Qualification Pack



Construction Fabricator

Masonry

QP Code: ICE/CON/Q0501 Instantiated QP Code: ICE/CON/Q0501-SI001

Version: 1.0

NSQF Level: 4

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ICE/CON/Q0501-SI001: Construction Fabricator

Brief Job Description

A Construction Fabricator assembles, shapes, and installs materials like metal, wood, masonry, and concrete to create structural elements for buildings and infrastructure. The individual interprets construction drawings, identifies materials, and follows the applicable safety and quality standards. The specializations available in the job include masonry, woodworking, metalworking, and concreting.

Personal Attributes

The individual should be physically fit and mentally alert. The person should have problem-solving, coordination and appropriate verbal and written communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ICE/CON/N0501: Identify Construction Building Materials and Components
2. ICE/CON/N0502: Follow Environment, Health and Safety (EHS) Guidelines at Construction Sites
3. DGT/VSQ/N0102: Employability Skills (60 Hours)

Electives*(mandatory to select at least one):*

Elective : Masonry

1. ICE/CON/N0503: Plan and Execute Masonry Layouts and Foundations
2. ICE/CON/N0530: Construct Masonry Walls and Blocks
3. ICE/CON/N0504: Construct and Assemble Masonry Staircases
4. ICE/CON/N0505: Apply Plastering and Finishing Techniques
5. ICE/CON/N0506: Install and Maintain Masonry Paving Systems
6. ICE/CON/N0507: Implement Advanced Construction Technologies in Masonry

Qualification Pack (QP) Parameters

Qualification Pack

Sector	Construction
Sub-Sector	Infrastructure Construction
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
Country	India
NSQF Level	4
Credits	13
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7122.0601, NCO-2015/7112.0200, NCO-2015/7115.0201, NCO-2015/7213.0200, NCO-2015/7114.9900
Minimum Educational Qualification & Experience	12th grade Pass OR 10th grade pass with 2 Years of experience Relevant Industry OR 8th grade pass with 4 Years of experience Relevant Industry
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	Not Applicable
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	07/10/2028
NSQC Approval Date	07/10/2025
Version	1.0
Reference code on NQR	NCVET-QG-04-CO-046442025-V1-ICES
NQR Version	1.0

Remarks:

The Min. Job Entry Age for this Job Role will be as per Government Norms

Qualification Pack

ICE/CON/N0501: Identify Construction Building Materials and Components

Description

This unit covers identifying, selecting and inspecting various building materials and components required for fabrication tasks. This includes understanding material specifications, properties, and applications to ensure proper use in construction projects.

Scope

The scope covers the following :

- Identify building materials
- Inspect and verify the quality of materials
- Organize and prepare materials

Elements and Performance Criteria

Identify building materials

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

PC1. identify different types of metals, such as steel, aluminium and alloys, used in construction

PC2. explain distinguish between non-metallic materials like concrete, glass, wood and plastics based on their properties and uses

PC3. interpret technical specifications of materials from product catalogues, datasheets and drawings

PC4. identify common building components such as beams, columns, trusses and panels based on drawings and specifications

Inspect and verify the quality materials

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

PC5. check the dimensions, weight and appearance of materials against specifications

PC6. assess the physical condition of materials for defects such as cracks, rust or warping

PC7. confirm material certifications and test reports to ensure compliance with the applicable quality standards

PC8. report any discrepancies or substandard materials to the supervisor

Organize and prepare materials

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

PC9. sort and label materials as per their type, size and intended use

PC10. store materials safely to prevent damage or contamination

PC11. check for the availability of appropriate tools and equipment for material handling during fabrication

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedures for material identification and handling
KU2. roles involved in ensuring material quality and compliance
KU3. common construction material defects and reporting lines for escalating material-related issues
KU4. types and classifications of construction materials (e.g., ferrous and non-ferrous metals, composites, polymers)
KU5. properties of materials such as strength, durability, and resistance to environmental conditions
KU6. use of material handling equipment, e.g.forklifts, pallet jacks, and trolleys
KU7. relevant material storage techniques
KU8. quality standards and certifications for construction materials (e.g., BIS, ASTM)
KU9. interpret specifications and drawings to identify material requirements
KU10. verify material quality through physical inspection and documentation review
KU11. benefits of sorting and storing materials systematically, e.g. accessibility and safety
KU12. use of measuring tools such as rulers, micrometers, calipers and weighing scales
KU13. material datasheets, product catalogues and technical specifications
KU14. use of relevant Personal Protective Equipment (PPE) for safe construction material handling

Generic Skills (GS)

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

GS1. comprehend technical documents, instructions and specifications accurately
GS2. use basic math skills for measurements, calculations,and verification tasks
GS3. convey information, report issues and coordinate with team members and supervisors with clarity
GS4. identify challenges and inconsistencies in tasks and resolve them effectively or escalate as needed
GS5. plan and prioritize work to ensure efficient task completion
GS6. collaborate effectively with others to meet project requirements and deadlines
GS7. adjust to changing priorities, updates or unexpected challenges in the work environment
GS8. follow safety protocols and guidelines consistently to maintain a secure workplace
GS9. acquire new skills and knowledge to improve work efficiency and adaptability

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify building materials	**10**	**20**	**-**	**4**
PC1. identify different types of metals, such as steel, aluminium and alloys, used in construction	-	-	-	-
PC2. explain distinguish between non-metallic materials like concrete, glass, wood and plastics based on their properties and uses	-	-	-	-
PC3. interpret technical specifications of materials from product catalogues, datasheets and drawings	-	-	-	-
PC4. identify common building components such as beams, columns, trusses and panels based on drawings and specifications	-	-	-	-
Inspect and verify the quality materials	**10**	**20**	**-**	**4**
PC5. check the dimensions, weight and appearance of materials against specifications	-	-	-	-
PC6. assess the physical condition of materials for defects such as cracks, rust or warping	-	-	-	-
PC7. confirm material certifications and test reports to ensure compliance with the applicable quality standards	-	-	-	-
PC8. report any discrepancies or substandard materials to the supervisor	-	-	-	-
Organize and prepare materials	**10**	**20**	**-**	**2**
PC9. sort and label materials as per their type, size and intended use	-	-	-	-
PC10. store materials safely to prevent damage or contamination	-	-	-	-
PC11. check for the availability of appropriate tools and equipment for material handling during fabrication	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0501
NOS Name	Identify Construction Building Materials and Components
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	4
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0502: Follow Environment, Health and Safety (EHS) Guidelines at Construction Sites

Description

This unit focuses on implementing Environment, Health and Safety (EHS) guidelines to minimize risks and ensure compliance with legal and organizational standards.

Scope

The scope covers the following :

- Identify hazards and risks
- Comply with safety standards
- Follow health and hygiene guidelines
- Follow environmental protection measures
- Handle emergencies

Elements and Performance Criteria

Identify hazards and risks

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

PC1. identify common construction site hazards, including falling objects, slippery surfaces and electrical risks

PC2. evaluate the potential risks

PC3. report the identified hazards to the supervisor or safety officer

Comply with safety standards

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

PC4. use and maintain personal protective equipment (PPE) such as helmets, gloves, safety boots and harnesses

PC5. follow signage and barricading instructions to avoid restricted or hazardous areas

PC6. adhere to safe lifting techniques and tools to minimize strain and injuries

Follow health and hygiene guidelines

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

PC7. maintain personal hygiene by using clean drinking water and designated rest areas

PC8. report health symptoms (e.g., respiratory issues, heatstroke) promptly to the designated authority

PC9. ensure proper handling and disposal of materials that may pose health risks such as asbestos or chemicals

Follow environmental protection measures

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

PC10. follow appropriate measures to prevent the spillage of construction materials and chemicals that may harm the environment

PC11. carry out waste segregation activities into biodegradable and non-biodegradable for recycling and disposal

PC12. follow protocols for conserving water and energy at the construction site

Handle emergencies

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

PC13. identify emergency alarms and evacuation routes

PC14. use firefighting equipment (fire extinguishers, sand buckets) proper, when necessary

PC15. assist in first-aid or CPR procedures, if required

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of EHS guidelines and company policies

KU2. reporting structure for safety incidents or concerns

KU3. roles of key personnel such as the safety officer and site engineer

KU4. types of construction hazards (e.g. chemical, physical, ergonomic)

KU5. correct use and maintenance of PPE

KU6. first aid and basic firefighting techniques

KU7. environmental regulations related to construction, e.g. dust control, waste disposal etc.

KU8. safe operation of construction tools and equipment

Generic Skills (GS)

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

GS1. effectively report hazards or safety violations

GS2. read safety signage and instructions

GS3. carry out appropriate documentation concerning workplace safety

GS4. apply basic problem-solving skills to manage minor risks or incidents

GS5. collaborate with the team during emergencies or environmental protection activities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify hazards and risks	**6**	**12**	**-**	**2**
PC1. identify common construction site hazards, including falling objects, slippery surfaces and electrical risks	-	-	-	-
PC2. evaluate the potential risks	-	-	-	-
PC3. report the identified hazards to the supervisor or safety officer	-	-	-	-
Comply with safety standards	**6**	**12**	**-**	**2**
PC4. use and maintain personal protective equipment (PPE) such as helmets, gloves, safety boots and harnesses	-	-	-	-
PC5. follow signage and barricading instructions to avoid restricted or hazardous areas	-	-	-	-
PC6. adhere to safe lifting techniques and tools to minimize strain and injuries	-	-	-	-
Follow health and hygiene guidelines	**6**	**12**	**-**	**2**
PC7. maintain personal hygiene by using clean drinking water and designated rest areas	-	-	-	-
PC8. report health symptoms (e.g., respiratory issues, heatstroke) promptly to the designated authority	-	-	-	-
PC9. ensure proper handling and disposal of materials that may pose health risks such as asbestos or chemicals	-	-	-	-
Follow environmental protection measures	**6**	**12**	**-**	**2**
PC10. follow appropriate measures to prevent the spillage of construction materials and chemicals that may harm the environment	-	-	-	-
PC11. carry out waste segregation activities into biodegradable and non-biodegradable for recycling and disposal	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. follow protocols for conserving water and energy at the construction site	-	-	-	-
Handle emergencies	**6**	**12**	**-**	**2**
PC13. identify emergency alarms and evacuation routes	-	-	-	-
PC14. use firefighting equipment (fire extinguishers, sand buckets) proper, when necessary	-	-	-	-
PC15. assist in first-aid or CPR procedures, if required	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0502
NOS Name	Follow Environment, Health and Safety (EHS) Guidelines at Construction Sites
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication, MEP Supervison - Maintenance
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 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
- Career Development & Goal Setting
- 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. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

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

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC5. recognize the significance of 21st Century Skills for employment

PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

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

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

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

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

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 English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	22/09/2026
Next Review Date	22/09/2031
NSQC Clearance Date	22/09/2026

ICE/CON/N0503: Plan and Execute Masonry Layouts and Foundations

Description

This unit focuses on planning and executing masonry layouts and foundations by interpreting construction drawings, understanding load-bearing structures, marking site layouts accurately, and using geopolymer concrete applications to ensure durable and structurally sound foundations.

Scope

The scope covers the following :

- Read and interpret construction drawings
- Measure and mark site layout
- Construct using bricks, blocks, and geopolymer concrete

Elements and Performance Criteria

Read and interpret construction drawings

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

PC1. identify symbols, dimensions and specifications in construction drawings related to masonry layouts and foundations.

PC2. interpret site plans and elevation drawings to determine material requirements and work sequence.

PC3. verify construction details with the supervisor or engineer before execution.

PC4. extract information related to load distribution, reinforcement and drainage from construction drawings.

PC5. check for any discrepancies in drawings and report them to the supervisor.

Measure and mark layouts for construction

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

PC6. use tools like spirit levels, plumb bobs and laser measuring devices to mark accurate layouts.

PC7. prepare the site for layout marking as per organizational norms.

PC8. mark foundation and wall locations based on specified dimensions.

PC9. verify squareness of layouts using 3-4-5 or builder’s square methods, as appropriate.

PC10. establish reference points and levels using optical leveling tools.

PC11. identify and address site-specific constraints impacting layout accuracy.

Construct using bricks, blocks and geopolymer concrete

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

PC12. mix geopolymer concrete and monitor its properties for structural use.

PC13. set up formwork for foundation masonry using geopolymer concrete with proper alignment and stability.

PC14. lay and align bricks, blocks or stones using thin joint technology, mortar or adhesives.

PC15. maintain consistent joint thickness for bricks and blocks to enhance stability.

PC16. construct corners, walls and openings ensuring alignment and plumb.

PC17. use AAC blocks with prefabricated insulation inserts to enhance thermal efficiency.

PC18. ensure water-cement ratio and proper curing techniques.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. types of construction drawings (site plans, foundation plans, elevation drawings) and their symbols, dimensions and specifications.

KU2. methods for extracting information on load distribution, reinforcement and drainage from drawings.

KU3. tools and techniques for marking layouts (spirit level, plumb bob, laser measuring devices, optical leveling tools).

KU4. methods for verifying squareness using the 3-4-5 method or builders square.

KU5. site preparation steps for accurate layout marking as per safety norms.

KU6. properties, mixing and application of geopolymer concrete in masonry foundations.

KU7. techniques for setting up formwork with proper alignment and stability.

KU8. methods for laying and aligning bricks, blocks and stones using thin joint technology, mortar or adhesives.

KU9. importance of joint thickness, alignment and plumb in masonry construction.

KU10. use of AAC blocks with prefabricated insulation inserts for thermal efficiency.

KU11. importance of water-cement ratio and proper curing techniques for structural durability.

Generic Skills (GS)

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

GS1. comprehend technical documents, instructions and specifications accurately

GS2. use basic math skills for measurements, calculations and verification tasks

GS3. convey information, report issues and coordinate with team members and supervisors with clarity

GS4. identify challenges and inconsistencies in tasks and resolve them effectively or escalate as needed

GS5. plan and prioritize work to ensure efficient task completion

GS6. collaborate effectively with others to meet project requirements and deadlines

GS7. adjust to changing priorities, updates or unexpected challenges in the work environment

GS8. follow safety protocols and guidelines consistently to maintain a secure workplace

GS9. acquire new skills and knowledge to improve work efficiency and adaptability

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Read and interpret construction drawings	**10**	**20**	**-**	**2**
PC1. identify symbols, dimensions and specifications in construction drawings related to masonry layouts and foundations.	-	-	-	-
PC2. interpret site plans and elevation drawings to determine material requirements and work sequence.	-	-	-	-
PC3. verify construction details with the supervisor or engineer before execution.	-	-	-	-
PC4. extract information related to load distribution, reinforcement and drainage from construction drawings.	-	-	-	-
PC5. check for any discrepancies in drawings and report them to the supervisor.	-	-	-	-
Measure and mark layouts for construction	**10**	**20**	**-**	**4**
PC6. use tools like spirit levels, plumb bobs and laser measuring devices to mark accurate layouts.	-	-	-	-
PC7. prepare the site for layout marking as per organizational norms.	-	-	-	-
PC8. mark foundation and wall locations based on specified dimensions.	-	-	-	-
PC9. verify squareness of layouts using 3-4-5 or builder’s square methods, as appropriate.	-	-	-	-
PC10. establish reference points and levels using optical leveling tools.	-	-	-	-
PC11. identify and address site-specific constraints impacting layout accuracy.	-	-	-	-
Construct using bricks, blocks and geopolymer concrete	**10**	**20**	**-**	**4**
PC12. mix geopolymer concrete and monitor its properties for structural use.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. set up formwork for foundation masonry using geopolymer concrete with proper alignment and stability.	-	-	-	-
PC14. lay and align bricks, blocks or stones using thin joint technology, mortar or adhesives.	-	-	-	-
PC15. maintain consistent joint thickness for bricks and blocks to enhance stability.	-	-	-	-
PC16. construct corners, walls and openings ensuring alignment and plumb.	-	-	-	-
PC17. use AAC blocks with prefabricated insulation inserts to enhance thermal efficiency.	-	-	-	-
PC18. ensure water-cement ratio and proper curing techniques.	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0503
NOS Name	Plan and Execute Masonry Layouts and Foundations
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0530: Construct Masonry Walls and Blocks

Description

This unit focuses on the construction of masonry walls and blocks using traditional and modern techniques. It includes laying bricks and blocks, using thin joint technology, and installing AAC blocks with prefabricated insulation inserts to enhance structural strength, efficiency, and durability.

Scope

The scope covers the following :

- Lay bricks and blocks
- Use thin joint technology

Elements and Performance Criteria

Lay Bricks and Blocks

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

PC1. Select the appropriate type and size of bricks or blocks based on construction requirements
PC2. Inspect bricks and blocks for defects before use
PC3. Prepare the mortar mix in the correct ratio as per project specifications
PC4. Apply mortar evenly and consistently to ensure proper bonding between bricks/blocks
PC5. Lay bricks/blocks in a straight and level manner using a spirit level and plumb bob
PC6. Maintain proper joint thickness and alignment throughout the wall construction
PC7. Ensure staggered joint placement for added structural strength
PC8. Cut bricks or blocks to size using appropriate tools such as a masonry saw or chisel
PC9. Check vertical and horizontal alignments at regular intervals to avoid deviations
PC10. Construct corners and junctions using proper bonding techniques for added stability
PC11. Integrate reinforcement as per structural requirements, such as wire mesh or rebar
PC12. Cure the masonry wall for the recommended period to enhance durability

Use Thin Joint Technology

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

PC13. Prepare high-performance adhesive or thin joint mortar as per manufacturer guidelines
PC14. Apply a uniform and thin layer of adhesive to minimize joint thickness
PC15. Use a notched trowel to ensure even distribution of the thin joint adhesive
PC16. Position blocks with precision to avoid gaps or misalignment
PC17. Adjust block placement using light tapping to ensure firm bonding
PC18. Check for uniform load distribution across the wall structure
PC19. Maintain consistent joint thickness across the entire masonry wall
PC20. Remove excess adhesive immediately to prevent weak bonding

Install AAC Blocks with Prefabricated Insulation Inserts

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

PC21. Prepare the site and ensure a level surface for AAC block installation
PC22. Use specialized adhesive designed for AAC blocks to ensure optimal bonding
PC23. Install prefabricated insulation inserts accurately within AAC block joints
PC24. Align AAC blocks precisely to maintain a uniform structure
PC25. Trim and shape AAC blocks as required using appropriate cutting tools
PC26. Reinforce AAC block walls where necessary using steel bars or mesh
PC27. Ensure that insulation inserts are securely placed to enhance thermal efficiency
PC28. Verify wall stability and strength by conducting basic quality checks
PC29. Follow curing procedures for AAC block construction to ensure long-term durability

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Types and properties of bricks, blocks, and aac blocks used in masonry construction
KU2. Methods for inspecting bricks and blocks for defects before use
KU3. Correct mortar mix ratios and preparation techniques as per project specifications
KU4. Techniques for applying mortar evenly for strong bonding between bricks and blocks
KU5. Methods for ensuring straight and level alignment using a spirit level and plumb bob
KU6. Importance of joint thickness, staggered joint placement, and bonding techniques for structural strength
KU7. Tools and techniques for cutting bricks and blocks to size accurately
KU8. Reinforcement methods such as using wire mesh or rebar for added stability
KU9. Curing procedures for masonry walls to enhance durability
KU10. Properties and application of thin joint mortar and high-performance adhesives
KU11. Techniques for applying and distributing thin joint adhesive evenly using a notched trowel
KU12. Importance of precision placement and light tapping for proper bonding in thin joint technology
KU13. Installation methods for aac blocks with prefabricated insulation inserts for thermal efficiency
KU14. Specialized adhesives and reinforcement techniques for aac block walls
KU15. Quality checks to verify stability, alignment, and strength of masonry structures

Generic Skills (GS)

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

GS1. Communicate effectively with team members, supervisors, and stakeholders
GS2. Listen actively to understand instructions and feedback
GS3. Perform basic arithmetic calculations and take measurements accurately
GS4. Analyze project specifications to identify potential risks or challenges
GS5. Plan tasks to optimize time and resources

GS6. Organize tools, equipment, and materials efficiently
GS7. Operate modern tools and equipment with basic proficiency
GS8. Adapt to new construction technologies and methods
GS9. Follow health and safety guidelines to minimize workplace risks
GS10. Identify and mitigate workplace hazards promptly
GS11. Ensure compliance with environmental sustainability practices
GS12. Assess work challenges and make informed decisions
GS13. Evaluate feedback to implement process improvements
GS14. Maintain a professional attitude and ethical behaviour

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Lay Bricks and Blocks	**10**	**28**	**-**	**4**
PC1. Select the appropriate type and size of bricks or blocks based on construction requirements	-	-	-	-
PC2. Inspect bricks and blocks for defects before use	-	-	-	-
PC3. Prepare the mortar mix in the correct ratio as per project specifications	-	-	-	-
PC4. Apply mortar evenly and consistently to ensure proper bonding between bricks/blocks	-	-	-	-
PC5. Lay bricks/blocks in a straight and level manner using a spirit level and plumb bob	-	-	-	-
PC6. Maintain proper joint thickness and alignment throughout the wall construction	-	-	-	-
PC7. Ensure staggered joint placement for added structural strength	-	-	-	-
PC8. Cut bricks or blocks to size using appropriate tools such as a masonry saw or chisel	-	-	-	-
PC9. Check vertical and horizontal alignments at regular intervals to avoid deviations	-	-	-	-
PC10. Construct corners and junctions using proper bonding techniques for added stability	-	-	-	-
PC11. Integrate reinforcement as per structural requirements, such as wire mesh or rebar	-	-	-	-
PC12. Cure the masonry wall for the recommended period to enhance durability	-	-	-	-
Use Thin Joint Technology	**10**	**16**	**-**	**2**
PC13. Prepare high-performance adhesive or thin joint mortar as per manufacturer guidelines	-	-	-	-
PC14. Apply a uniform and thin layer of adhesive to minimize joint thickness	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC15. Use a notched trowel to ensure even distribution of the thin joint adhesive	-	-	-	-
PC16. Position blocks with precision to avoid gaps or misalignment	-	-	-	-
PC17. Adjust block placement using light tapping to ensure firm bonding	-	-	-	-
PC18. Check for uniform load distribution across the wall structure	-	-	-	-
PC19. Maintain consistent joint thickness across the entire masonry wall	-	-	-	-
PC20. Remove excess adhesive immediately to prevent weak bonding	-	-	-	-
Install AAC Blocks with Prefabricated Insulation Inserts	**10**	**16**	**-**	**4**
PC21. Prepare the site and ensure a level surface for AAC block installation	-	-	-	-
PC22. Use specialized adhesive designed for AAC blocks to ensure optimal bonding	-	-	-	-
PC23. Install prefabricated insulation inserts accurately within AAC block joints	-	-	-	-
PC24. Align AAC blocks precisely to maintain a uniform structure	-	-	-	-
PC25. Trim and shape AAC blocks as required using appropriate cutting tools	-	-	-	-
PC26. Reinforce AAC block walls where necessary using steel bars or mesh	-	-	-	-
PC27. Ensure that insulation inserts are securely placed to enhance thermal efficiency	-	-	-	-
PC28. Verify wall stability and strength by conducting basic quality checks	-	-	-	-
PC29. Follow curing procedures for AAC block construction to ensure long-term durability	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0530
NOS Name	Construct Masonry Walls and Blocks
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0504: Construct and Assemble Masonry Staircases

Description

This unit focuses on the construction and assembly of masonry staircases using precast modular sections and traditional masonry techniques.

Scope

The scope covers the following :

- Prepare for Masonry Staircase Construction
- Construct Masonry Staircases Using Bricks and Blocks
- Assemble Staircases Using Precast Modular Sections
- Ensure Structural Integrity of the Staircase
- Align Staircases to Architectural Designs

Elements and Performance Criteria

Prepare for Masonry Staircase Construction

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

PC1. read and interpret staircase construction drawings, blueprints and specifications

PC2. identify the appropriate staircase type (e.g., straight, spiral, l-shaped) based on design requirements

PC3. calculate rise, run and tread dimensions to ensure ergonomic and code-compliant construction

PC4. inspect and prepare the site for staircase construction, ensuring a level and stable foundation

PC5. select and arrange the required masonry materials such as bricks, blocks and precast sections

PC6. determine the load-bearing capacity and reinforcement needs of the staircase structure

Construct Masonry Staircases Using Bricks and Blocks

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

PC7. lay bricks or blocks to construct staircase steps, risers and landings

PC8. use formwork or shuttering to shape and support staircases during construction

PC9. apply the correct mortar mix for strong bonding and long-lasting durability

PC10. install reinforcement bars (rebar) or mesh within the staircase structure for added strength

PC11. ensure proper curing of masonry staircases to prevent cracks and enhance durability

PC12. align brick/block steps precisely to maintain uniformity and consistency

Assemble Staircases Using Precast Modular Sections

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

PC13. handle and position precast modular staircase sections using appropriate lifting techniques

PC14. ensure proper alignment of precast components as per design specifications

PC15. apply bonding agents or mortar to securely join precast sections

PC16. use fasteners or reinforcements such as steel rods or anchors for additional stability
PC17. seal joints between precast sections to prevent structural gaps and ensure durability
PC18. verify the uniformity of steps and landings to maintain safety and comfort

Ensure Structural Integrity of the Staircase

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

PC19. conduct load-bearing tests to verify the strength of the constructed staircase
PC20. inspect the staircase for cracks, misalignment, or instability and take corrective measures
PC21. apply waterproofing and anti-skid treatments to improve safety and longevity
PC22. check for proper drainage and ventilation around the staircase to prevent water damage
PC23. conduct finishing work such as plastering and polishing for a smooth and professional appearance

Align Staircases to Architectural Designs

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

PC24. ensure that staircase dimensions and aesthetics match the overall architectural design
PC25. verify compliance with building codes and safety regulations for staircase construction
PC26. coordinate with engineers, architects, and site supervisors to address design concerns
PC27. install handrails, balustrades, or decorative elements as per architectural requirements
PC28. conduct final quality checks before handing over the staircase for use

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. methods for reading and interpreting staircase construction drawings and blueprints
KU2. types of masonry staircases (e.g., straight, spiral, l-shaped) and their construction requirements
KU3. calculation techniques for rise, run, and tread dimensions to ensure ergonomic and code-compliant stairs
KU4. site preparation techniques for staircase construction, including foundation leveling and stability checks
KU5. selection and arrangement of masonry materials such as bricks, blocks and precast sections
KU6. load-bearing capacity and reinforcement requirements for masonry staircases
KU7. techniques for laying bricks and blocks to construct steps, risers and landings
KU8. importance of using formwork or shuttering to support staircases during construction
KU9. correct mortar mix preparation and application for strong bonding and durability
KU10. reinforcement methods using rebar or mesh for added staircase strength
KU11. curing procedures for masonry staircases to prevent cracks and improve longevity
KU12. handling and positioning techniques for precast modular staircase sections
KU13. methods for aligning precast components accurately according to design specifications
KU14. application of bonding agents, fasteners, and reinforcements to ensure staircase stability
KU15. sealing techniques to prevent structural gaps and improve durability of precast staircases
KU16. procedures for conducting load-bearing tests and inspecting staircases for defects

KU17. application of waterproofing and anti-skid treatments for safety and longevity
KU18. drainage and ventilation considerations to prevent water damage to staircases
KU19. finishing techniques such as plastering and polishing for a professional appearance
KU20. compliance with building codes and safety regulations for staircase construction
KU21. installation of handrails, balustrades and decorative elements as per architectural designs

Generic Skills (GS)

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

GS1. communicate effectively with team members, supervisors, and stakeholders
GS2. listen actively to understand instructions and feedback
GS3. perform basic arithmetic calculations and take measurements accurately
GS4. analyze project specifications to identify potential risks or challenges
GS5. plan tasks to optimize time and resources
GS6. organize tools, equipment, and materials efficiently
GS7. operate modern tools and equipment with basic proficiency
GS8. adapt to new construction technologies and methods
GS9. follow health and safety guidelines to minimize workplace risks
GS10. identify and mitigate workplace hazards promptly
GS11. ensure compliance with environmental sustainability practices
GS12. assess work challenges and make informed decisions
GS13. evaluate feedback to implement process improvements
GS14. maintain a professional attitude and ethical behaviour

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for Masonry Staircase Construction	**6**	**12**	**-**	**2**
PC1. read and interpret staircase construction drawings, blueprints and specifications	-	-	-	-
PC2. identify the appropriate staircase type (e.g., straight, spiral, l-shaped) based on design requirements	-	-	-	-
PC3. calculate rise, run and tread dimensions to ensure ergonomic and code-compliant construction	-	-	-	-
PC4. inspect and prepare the site for staircase construction, ensuring a level and stable foundation	-	-	-	-
PC5. select and arrange the required masonry materials such as bricks, blocks and precast sections	-	-	-	-
PC6. determine the load-bearing capacity and reinforcement needs of the staircase structure	-	-	-	-
Construct Masonry Staircases Using Bricks and Blocks	**6**	**12**	**-**	**2**
PC7. lay bricks or blocks to construct staircase steps, risers and landings	-	-	-	-
PC8. use formwork or shuttering to shape and support staircases during construction	-	-	-	-
PC9. apply the correct mortar mix for strong bonding and long-lasting durability	-	-	-	-
PC10. install reinforcement bars (rebar) or mesh within the staircase structure for added strength	-	-	-	-
PC11. ensure proper curing of masonry staircases to prevent cracks and enhance durability	-	-	-	-
PC12. align brick/block steps precisely to maintain uniformity and consistency	-	-	-	-
Assemble Staircases Using Precast Modular Sections	**6**	**12**	**-**	**2**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. handle and position precast modular staircase sections using appropriate lifting techniques	-	-	-	-
PC14. ensure proper alignment of precast components as per design specifications	-	-	-	-
PC15. apply bonding agents or mortar to securely join precast sections	-	-	-	-
PC16. use fasteners or reinforcements such as steel rods or anchors for additional stability	-	-	-	-
PC17. seal joints between precast sections to prevent structural gaps and ensure durability	-	-	-	-
PC18. verify the uniformity of steps and landings to maintain safety and comfort	-	-	-	-
Ensure Structural Integrity of the Staircase	**6**	**12**	**-**	**2**
PC19. conduct load-bearing tests to verify the strength of the constructed staircase	-	-	-	-
PC20. inspect the staircase for cracks, misalignment, or instability and take corrective measures	-	-	-	-
PC21. apply waterproofing and anti-skid treatments to improve safety and longevity	-	-	-	-
PC22. check for proper drainage and ventilation around the staircase to prevent water damage	-	-	-	-
PC23. conduct finishing work such as plastering and polishing for a smooth and professional appearance	-	-	-	-
Align Staircases to Architectural Designs	**6**	**12**	**-**	**2**
PC24. ensure that staircase dimensions and aesthetics match the overall architectural design	-	-	-	-
PC25. verify compliance with building codes and safety regulations for staircase construction	-	-	-	-
PC26. coordinate with engineers, architects, and site supervisors to address design concerns	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. install handrails, balustrades, or decorative elements as per architectural requirements	-	-	-	-
PC28. conduct final quality checks before handing over the staircase for use	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0504
NOS Name	Construct and Assemble Masonry Staircases
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0505: Apply Plastering and Finishing Techniques

Description

This unit focuses on carrying out plastering and rendering works to achieve smooth and durable masonry surfaces.

Scope

The scope covers the following :

- Prepare for Plastering and Finishing Work
- Carry Out Plastering and Rendering Works
- Use Self-Curing Plaster Techniques
- Perform Masonry Repair Using Nano Particle Sealants

Elements and Performance Criteria

Prepare for Plastering and Finishing Work

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

PC1. inspect the surface condition to determine the required preparation and treatment

PC2. select appropriate plastering materials based on substrate type and environmental conditions

PC3. clean the masonry surface to remove dust, debris and loose particles before application

PC4. apply bonding agents or primers to improve adhesion of plaster materials

PC5. set up tools, mixing equipment and scaffolding safely before starting the work

Carry Out Plastering and Rendering Works

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

PC6. mix plaster or render to the required consistency using manual or mechanical methods

PC7. apply base and finishing coats of plaster evenly using trowels, floats and spraying techniques

PC8. use different plastering techniques such as single-coat, two-coat and multi-layer applications

PC9. ensure uniform thickness and smooth application by using screeds and levelers

PC10. finish plastered surfaces using troweling, polishing or textured finishing techniques

PC11. check for hollowness or cracks in the plaster and rectify imperfections before drying

Use Self-Curing Plaster Techniques

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

PC12. prepare and apply self-curing plaster using polymer-based compounds

PC13. ensure even distribution of self-curing agents to reduce water evaporation losses

PC14. monitor the curing process and maintain surface hydration without external curing methods

PC15. assess the effectiveness of self-curing plaster in different climate conditions

Perform Masonry Repair using Nano-particle Sealants

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

PC16. identify damaged or deteriorated masonry surfaces requiring repair

PC17. clean cracks, voids and porous surfaces before applying nano-particle sealants
PC18. select the appropriate nano-sealant formulation based on the material type and damage level
PC19. apply nano-sealants using brush, roller or spray techniques to ensure deep penetration
PC20. monitor curing time and effectiveness of the sealant in strengthening and waterproofing masonry
PC21. check for any remaining weak spots or gaps and reapply sealant as needed

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. surface inspection techniques for determining preparation and treatment needs
KU2. selection of appropriate plastering materials based on substrate type and environmental factors
KU3. cleaning methods for masonry surfaces before plastering
KU4. application of bonding agents or primers to enhance plaster adhesion
KU5. safe setup of tools, mixing equipment and scaffolding for plastering work
KU6. mixing techniques for plaster or render to achieve the correct consistency
KU7. methods for applying base and finishing coats using trowels, floats and spraying
KU8. plastering techniques such as single-coat, two-coat and multi-layer applications
KU9. use of screeds and levelers for uniform thickness and smooth application
KU10. finishing techniques like troweling, polishing, and texturing
KU11. identification and rectification of hollowness or cracks in plaster before drying
KU12. application of self-curing plaster using polymer-based compounds
KU13. monitoring and maintaining surface hydration without external curing methods
KU14. identification and preparation of damaged masonry surfaces for repair
KU15. selection and application of nano-particle sealants for strengthening and waterproofing masonry
KU16. techniques for monitoring curing time and effectiveness of nano-sealants

Generic Skills (GS)

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

GS1. communicate effectively with team members, supervisors, and stakeholders
GS2. listen actively to understand instructions and feedback
GS3. perform basic arithmetic calculations and take measurements accurately
GS4. analyze project specifications to identify potential risks or challenges
GS5. plan tasks to optimize time and resources
GS6. organize tools, equipment, and materials efficiently
GS7. operate modern tools and equipment with basic proficiency

GS8. adapt to new construction technologies and methods
GS9. follow health and safety guidelines to minimize workplace risks
GS10. identify and mitigate workplace hazards promptly
GS11. ensure compliance with environmental sustainability practices
GS12. assess work challenges and make informed decisions
GS13. evaluate feedback to implement process improvements
GS14. maintain a professional attitude and ethical behaviour

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for Plastering and Finishing Work	**5**	**13**	**-**	**2**
PC1. inspect the surface condition to determine the required preparation and treatment	-	-	-	-
PC2. select appropriate plastering materials based on substrate type and environmental conditions	-	-	-	-
PC3. clean the masonry surface to remove dust, debris and loose particles before application	-	-	-	-
PC4. apply bonding agents or primers to improve adhesion of plaster materials	-	-	-	-
PC5. set up tools, mixing equipment and scaffolding safely before starting the work	-	-	-	-
Carry Out Plastering and Rendering Works	**10**	**17**	**-**	**3**
PC6. mix plaster or render to the required consistency using manual or mechanical methods	-	-	-	-
PC7. apply base and finishing coats of plaster evenly using trowels, floats and spraying techniques	-	-	-	-
PC8. use different plastering techniques such as single-coat, two-coat and multi-layer applications	-	-	-	-
PC9. ensure uniform thickness and smooth application by using screeds and levelers	-	-	-	-
PC10. finish plastered surfaces using troweling, polishing or textured finishing techniques	-	-	-	-
PC11. check for hollowness or cracks in the plaster and rectify imperfections before drying	-	-	-	-
Use Self-Curing Plaster Techniques	**10**	**17**	**-**	**3**
PC12. prepare and apply self-curing plaster using polymer-based compounds	-	-	-	-
PC13. ensure even distribution of self-curing agents to reduce water evaporation losses	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. monitor the curing process and maintain surface hydration without external curing methods	-	-	-	-
PC15. assess the effectiveness of self-curing plaster in different climate conditions	-	-	-	-
Perform Masonry Repair using Nano-particle Sealants	**5**	**13**	**-**	**2**
PC16. identify damaged or deteriorated masonry surfaces requiring repair	-	-	-	-
PC17. clean cracks, voids and porous surfaces before applying nano-particle sealants	-	-	-	-
PC18. select the appropriate nano-sealant formulation based on the material type and damage level	-	-	-	-
PC19. apply nano-sealants using brush, roller or spray techniques to ensure deep penetration	-	-	-	-
PC20. monitor curing time and effectiveness of the sealant in strengthening and waterproofing masonry	-	-	-	-
PC21. check for any remaining weak spots or gaps and reapply sealant as needed	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0505
NOS Name	Apply Plastering and Finishing Techniques
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0506: Install and Maintain Masonry Paving Systems

Description

This unit focuses on the installation, maintenance, and repair of masonry paving systems, ensuring stability, durability, and alignment while incorporating modern techniques like permeable paving for sustainable construction.

Scope

The scope covers the following :

- Prepare site for paving
- Install masonry paving systems
- Apply permeable paving technology
- Repair and maintain paving systems

Elements and Performance Criteria

Prepare Site for Paving

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

PC1. assess the site conditions, including soil type, drainage and load-bearing capacity

PC2. clear debris, vegetation and obstructions from the paving area

PC3. mark layout and levels based on construction drawings and specifications

PC4. compact and level the base using appropriate techniques for a stable foundation

Install Masonry Paving Systems

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

PC5. select suitable paving materials based on site requirements and design specifications

PC6. lay pavers in the prescribed pattern, ensuring uniform alignment and spacing

PC7. use appropriate jointing materials such as polymeric sand or mortar to secure pavers

PC8. compact and stabilize the pavers using a plate compactor or manual tamping

Apply Permeable Paving Technology

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

PC9. install permeable paving materials to facilitate stormwater drainage and reduce runoff

PC10. incorporate gravel layers and drainage channels to enhance water infiltration

PC11. ensure proper spacing and grading to maintain permeability and prevent clogging

Repair and Maintain Paving Systems

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

PC12. inspect paving surfaces for defects such as sinking, cracking or misalignment

PC13. replace damaged pavers without disturbing the surrounding layout

PC14. re-level and compact loose or uneven sections to restore stability

PC15. remove weeds, debris, and sediment buildup from paved surfaces and joints

PC16. handle and transport pavers safely to avoid injuries and breakage

PC17. conduct final inspection to ensure proper alignment, durability and compliance with design specifications

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standard procedures for preparing, laying and maintaining masonry paving systems
KU2. applicable building codes, industry standards and safety regulations for paving works
KU3. quality standards for different types of paving materials and their application
KU4. workplace policies related to waste disposal, environmental compliance and material handling
KU5. documentation and reporting procedures for completed paving work and repairs
KU6. types of paving materials, including concrete blocks, stone pavers, clay bricks and permeable pavers
KU7. properties and durability of various paving materials under different climatic conditions
KU8. selection criteria for appropriate paving materials based on load-bearing capacity and aesthetics
KU9. methods of site assessment for drainage, soil conditions and stability
KU10. techniques for grading, compacting and leveling the base for a stable foundation
KU11. importance of geotextile membranes and bedding layers in paving systems
KU12. laying patterns and techniques, such as herringbone, running bond and basket weave
KU13. methods for aligning, spacing and securing pavers to maintain uniformity
KU14. role of jointing materials like polymeric sand and mortar in enhancing stability
KU15. working principles of permeable paving for stormwater management and eco-friendly construction
KU16. types of permeable paving materials and their water infiltration capacity
KU17. techniques for maintaining permeability by preventing clogging and sediment buildup
KU18. common paving defects, including sinking, cracking and weed growth
KU19. procedures for replacing damaged or misaligned pavers without affecting the entire surface
KU20. techniques for re-leveling, compacting and sealing joints for long-term stability
KU21. occupational hazards related to masonry paving including lifting injuries and tripping risks
KU22. proper usage and maintenance of paving tools and equipment, such as plate compactors and rubber mallets

Generic Skills (GS)

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

GS1. communicate effectively with team members, supervisors and stakeholders
GS2. listen actively to understand instructions and feedback
GS3. perform basic arithmetic calculations and take measurements accurately
GS4. analyze project specifications to identify potential risks or challenges

GS5. plan tasks to optimize time and resources
GS6. organize tools, equipment and materials efficiently
GS7. operate modern tools and equipment with basic proficiency
GS8. adapt to new construction technologies and methods
GS9. follow health and safety guidelines to minimize workplace risks
GS10. identify and mitigate workplace hazards promptly
GS11. ensure compliance with environmental sustainability practices
GS12. assess work challenges and make informed decisions
GS13. evaluate feedback to implement process improvements
GS14. maintain a professional attitude and ethical behaviour

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare Site for Paving	**5**	**5**	**-**	**2**
PC1. assess the site conditions, including soil type, drainage and load-bearing capacity	-	-	-	-
PC2. clear debris, vegetation and obstructions from the paving area	-	-	-	-
PC3. mark layout and levels based on construction drawings and specifications	-	-	-	-
PC4. compact and level the base using appropriate techniques for a stable foundation	-	-	-	-
Install Masonry Paving Systems	**5**	**10**	**-**	**2**
PC5. select suitable paving materials based on site requirements and design specifications	-	-	-	-
PC6. lay pavers in the prescribed pattern, ensuring uniform alignment and spacing	-	-	-	-
PC7. use appropriate jointing materials such as polymeric sand or mortar to secure pavers	-	-	-	-
PC8. compact and stabilize the pavers using a plate compactor or manual tamping	-	-	-	-
Apply Permeable Paving Technology	**10**	**25**	**-**	**3**
PC9. install permeable paving materials to facilitate stormwater drainage and reduce runoff	-	-	-	-
PC10. incorporate gravel layers and drainage channels to enhance water infiltration	-	-	-	-
PC11. ensure proper spacing and grading to maintain permeability and prevent clogging	-	-	-	-
Repair and Maintain Paving Systems	**10**	**20**	**-**	**3**
PC12. inspect paving surfaces for defects such as sinking, cracking or misalignment	-	-	-	-
PC13. replace damaged pavers without disturbing the surrounding layout	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. re-level and compact loose or uneven sections to restore stability	-	-	-	-
PC15. remove weeds, debris, and sediment buildup from paved surfaces and joints	-	-	-	-
PC16. handle and transport pavers safely to avoid injuries and breakage	-	-	-	-
PC17. conduct final inspection to ensure proper alignment, durability and compliance with design specifications	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0506
NOS Name	Install and Maintain Masonry Paving Systems
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N0507: Implement Advanced Construction Technologies in Masonry

Description

This unit focuses on the integration of modern construction technologies in masonry, including 3D printing, automated fabrication, and digital construction techniques

Scope

The scope covers the following :

- Understand and apply 3D printing technology in masonry
- Apply automated and digital fabrication methods

Elements and Performance Criteria

Understand and Apply 3D Printing Technology in Masonry

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

PC1. identify the principles and working mechanisms of 3D printing in masonry construction

PC2. interpret 3D digital models and convert them into printable masonry structures

PC3. set up and calibrate masonry-specific 3D printers for on-site and off-site applications

PC4. prepare raw materials such as geopolymer concrete and specialized mortar for 3D printing

PC5. monitor the printing process to ensure structural accuracy and material consistency

PC6. troubleshoot printing defects such as layer misalignment, cracking or material inconsistencies

Apply Automated and Digital Methods in Masonry Activities

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

PC7. operation of robotic bricklaying and automated block assembly systems

PC8. program and control robotic masonry systems for efficient and precise construction

PC9. implement prefabricated masonry components using digital design and CNC-cutting methods

PC10. utilize BIM (Building Information Modeling) to optimize masonry layouts and workflow efficiency

PC11. integrate sensor-based monitoring systems to track construction accuracy and material usage

Follow Sustainability and Efficiency in Modern Masonry Techniques

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

PC12. assess the environmental impact of traditional versus advanced masonry techniques

PC13. optimize material usage by reducing waste through automated and digital fabrication methods

PC14. implement energy-efficient masonry solutions such as self-healing concrete and smart insulation

PC15. evaluate the cost-effectiveness and return on investment (ROI) of using advanced construction technologies

PC16. follow green building standards and certifications when applying digital masonry techniques

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. principles of 3D printing and its applications in masonry construction and repairs
KU2. types of 3D printing materials suitable for masonry, including geopolymer concrete and specialized mortars
KU3. workflow of digital modeling, slicing, and printing for masonry structures
KU4. troubleshooting common issues in 3D-printed masonry structures
KU5. fundamentals of robotic bricklaying and automated block assembly techniques
KU6. benefits and limitations of digital fabrication in masonry
KU7. use of prefabricated masonry components in modular construction
KU8. integration of BIM (Building Information Modeling) in masonry construction for efficiency and precision
KU9. role of AI and IoT in optimizing automated masonry processes
KU10. sustainability principles related to modern masonry construction methods
KU11. environmental impact of traditional masonry versus advanced construction technologies
KU12. strategies for reducing waste and improving resource efficiency through automation
KU13. advanced masonry materials such as self-healing concrete and nanotechnology-based coatings
KU14. importance of adhering to green building standards and certification programs
KU15. occupational health and safety considerations when working with automated machinery
KU16. standard safety procedures for operating 3D printers and robotic masonry equipment
KU17. maintenance practices for prolonging the life of digital and automated masonry tools
KU18. latest trends and innovations in masonry automation and construction technology

Generic Skills (GS)

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

GS1. communicate effectively with team members, supervisors, and stakeholders
GS2. listen actively to understand instructions and feedback
GS3. perform basic arithmetic calculations and take measurements accurately
GS4. analyze project specifications to identify potential risks or challenges
GS5. plan tasks to optimize time and resources
GS6. organize tools, equipment, and materials efficiently
GS7. operate modern tools and equipment with basic proficiency
GS8. adapt to new construction technologies and methods
GS9. follow health and safety guidelines to minimize workplace risks
GS10. identify and mitigate workplace hazards promptly

GS11. ensure compliance with environmental sustainability practices
GS12. assess work challenges and make informed decisions
GS13. evaluate feedback to implement process improvements
GS14. maintain a professional attitude and ethical behaviour

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Understand and Apply 3D Printing Technology in Masonry	**10**	**15**	**-**	**2**
PC1. identify the principles and working mechanisms of 3D printing in masonry construction	-	-	-	-
PC2. interpret 3D digital models and convert them into printable masonry structures	-	-	-	-
PC3. set up and calibrate masonry-specific 3D printers for on-site and off-site applications	-	-	-	-
PC4. prepare raw materials such as geopolymer concrete and specialized mortar for 3D printing	-	-	-	-
PC5. monitor the printing process to ensure structural accuracy and material consistency	-	-	-	-
PC6. troubleshoot printing defects such as layer misalignment, cracking or material inconsistencies	-	-	-	-
Apply Automated and Digital Methods in Masonry Activities	**10**	**25**	**-**	**4**
PC7. operation of robotic bricklaying and automated block assembly systems	-	-	-	-
PC8. program and control robotic masonry systems for efficient and precise construction	-	-	-	-
PC9. implement prefabricated masonry components using digital design and CNC-cutting methods	-	-	-	-
PC10. utilize BIM (Building Information Modeling) to optimize masonry layouts and workflow efficiency	-	-	-	-
PC11. integrate sensor-based monitoring systems to track construction accuracy and material usage	-	-	-	-
Follow Sustainability and Efficiency in Modern Masonry Techniques	**10**	**20**	**-**	**4**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. assess the environmental impact of traditional versus advanced masonry techniques	-	-	-	-
PC13. optimize material usage by reducing waste through automated and digital fabrication methods	-	-	-	-
PC14. implement energy-efficient masonry solutions such as self-healing concrete and smart insulation	-	-	-	-
PC15. evaluate the cost-effectiveness and return on investment (ROI) of using advanced construction technologies	-	-	-	-
PC16. follow green building standards and certifications when applying digital masonry techniques	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N0507
NOS Name	Implement Advanced Construction Technologies in Masonry
Sector	Construction
Sub-Sector	
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Awarding Body. Each Performance Criteria (PC)/ Element will be assigned marks proportional to its importance in NOS. AB will also lay down proportion of marks for Theory and Practical Skills for each PC/ Element.

2. The assessment of the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by AB.

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. To pass the Qualification Pack, every trainee must score 70% on overall QP.

6. The Assessor shall check the outcome of the practices while evaluating the steps performed to achieve the outcome.

7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of

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

8. After the certain number of iterations as decided by AB 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 time frame set by AB.

10. Minimum duration of Assessment of each QP shall be 8hrs/batch (max. 30 candidates).

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
ICE/CON/N0501.Identify Construction Building Materials and Components	30	60	-	10	100	15
ICE/CON/N0502.Follow Environment, Health and Safety (EHS) Guidelines at Construction Sites	30	60	-	10	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	**80**	**150**	**-**	**20**	**250**	**30**

Elective: 1 Masonry

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ICE/CON/N0503.Plan and Execute Masonry Layouts and Foundations	30	60	-	10	100	10
ICE/CON/N0530.Construct Masonry Walls and Blocks	30	60	-	10	100	10

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ICE/CON/N0504.Construct and Assemble Masonry Staircases	30	60	-	10	100	10
ICE/CON/N0505.Apply Plastering and Finishing Techniques	30	60	-	10	100	10
ICE/CON/N0506.Install and Maintain Masonry Paving Systems	30	60	-	10	100	15
ICE/CON/N0507.Implement Advanced Construction Technologies in Masonry	30	60	-	10	100	15
Total	**180**	**360**	**-**	**60**	**600**	**70**