for complex RCC structures</i>	16	35	-	5
PC15. follow dismantling procedure /standard practice as per system used	-	-	-	-
PC16. dismantle system formwork ensuring stripping time as per IS (Indian standard)/international code for different types of structures	-	-	-	-
PC17. remove bracing and all other support sequentially and safely as instructed	-	-	-	-
PC18. remove sheathing material sequentially using proper tools and tackles to avoid damage to structure or sheathing materials	-	-	-	-
PC19. remove formwork shutters manually or by mechanical means as per requirement, basis shutter size	-	-	-	-
PC20. ensure that all the small components are staked properly for further use	-	-	-	-
PC21. replace/repair formwork material if required and ensure cleaning and proper staking after dismantling	-	-	-	-
NOS Total	30	60	-	10



National Occupational Standards (NOS) Parameters

NOS Code	CON/N0316
NOS Name	Assemble and dismantle system formwork for complex RCC structure
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Shuttering Carpentry
NSQF Level	3.5
Credits	4
Version	3.0
Next Review Date	NA



CON/N0317: Assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures

Description

This unit describes the skills and knowledge required to assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures.

Scope

The scope covers the following :

- Assemble and dismantle moulds/frames for pre-cast segments
- Assemble and dismantle system formwork for form finished structures

Elements and Performance Criteria

Assemble and dismantle moulds/frames for pre-cast segments

To be competent, the user/individual on the job must be able to:

- PC1.** read assembly drawings and work method statements
- PC2.** interpret sketches related to fixing sequence and method for assembling moulds and frames
- PC3.** check the availability of materials, tools, details and method statement before assembling moulds or frames for pre-cast work
- PC4.** position, assemble, prop and secure shutter panels as per approved workshop drawing and profile requirement
- PC5.** apply release agent uniformly as per instructed method
- PC6.** fix all other accessories of external vibration for compacting concrete, if required
- PC7.** check for proper alignment and geometric accuracy of shutters
- PC8.** fix block out and cast-in-services as per marking and design requirement and check their positions after fixing
- PC9.** check the assembly for rigidity
- PC10.** ensure joints are water tight by providing form sheets or necessary packing material
- PC11.** fix build-in components , void formers, box-outs and confirm their positions as per drawings
- PC12.** report to superior for completion and checking of shuttering and carry out suggested rework
- PC13.** dismantle moulds/frames sequentially
- PC14.** use proper tools and tackles to ensure structure or sheathing material is not damaged

Assemble and dismantle system formwork for form finished structures

To be competent, the user/individual on the job must be able to:

- PC15.** check the availability of all tools, materials, components as per requirement
- PC16.** check that forms are free from spillages, rust marks and stains
- PC17.** check that formwork panels are of same size and forms a regular pattern
- PC18.** check that holes left by formwork ties and components in concrete surfaces are in line horizontally and vertically and form a regular pattern
- PC19.** check that chamfers are provided for all external angles of 90 degree



Qualification Pack



- PC20.** check that joints between formwork panels are tightly sealed with foamed rubber strips
- PC21.** ensure that gap between the panels is not greater than 1 mm and the sealing strips does not protrude from the surface of the formwork panels
- PC22.** apply release agent uniformly as per instructed method or as per form finished requirement
- PC23.** position and set out formwork manually or by mechanical means as per instructions and requirement
- PC24.** check that profiling of shutters panels conforms to the required shape of structure
- PC25.** position and provide necessary support using props or other appropriate components based on system used
- PC26.** check for proper alignment and geometric accuracy of forms
- PC27.** fix build-in components, void formers and box-outs in positions as per drawings
- PC28.** check the assembly for rigidity and ensure joints between formwork panel, stop ends and adjoining concrete are tight and do not permit grout loss
- PC29.** report to superior for completion and checking of shuttering and carry out suggested rework
- PC30.** dismantle moulds/frames sequentially
- PC31.** use proper tools and tackles to ensure structure or sheathing material is not damaged

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedures for shuttering and formwork for in situ and pre cast construction
- KU2.** safety rules and regulations for handling and storing relevant tools, equipment, and materials required for relevant works in accordance with organizational norms
- KU3.** importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms
- KU4.** service request procedures for tools, materials and equipment
- KU5.** procedure for assembling and dismantling moulds/frames for precast structures
- KU6.** how to read plan, elevation and sectional drawing relevant to task
- KU7.** basic principles of measurement, conversion of units, basic geometric and arithmetic calculation
- KU8.** use of different types of measurements and marking tools
- KU9.** standard size of all formwork tools, material and components
- KU10.** use of consumables
- KU11.** properties and application of release agents required for precast & form finished structures
- KU12.** how to use different types of hand tools for fixing moulds/frames and form finished shutters
- KU13.** importance of preventing grout loss caused by leakage
- KU14.** standard tolerance of shuttering works
- KU15.** checklist for shuttering work
- KU16.** how to check for line, level and alignment requirement
- KU17.** importance of finishing in case of form finish concrete
- KU18.** preparation of shutters for form finish concrete structure
- KU19.** types of material used for making shutters for form finished concrete



KU20. stripping time as per IS/International code

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively
- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assemble and dismantle moulds/frames for pre-cast segments</i>	15	35	-	-
PC1. read assembly drawings and work method statements	-	-	-	-
PC2. interpret sketches related to fixing sequence and method for assembling moulds and frames	-	-	-	-
PC3. check the availability of materials, tools, details and method statement before assembling moulds or frames for pre-cast work	-	-	-	-
PC4. position, assemble, prop and secure shutter panels as per approved workshop drawing and profile requirement	-	-	-	-
PC5. apply release agent uniformly as per instructed method	-	-	-	-
PC6. fix all other accessories of external vibration for compacting concrete, if required	-	-	-	-
PC7. check for proper alignment and geometric accuracy of shutters	-	-	-	-
PC8. fix block out and cast-in-services as per marking and design requirement and check their positions after fixing	-	-	-	-
PC9. check the assembly for rigidity	-	-	-	-
PC10. ensure joints are water tight by providing form sheets or necessary packing material	-	-	-	-
PC11. fix build-in components , void formers, box-outs and confirm their positions as per drawings	-	-	-	-
PC12. report to superior for completion and checking of shuttering and carry out suggested rework	-	-	-	-
PC13. dismantle moulds/frames sequentially	-	-	-	-
PC14. use proper tools and tackles to ensure structure or sheathing material is not damaged	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assemble and dismantle system formwork for form finished structures</i>	15	35	-	-
PC15. check the availability of all tools, materials, components as per requirement	-	-	-	-
PC16. check that forms are free from spillages, rust marks and stains	-	-	-	-
PC17. check that formwork panels are of same size and forms a regular pattern	-	-	-	-
PC18. check that holes left by formwork ties and components in concrete surfaces are in line horizontally and vertically and form a regular pattern	-	-	-	-
PC19. check that chamfers are provided for all external angles of 90 degree	-	-	-	-
PC20. check that joints between formwork panels are tightly sealed with foamed rubber strips	-	-	-	-
PC21. ensure that gap between the panels is not greater than 1 mm and the sealing strips does not protrude from the surface of the formwork panels	-	-	-	-
PC22. apply release agent uniformly as per instructed method or as per form finished requirement	-	-	-	-
PC23. position and set out formwork manually or by mechanical means as per instructions and requirement	-	-	-	-
PC24. check that profiling of shutters panels conforms to the required shape of structure	-	-	-	-
PC25. position and provide necessary support using props or other appropriate components based on system used	-	-	-	-
PC26. check for proper alignment and geometric accuracy of forms	-	-	-	-
PC27. fix build-in components, void formers and box-outs in positions as per drawings	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC28. check the assembly for rigidity and ensure joints between formwork panel, stop ends and adjoining concrete are tight and do not permit grout loss	-	-	-	-
PC29. report to superior for completion and checking of shuttering and carry out suggested rework	-	-	-	-
PC30. dismantle moulds/frames sequentially	-	-	-	-
PC31. use proper tools and tackles to ensure structure or sheathing material is not damaged	-	-	-	-
NOS Total	30	70	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N0317
NOS Name	Assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Shuttering Carpentry
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



CON/N0318: Erect and dismantle jump form system

Description

This unit describes the skills and knowledge required to erect and dismantle jump form system

Scope

The scope covers the following :

- Set out and assemble jump form system
- De-shutter and jump/move the formwork system to the next level

Elements and Performance Criteria

Set out and assemble jump form system

To be competent, the user/individual on the job must be able to:

- PC1.** interpret assembling drawings and work method statement of the jump formwork system
- PC2.** check the availability of all tools, materials, and components as per requirement
- PC3.** check the starters/ fixing marks/ set out points for the installation of jump formwork system as per the instruction of superior
- PC4.** set out jump form system as per drawing
- PC5.** erect, fix, and align the shutters at the specified location as per structural drawing/ layout
- PC6.** install shear key as per manufacturer's specification
- PC7.** fix platforms and assembly into core formworks as per manufacturer's specification
- PC8.** install hydraulic system, power units and accessories as per manufacturer's specifications and standards, for lifting purpose
- PC9.** install penetration, block-out and cast-in services as per drawings
- PC10.** check that wall form shutter, working platform, lifting arrangement and other accessories are installed as per manufacturer's specifications
- PC11.** report to superiors for completion of work and checking of shuttering for their approval and allowing concreting team for concrete casting

De-shutter and jump/move the formwork system to the next level

To be competent, the user/individual on the job must be able to:

- PC12.** carry out the de-shuttering and move the whole jump formwork setup to next level using cranes or hydraulics
- PC13.** install the form shutters and other components as per the system of the jump formwork
- PC14.** install trailing screens and working platforms at required levels
- PC15.** dismantle jump form system after the concreting, at all required levels are completed, as per manufacturer's specifications and standard practices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



Qualification Pack



- KU1.** standard procedure for erecting and dismantling jump form system
- KU2.** safety rules and regulations for handling and storing relevant tools, equipment, and materials required for relevant works in accordance with organizational norms
- KU3.** importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms
- KU4.** service request procedures for tools, materials and equipment
- KU5.** types of Jump form system/ specialized formwork system such as slip form, jump form system
- KU6.** schematic installation & working drawing
- KU7.** preparatory works for installation of Jump form system
- KU8.** profiling of formwork as per required shape of structure
- KU9.** how to check plumb and take corrective action
- KU10.** use of fixtures, connection
- KU11.** use of tools, tackles, components & equipment for installation of Jump form system
- KU12.** use of anchor cones, ties, sleeves
- KU13.** manufacturers instructions/specification for Jump form system
- KU14.** preventive and corrective action to ensure formwork meets the required standards of quality
- KU15.** types and application of advance formwork system and their applications for basic and complex structures
- KU16.** types of cranes and hydraulic jacks used for lifting of Jump form system
- KU17.** basics of reinforcement works
- KU18.** basics of concreting works
- KU19.** weight of different components, assembled panels

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively
- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Set out and assemble jump form system</i>	20	35	-	-
PC1. interpret assembling drawings and work method statement of the jump formwork system	-	-	-	-
PC2. check the availability of all tools, materials, and components as per requirement	-	-	-	-
PC3. check the starters/ fixing marks/ set out points for the installation of jump formwork system as per the instruction of superior	-	-	-	-
PC4. set out jump form system as per drawing	-	-	-	-
PC5. erect, fix, and align the shutters at the specified location as per structural drawing/ layout	-	-	-	-
PC6. install shear key as per manufacturer's specification	-	-	-	-
PC7. fix platforms and assembly into core formworks as per manufacturer's specification	-	-	-	-
PC8. install hydraulic system, power units and accessories as per manufacturer's specifications and standards, for lifting purpose	-	-	-	-
PC9. install penetration, block-out and cast-in services as per drawings	-	-	-	-
PC10. check that wall form shutter, working platform, lifting arrangement and other accessories are installed as per manufacturer's specifications	-	-	-	-
PC11. report to superiors for completion of work and checking of shuttering for their approval and allowing concreting team for concrete casting	-	-	-	-
<i>De-shutter and jump/move the formwork system to the next level</i>	10	35	-	-
PC12. carry out the de-shuttering and move the whole jump formwork setup to next level using cranes or hydraulics	-	-	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. install the form shutters and other components as per the system of the jump formwork	-	-	-	-
PC14. install trailing screens and working platforms at required levels	-	-	-	-
PC15. dismantle jump form system after the concreting, at all required levels are completed, as per manufacturer's specifications and standard practices	-	-	-	-
NOS Total	30	70	-	-



National Occupational Standards (NOS) Parameters

NOS Code	CON/N0318
NOS Name	Erect and dismantle jump form system
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Shuttering Carpentry
NSQF Level	3.5
Credits	4
Version	3.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC)/ Element will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC/ Element.
2. The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5. The passing percentage for each QP will be 70%. To pass the Qualification Pack, every trainee should score a minimum of 70% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.
7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of



Qualification Pack



improper performance, with a deduction of marks for each iteration.

8. After the certain number of iterations as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.

9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified timeframe set by SSC.

10. Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N8001.Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	10
CON/N8002.Plan and organize work to meet expected outcomes	30	70	-	-	100	10
CON/N9001.Work according to personal health, safety and environment protocols at construction site	30	70	-	-	100	10
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	10
Total	110	240	-	-	350	40

Elective: 1 Conventional Formwork



Qualification Pack



National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0319.Erect and dismantle conventional formwork for heavy civil construction works	30	70	-	-	100	60
Total	30	70	-	-	100	60

Elective: 2 System Formwork

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0316.Assemble and dismantle system formwork for complex RCC structure	30	70	-	-	100	20
CON/N0317.Assemble and dismantle system formwork for pre-cast segments and form finished R.C.C structures	30	70	-	-	100	20
CON/N0318.Erect and dismantle jump form system	30	70	-	-	100	20
Total	90	210	-	-	300	60



Qualification Pack



Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
RCC	Reinforced Cement Concrete
EHS	Environmental, Health, and Safety
PPE	Personal Protective Equipment



Qualification Pack



Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.



Qualification Pack



Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.