

Curriculum

QP Name:	**Construction Fabricator** **Electives: Masonry**
QP Code:	**ICE/CON/Q0501-SI001**
Version:	**1.0**
NSQF Level:	**4**
Model Curriculum Version:	**1.0**

The Institution of Civil Engineers Society (ICES)
301-303, Suncity Trade Tower, Sector-21, Gurugram, Haryana || Email: ceo@iceskills.in

Table of Contents

Training Parameters 3
Program Overview 4
Training Outcomes: 4
Compulsory Modules: 5
Elective Modules: 6
Elective 1: Masonry 6
Module Details 8
Module 1: Introduction to the Construction Industry and the job role "Construction Fabricator" 8
Module 2: Identify construction building materials and components 9
Module 3: Workplace Safety and Health Compliance 10
Module 4: Environmental Protection and Emergency Preparedness 11
Module 5: Employability Skills (60 Hours) 12
Module 6: Plan and Execute Masonry Layouts and Foundations 14
Module 7: Construct Masonry Walls and Blocks 16
Module 8: Construct and Assemble Masonry Staircases 18
Module 9: Apply Plastering and Finishing Techniques 20
Module 10: Install and Maintain Masonry Paving Systems 22
Module 11: Implement Advanced Construction Technologies in Masonry 24
On-the-Job Training 26
Annexures 28
Trainer Requirements 28
Assessor Requirements 29
Assessment Strategy 30
References 34
Glossary 34
Acronyms and Abbreviations 36

Training Parameters

Sector	Construction		
Sub-Sector	Infrastructure Construction		
Occupation	Masonry/Shuttering Carpentry/Bar Bending/Fabrication		
Country	India		
NSQF Level	4		
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 and Experience	**S. No.**	**Academic/Skill Qualification (with Specialization - if applicable)**	**Required Experience (with Specialization - if applicable)**
	1	12th Grade pass	
	OR		
	2	10th Grade pass	3 years of Relevant Industry Experience
	OR		
	3	8th Grade pass	6 years of Relevant Industry Experience
	OR		
	4	Previous relevant Qualification of NSQF Level 3	3 years of relevant experience
	OR		
	5	Previous relevant Qualification of NSQF Level 3.5	1.5 years of relevant experience
Pre-Requisite License or Training	Not Applicable		
Minimum Job Entry Age	As per Govt. Norms		
Last Reviewed On	07-10-2025		
Next Review Date	07-10-2028		
NSQC Approval Date	07-10-2025		
QP Version	1.0		
Model Curriculum Creation Date	07-10-2025		
Model Curriculum Valid Up to Date	07-10-2028		
Model Curriculum Version	1.0		
Minimum Duration of the Course	390 Hours		
Maximum Duration of the Course	390 Hours		

Program Overview

This section summarises the end objectives of the program along with its duration.

Training Outcomes:

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Identify and classify construction materials, their properties and appropriate applications for civil works.
- Interpret construction drawings, dimensions and specifications for layout and execution.
- Apply occupational health, safety and environmental practices as per site standards.
- Demonstrate teamwork, communication and employability skills required for the construction industry.
- Use basic digital tools and documentation techniques for construction data and reporting
- Prepare masonry layouts and foundations with accurate alignment and levelling.
- Mix and apply mortar in correct proportions for different masonry applications.
- Construct brick, block and stone masonry walls maintaining plumb, bond and uniform joints.
- Build masonry staircases, corners and junctions as per design and safety norms.
- Apply plastering, rendering and finishing techniques for smooth and decorative surfaces.
- Install and maintain masonry paving systems ensuring slope, joint filling and surface finish.
- Use advanced masonry technologies like interlocking blocks and AAC systems for energy-efficient construction.
- Identify types of timber, joints and tools used for carpentry and formwork.
- Prepare and assemble wooden frameworks for doors, windows and structural elements.
- Install interior wooden partitions, panels and linings ensuring level and finish quality.
- Assemble, align and dismantle shuttering for concreting as per formwork design.
- Construct and install wooden structural or decorative features following dimensional accuracy.
- Plan fabrication tasks based on metal types, dimensions and structural drawings.
- Cut, bend and tie reinforcement bars as per bar bending schedules.
- Weld and assemble metal components ensuring correct joints and alignment.
- Apply protective coatings and surface treatments to prevent corrosion and enhance durability.
- Install metal cladding and structural components ensuring stability and insulation efficiency.
- Prepare, pour and compact concrete mixes ensuring uniform quality and proper curing.
- Execute concreting for beams, columns, slabs and footings maintaining alignment and finish.
- Carry out reinforced concrete works integrating rebar and formwork systems safely.
- Perform repair and restoration of concrete surfaces using appropriate materials and techniques.
- Construct and install precast concrete components following lifting and installation procedures.
- Cut, shape and assemble sheet metal components as per design and tolerance requirements.
- Operate advanced fabrication equipment for precision sheet metal and aluminium structures.
- Apply finishing, coating and surface treatments to achieve desired texture and protection.
- Conduct inspection and quality control checks to ensure dimensional accuracy in fabrication.
- Identify and assemble aluminium formwork panels and accessories as per layout.
- Install and secure aluminium formwork on site maintaining alignment and structural stability.
- Carry out concrete pouring, vibration and safe dismantling of aluminium formwork after curing.
- Demonstrate professional work ethics, environmental awareness and commitment to
- Demonstrate professional work ethics, environmental awareness and commitment to sustainable construction practices.

Compulsory Modules:

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

NOS and Module Details	Theory Duration (in Hours)	Practical Duration (in Hours)	On-the-Job Training Duration (Mandatory) (in Hours)	On-the-Job Training Duration (Recommended) (in Hours)	Total Duration (in Hours)
ICE/CON/N0501: Identify construction building materials and components NOS Version: 1.0 NSQF Level: 4	**20:00**	**70:00**	**30:00**	**00:00**	**120:00**
Module 1: Introduction to the Construction Industry and the job role "Construction Fabricator"	05:00	00:00	00:00	00:00	05:00
Module 2: Identify construction building materials and components	15:00	70:00	30:00	00:00	115:00
ICE/CON/N0502: Follow Environmental, Health and Safety (EHS) Guidelines at Construction Sites NOS Version: 1.0 NSQF Level: 4	**10:00**	**20:00**	**00:00**	**00:00**	**30:00**
Module 3: Workplace Safety and Health Compliance	05:00	10:00	00:00	00:00	15:00
Module 4: Environmental Protection and Emergency Preparedness	05:00	10:00	00:00	00:00	15:00
DGT/VSQ/N0102: Employability Skills (60 Hours) NOS Version: 1.0 NSQF Level: 4	**60:00**	**00:00**	**00:00**	**00:00**	**60:00**
Module 5: Employability Skills (60 Hours)	60:00	00:00	00:00	00:00	60:00
Total Duration	**90:00**	**90:00**	**30:00**	**00:00**	**210:00**

Elective Modules:

Elective 1: Masonry

NOS and Module Details	Theory Duration (in Hours)	Practical Duration (in Hours)	On-the-Job Training Duration (Mandatory) (in Hours)	On-the-Job Training Duration (Recommended) (in Hours)	Total Duration (in Hours)
ICE/CON/N0503: Plan and Execute Masonry Layouts and Foundations NOS Version: 1.0 NSQF Level: 4.0	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 6: Plan and Execute Masonry Layouts and Foundations	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0530: Construct Masonry Walls and Blocks NOS Version: 1.0 NSQF Level: 4.0	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 7: Construct Masonry Walls and Blocks	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0504: Construct and Assemble Masonry Staircases NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 8: Construct and Assemble Masonry Staircases	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0505: Apply Plastering and Finishing Techniques NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 9: Apply Plastering and Finishing Techniques	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0506: Install and Maintain Masonry Paving Systems NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**

Module 10: Install and Maintain Masonry Paving Systems	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0507: Implement Advanced Construction Technologies in Masonry NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 11: Implement Advanced Construction Technologies in Masonry	10:00	15:00	05:00	00:00	30:00
Total Duration	**60:00**	**90:00**	**30:00**	**00:00**	**180:00**

Module Details

Module 1: Introduction to the Construction Industry and the job role "Construction Fabricator"

Mapped to ICE/CON/N0501, v1.0

Terminal Outcomes:

- Explain the importance of Construction Industry.
- Describe the responsibilities and career opportunities of a Construction Fabricator.

Duration: 05:00	**Duration: 00:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define the Construction Industry. • Describe the main sectors within the construction industry and their impact on infrastructure development. • Discuss the scope of employment in the Construction Industry. • Explain the role and responsibilities of a Construction Fabricator. • Discuss the skills and qualifications necessary for a career as a Construction Fabricator. • Identify various career opportunities available for a Construction Fabricator.	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Identify construction building materials and components

Mapped to ICE/CON/N0501, v1.0

Terminal Outcomes:

- Explain the process of identifying different construction materials and components used in fabrication tasks.
- Demonstrate the methods for inspecting, verifying and organizing construction materials for fabrication.

Duration: 15:00	**Duration: 70:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types of construction materials (metals like steel, aluminium, alloys and non-metals like concrete, glass, wood and plastics) and their properties and applications in construction. • Describe the properties of construction materials, including strength, durability and environmental resistance and how they influence material selection. • Elucidate the role of material specifications and technical datasheets in identifying the correct materials for fabrication. • Identify different construction components, such as beams, columns, trusses and panels, based on drawings and specifications. • List the common construction material defects, such as cracks, rust, warping and how they affect material suitability. • Explain the different material certifications and standards (e.g., BIS, ASTM) and their relevance in ensuring material quality. • Describe the procedures for verifying material quality through visual inspection, physical testing and reviewing certifications. • Identify the importance of proper material storage and the safety precautions associated with material handling.	• Show how to identify various building materials (metals, non-metals) by inspecting their properties and uses. • Demonstrate how to check construction materials for defects like cracks, rust and warping using manual and visual inspection techniques. • Show how to verify material specifications by reviewing technical datasheets, product catalogues and construction drawings. • Demonstrate how to assess the physical condition of materials by comparing them against the required specifications. • Show how to organize and label materials according to type, size and intended use to facilitate efficient storage and handling. • Demonstrate the proper storage methods for different materials to prevent damage and contamination. • Show how to use measuring tools, such as rulers, micrometers and calipers, to check the dimensions of materials. • Demonstrate how to safely handle materials using equipment like forklifts, pallet jacks and trolleys during fabrication tasks.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Micrometers, calipers, rulers, forklifts, pallet jacks, trolleys, safety gloves, safety shoes, material datasheets, product catalogues, technical specifications, measuring tape, weighing scales, label markers, storage bins, material certification documents and personal protective equipment (PPE) such as helmets, face shields and protective gloves	

Module 3: Workplace Safety and Health Compliance

Mapped to ICE/CON/N0502, v1.0

Terminal Outcomes:

- Explain workplace hazards and safety measures in construction.
- Demonstrate the use of personal protective equipment (PPE) and emergency response procedures.

Duration: 05:00	**Duration: 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of Safety, Health and Environment (SHE) guidelines in maintaining a safe workplace. • Describe how company policies help in ensuring safety and compliance on construction sites. • Explain the correct procedure for reporting safety incidents or workplace hazards. • Describe the reporting structure for safety concerns within a construction site. • Identify the key personnel responsible for workplace safety, such as the safety officer and site engineer. • Explain the roles and responsibilities of the safety officer in maintaining site safety. • List different types of construction hazards, including chemical, physical and ergonomic risks. • Describe the potential impact of construction hazards on workers' health and safety. • Discuss the correct use of personal protective equipment (PPE) such as helmets, gloves, safety boots and harnesses. • Explain how to properly maintain PPE to ensure its effectiveness and durability.	• Show the process to identify common construction site hazards, including falling objects, slippery surfaces and electrical risks. • Demonstrate the process of evaluating potential risks associated with workplace hazards. • Show how to report identified hazards to a supervisor or safety officer using the correct reporting procedures. • Demonstrate the proper use and maintenance of personal protective equipment (PPE), including helmets, gloves, safety boots and harnesses. • Show the ability to follow safety signage and barricading instructions to avoid restricted or hazardous areas. • Demonstrate safe lifting techniques and the proper use of lifting tools to minimize strain and prevent injuries. • Demonstrate proper personal hygiene practices, including the use of clean drinking water and designated rest areas. • Show how to recognize and report health symptoms such as respiratory issues or heatstroke to the designated authority. • Demonstrate safe handling and disposal procedures for hazardous materials such as asbestos and chemicals to ensure workplace safety.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Safety helmets, gloves, safety boots, safety harnesses, high-visibility vests, safety goggles, ear protection, dust masks, fire extinguishers, first aid kits, emergency response charts, barricading tape, safety cones, hazard signage, lifting belts, lifting tools such as pulleys and ropes, spill control kits, asbestos handling kits, chemical-resistant gloves, chemical spill absorbents, lockout/tagout (LOTO) kits, electrical insulating mats, hand wash stations and waste disposal bins for hazardous materials.	

Module 4: Environmental Protection and Emergency Preparedness

Mapped to ICE/CON/N0502, v1.0

Terminal Outcomes:

- Describe sustainable construction practices and waste management techniques.
- Explain emergency preparedness measures for fire, chemical spills and natural disasters.

Duration: 05:00	**Duration: 10:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of first aid in construction site safety. • Describe basic first aid procedures for common workplace injuries such as cuts, burns and fractures. • Identify the steps to take in case of a fire emergency. • Explain how to use fire extinguishers and other firefighting equipment. • Describe the role of emergency response teams in handling accidents and fires. • Explain the importance of environmental regulations in construction work. • Describe dust control measures used to minimize air pollution on construction sites. • Discuss proper waste disposal techniques for hazardous and non-hazardous materials. • Identify water conservation methods used in construction activities. • Explain the impact of poor environmental practices on health and safety. • Describe the correct procedures for handling and using construction tools safely. • List the common hand tools and power tools used in interior finishing work. • Explain the risks associated with improper use of construction equipment. • Describe safety precautions to follow while using hand tools and power tools. • Discuss the importance of regular maintenance and inspection of tools to prevent accidents.	• Demonstrate the correct way to prevent spills of construction materials and chemicals. • Show how to properly segregate biodegradable and non-biodegradable waste for recycling and disposal. • Demonstrate water conservation practices while performing construction activities. • Show how to follow energy-saving protocols at a construction site. • Identify emergency alarms and evacuation routes at a construction site. • Demonstrate the correct use of firefighting equipment, such as fire extinguishers and sand buckets. • Show how to assist in basic first aid procedures for minor injuries. • Demonstrate the correct method for performing CPR in an emergency.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
First aid kits, gloves, fire extinguishers (ABC, CO_2, foam), sand buckets, fire blankets, emergency alarm systems, evacuation maps, color-coded waste bins, spill control kits, dust suppression tools such as water sprayers and dust nets, hand tools ,power tools	

Module 5: Employability Skills (60 Hours)

Mapped to DGT/VSQ/N0102, v1.0

Duration (in hours): 60:00

Key Learning Outcomes

After completing this programme, participants will be able to:

Introduction to Employability Skills :

1. Discuss the Employability Skills required for jobs in various industries.
2. List different learning and employability-related GOI and private portals and their usage.

Constitutional values - Citizenship :

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen.
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century :

5. Discuss the importance of relevant 21st-century skills.
6. Exhibit 21st-century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Elucidate the appropriate code of conduct.

Basic English Skills :

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone.
9. Read and interpret text written in basic English.
10. Write a short note/paragraph / letter/e -mail using basic English.

Career Development & Goal Setting :

11. Discuss the difference between job and career.
12. Create a career development plan with well-defined short- and long-term goals.

Communication Skills :

13. Elucidate the importance of communication and professional communication.
14. Explain the importance of following verbal and non-verbal communication etiquette in various settings.
15. Elucidate the process of interacting with reporting superiors regarding job order, work output requirements, targets, performance indicators and incentives.
16. Discuss how effective coordination ensures the timely completion of tasks in accordance with quality standards.
17. Describe the steps involved in ensuring the timely resolution of problems, complaints and delays through coordination with relevant personnel and superiors.
18. Determine the role of active communication and respect in achieving a smooth workflow and resolving work standards and quality-related concerns with personnel and superiors.
19. Explain the significance of maintaining appropriate documentation concerning completed work schedules as per organizational requirements.
20. Elucidate the importance of prioritizing teamwork and supporting team members in achieving shared goals.

Diversity & Inclusion :

21. Describe the recommended practices for preventing sexual harassment, physical and verbal abuse and the objectification of women in the workplace.
22. Discuss the appropriate safety precautions to follow while utilizing transportation facilities and during night trips, particularly concerning women's safety.
23. Elucidate the process for escalating issues related to abuse and sexual harassment in the

workplace according to the POSH Act and organizational procedures.

24. Determine how to effectively educate co-workers on women's rights and the importance of showing respect to all genders, including persons with disabilities.

Financial and Legal Literacy :

25. Outline the importance of selecting the right financial institution, product and service.
26. Overview how to carry out offline and online financial transactions, safely and securely.
27. List the common components of salary and compute income, expenditure, taxes, investments etc.
28. Discuss the legal rights, laws and aids.
29. Elucidate the purchase, inspection, indenting and recordkeeping procedure for stores.

Essential Digital Skills :

30. Describe the role of digital technology in today's life.
31. Overview how to operate digital devices and use the associated applications and features, safely and securely.
32. Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely.
33. Create sample word documents, excel sheets and presentations using basic features.
34. utilize virtual collaboration tools to work effectively.

Entrepreneurship :

35. Explain the types of entrepreneurships and enterprises.
36. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan.
37. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement.
38. Create a sample business plan, for the selected business opportunity.
39. Describe the best practices for leading teams.
40. Explain the 5S Standards and their implementation for organize the workplace and create a productive work environment.
41. Explain how to manage clients, contractors, subordinates and labourers.

Customer Service :

42. Explain the importance of implementing appropriate hygiene, grooming standards and professional dress code at work to cater to different types of customers.
43. Elucidate the significance of practicing and encouraging active listening for effective communication with both customers and co-workers.
44. Discuss the methods used to ensure effective probing of customers to identify their needs and expectations.
45. Describe the strategies for maintaining effective communication with customers, keeping them informed regarding any issues and developments involving them.
46. Determine the steps involved in identifying and addressing customer dissatisfaction and complaints promptly and effectively.
47. Explain the importance of being fair and firm with staff to achieve work objectives and describe leave and attendance management.
48. Explain the importance of upskilling self and staff for continuous improvement.

Getting Ready for apprenticeship & Jobs :

49. Create a professional Curriculum Vitae (CV)
50. Use various offline and online job search sources such as employment exchanges, recruitment agencies and job portals respectively.
51. Discuss the significance of maintaining hygiene and confidence during an interview.
52. Elucidate how to give a personal introduction and present oneself.
53. Perform a mock interview.
54. List the steps for searching and registering for apprenticeship opportunities.

Module 6: Plan and Execute Masonry Layouts and Foundations

Mapped to ICE/CON/N0503, v1.0

Terminal Outcomes:

- Explain the interpretation of construction drawings for masonry layouts and foundations.
- Demonstrate the accurate measurement and marking of layouts using appropriate tools.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types of construction drawings (site plans, foundation plans, elevation drawings) and their symbols, dimensions and specifications. • Describe methods for extracting information on load distribution, reinforcement and drainage from drawings. • Define the tools and techniques for marking layouts, including spirit levels, plumb bobs, laser measuring devices and optical leveling tools. • Identify methods for verifying squareness using the 3-4-5 method or builder's square. • Describe site preparation steps for accurate layout marking as per safety norms. • Explain the properties, mixing and application of geopolymer concrete in masonry foundations. • Describe techniques for setting up formwork with proper alignment and stability. • Explain methods for laying and aligning bricks, blocks and stones using thin joint technology, mortar, or adhesives. • Identify the importance of joint thickness, alignment and plumb in masonry construction. • Describe the use of AAC blocks with prefabricated insulation inserts for thermal efficiency. • Explain the importance of water-cement ratio and proper curing techniques for structural durability.	• Show how to read and interpret construction drawings to determine masonry layout and foundation details. • Demonstrate the process of identifying symbols, dimensions and specifications in construction drawings. • Show how to measure and mark layouts accurately using spirit levels, plumb bobs, laser measuring devices and optical leveling tools. • Demonstrate the process of verifying squareness using the 3-4-5 or builder's square method. • Show how to clear and prepare the site for layout marking while following safety norms. • Demonstrate the mixing process of geopolymer concrete for masonry applications. • Show how to set up formwork for foundation masonry with proper alignment and stability. • Demonstrate the correct method of laying and aligning bricks, blocks, or stones using thin joint technology, mortar, or adhesives. • Show how to ensure proper joint thickness and plumb for stability in masonry construction. • Demonstrate the use of AAC blocks with prefabricated insulation inserts for improved thermal efficiency. • Show how to maintain water-cement ratio and proper curing techniques to ensure durability.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements
Spirit levels, plumb bobs, laser measuring devices, optical leveling tools, builder's square, measuring tapes, trowels, mortar mixers, masonry hammers, brick jointers, rubber mallets, chalk lines, formwork panels, reinforcement bars, curing sheets, AAC blocks, prefabricated insulation inserts, safety gloves, goggles and dust masks.

Module 7: Construct Masonry Walls and Blocks

Mapped to ICE/CON/N0530, v1.0

Terminal Outcomes:

- Explain the methods for laying bricks, blocks and AAC blocks with prefabricated insulation inserts.
- Demonstrate the application of mortar and adhesives using thin joint technology.
- Construct masonry walls with proper alignment, reinforcement and finishing techniques.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the types and properties of bricks, blocks and AAC blocks used in masonry construction. • Explain methods for inspecting bricks and blocks for defects before use. • Define correct mortar mix ratios and preparation techniques as per project specifications. • Explain techniques for applying mortar evenly for strong bonding between bricks and blocks. • Describe methods for ensuring straight and level alignment using a spirit level and plumb bob. • Explain the importance of joint thickness, staggered joint placement and bonding techniques for structural strength. • Describe tools and techniques for cutting bricks and blocks to size accurately. • Explain reinforcement methods such as using wire mesh or rebar for added stability. • Describe curing procedures for masonry walls to enhance durability. • Explain properties and applications of thin joint mortar and high-performance adhesives. • Describe techniques for applying and distributing thin joint adhesive evenly using a notched trowel. • Explain the importance of precision placement and light tapping for proper bonding in thin joint technology. • Describe installation methods for AAC blocks with prefabricated insulation inserts for thermal efficiency. • Explain specialized adhesives and reinforcement techniques for AAC block walls.	• Show how to select the appropriate type and size of bricks or blocks based on construction requirements. • Show the inspection process to identify defective bricks or blocks before use. • Show the preparation of mortar mix in the correct ratio and its even application for proper bonding. • Show the laying of bricks and blocks in a straight and level manner using a spirit level and plumb bob. • Show the maintenance of proper joint thickness, alignment and staggered joint placement for structural strength. • Show cutting techniques using masonry saws or chisels to fit bricks and blocks. • Show the construction of stable corners and junctions using bonding techniques. • Show the integration of reinforcement such as wire mesh or rebar as per structural requirements. • Show the curing methods to enhance masonry durability. • Show the preparation and application of high-performance adhesive or thin joint mortar as per manufacturer guidelines. • Show the use of a notched trowel to apply a uniform and thin layer of adhesive to minimize joint thickness. • Show the positioning of blocks with precision to avoid misalignment. • Show the adjustment of block placement using light tapping for firm bonding. • Show the maintenance of consistent joint thickness and removal of excess adhesive to prevent weak bonding. • Show the preparation of the site and leveling for AAC block installation. • Show the installation of prefabricated

• Define quality checks to verify stability, alignment and strength of masonry structures.	insulation inserts accurately within AAC block joints. • Show the reinforcement of AAC block walls using steel bars or mesh where necessary. • Show the verification of wall stability and strength by conducting basic quality checks. • Show the curing procedures for AAC block construction to ensure long-term durability. • Demonstrate the alignment and positioning of bricks, blocks and AAC blocks to maintain structural accuracy. • Demonstrate the methods for applying mortar and adhesives using thin joint technology. • Demonstrate the proper use of tools and equipment required for masonry construction.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Spirit levels, plumb bobs, laser measuring devices, optical leveling tools, measuring tapes, builder's square, trowels, notched trowels, masonry saws, chisels, rubber mallets, mixing containers, reinforcement bars, wire mesh, Bricks, blocks, AAC blocks, prefabricated insulation inserts, high-performance adhesive, thin joint mortar, curing sheets, gloves, goggles, dust masks, safety boots, helmets.	

Module 8: Construct and Assemble Masonry Staircases

Mapped to ICE/CON/N0504, v1.0

Terminal Outcomes:

- Explain the construction methods for masonry staircases using bricks, blocks and precast modular sections.
- Demonstrate the laying of bricks and blocks to construct staircase steps, risers and landings.
- Demonstrate the handling, positioning and assembly of precast modular staircase sections.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe different types of masonry staircases (e.g., straight, spiral, L-shaped) and their construction requirements. • Explain the process of reading and interpreting staircase construction drawings and blueprints. • Describe methods for calculating rise, run and tread dimensions to ensure ergonomic and code-compliant staircases. • Explain site preparation techniques, including foundation leveling and stability checks before staircase construction. • Describe the selection and arrangement of masonry materials such as bricks, blocks and precast sections. • Explain load-bearing capacity considerations and reinforcement requirements for masonry staircases. • Describe techniques for laying bricks and blocks to construct staircase steps, risers and landings. • Explain the importance of using formwork or shuttering to shape and support staircases during construction. • Describe the correct preparation and application of mortar mix for strong bonding and long-term durability. • Explain reinforcement methods such as using rebar or mesh for added staircase strength. • Describe the curing procedures necessary to prevent cracks and ensure staircase durability. • Explain handling and positioning techniques for precast modular staircase sections. • Describe methods for aligning precast components according to design	• Show how to read and interpret staircase construction drawings, blueprints and specifications. • Show the calculation of rise, run and tread dimensions to ensure code compliance. • Show site preparation for staircase construction, including foundation leveling and stability checks. • Show the selection and arrangement of bricks, blocks and precast sections for staircase construction. • Show the process of laying bricks and blocks to construct steps, risers and landings. • Show the use of formwork or shuttering to shape and support staircases. • Show the correct preparation and application of mortar mix for masonry staircases. • Show the installation of reinforcement bars (rebar) or mesh within staircase structures. • Show the curing methods necessary to enhance the durability of masonry staircases. • Show the handling and positioning of precast modular staircase sections. • Show the alignment of precast components as per architectural designs. • Show the application of bonding agents or mortar for secure joining of precast sections. • Show the use of fasteners, steel rods, or anchors for additional stability in precast staircases. • Show the sealing of joints in precast staircases to prevent gaps and enhance durability.

specifications. • Explain the application of bonding agents, fasteners and reinforcements to ensure staircase stability. • Describe techniques for sealing joints in precast staircases to prevent structural gaps and improve durability. • Explain procedures for conducting load-bearing tests and inspecting staircases for defects. • Describe the application of waterproofing and anti-skid treatments for staircase safety. • Explain drainage and ventilation considerations to prevent water damage to staircases. • Describe finishing techniques such as plastering and polishing for a smooth and professional appearance. • Explain compliance requirements for staircase construction according to building codes and safety regulations. • Describe methods for installing handrails, balustrades and decorative elements as per architectural designs.	• Show load-bearing tests and quality inspections for staircase strength verification. • Show the application of waterproofing and anti-skid treatments for enhanced safety. • Show the installation of handrails, balustrades, or decorative elements as per architectural requirements. • Demonstrate the alignment and positioning of staircase components to maintain structural accuracy. • Demonstrate the final quality checks to verify staircase stability, alignment and safety compliance.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Tape measures, spirit levels, plumb bobs, trowels, brick hammers, jointers, mortar pans, mortar mixers, wooden shuttering, metal shuttering, clamps, supports, masonry saws, chisels, hoists, pulleys, rebar cutters, tying wires, bonding agents, cement adhesives, waterproofing compounds, drills, anchors, gloves, helmets, goggles, harnesses.	

Module 9: Apply Plastering and Finishing Techniques

Mapped to ICE/CON/N0505, v1.0

Terminal Outcomes:

- Explain surface preparation, material selection and adhesion improvement for plastering and finishing.
- Demonstrate the application of plaster and rendering techniques for smooth and durable masonry surfaces.
- Implement self-curing plaster techniques to reduce external curing requirements.
- Perform masonry repairs using nano-particle sealants for structural strengthening and waterproofing.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe surface inspection techniques to determine preparation and treatment needs. • Explain selection criteria for plastering materials based on substrate type and environmental conditions. • Describe methods for cleaning masonry surfaces before plastering. • Explain the application of bonding agents or primers for improved plaster adhesion. • Describe the safe setup of tools, mixing equipment and scaffolding for plastering work. • Explain mixing techniques for plaster or render to achieve the correct consistency. • Describe methods for applying base and finishing coats using trowels, floats and spraying. • Explain plastering techniques such as single-coat, two-coat and multi-layer applications. • Describe the use of screeds and levelers for uniform thickness and smooth application. • Explain finishing techniques such as troweling, polishing and texturing. • Describe the identification and rectification of hollowness or cracks in plaster before drying. • Explain the process of applying self-curing plaster using polymer-based compounds. • Describe methods for monitoring and maintaining surface hydration without external curing.	• Show how to inspect surfaces and determine the necessary preparation and treatment. • Show how to select appropriate plastering materials for different masonry surfaces. • Show cleaning methods for removing dust, debris and loose particles before plastering. • Show the application of bonding agents or primers to improve plaster adhesion. • Show the setup of tools, mixing equipment and scaffolding before starting work. • Show how to mix plaster or render to the required consistency using manual or mechanical methods. • Show the application of base and finishing coats of plaster using trowels, floats and spraying techniques. • Show the use of screeds and levelers to ensure uniform thickness and smooth application. • Show finishing techniques such as troweling, polishing and textured finishing. • Show methods to check for hollowness or cracks in the plaster and rectify imperfections before drying. • Show the preparation and application of self-curing plaster using polymer-based compounds. • Show how to distribute self-curing agents evenly to reduce water evaporation losses.

• Explain identification and preparation techniques for repairing damaged masonry surfaces. • Describe selection and application methods for nano-particle sealants to strengthen and waterproof masonry. • Explain techniques for monitoring curing time and effectiveness of nano-sealants	• Show the monitoring of curing processes without external curing methods. • Show the identification of damaged or deteriorated masonry surfaces for repair. • Show cleaning techniques for cracks, voids and porous surfaces before applying nano-sealants. • Show how to select and apply nano-particle sealants using brush, roller, or spray techniques. • Show the monitoring of curing time and effectiveness of nano-sealants in strengthening and waterproofing masonry. • Show quality checks to identify weak spots and the process of reapplying sealants if necessary.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Trowels, floats, putty knives, plastering hawks, mortar pans, mixing buckets, mechanical mixers, measuring cups, spirit levels, screeds, straight edges, sponges, polishing tools, paint rollers, spray guns, scaffolding, bonding agents, primers, self-curing plaster compounds, nano-particle sealants, protective gloves, safety goggles, dust masks and waterproofing solutions.	

Module 10: Install and Maintain Masonry Paving Systems

Mapped to ICE/CON/N0506, v1.0

Terminal Outcomes:

- Explain site preparation, material selection and foundation techniques for masonry paving.
- Demonstrate the installation of masonry paving systems, ensuring proper alignment and stability.
- Implement permeable paving technology for improved drainage and sustainability.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe standard procedures for preparing, laying and maintaining masonry paving systems. • Explain applicable building codes, industry standards and safety regulations for paving works. • Describe quality standards for different types of paving materials and their application. • Explain workplace policies related to waste disposal, environmental compliance and material handling. • Describe documentation and reporting procedures for completed paving work and repairs. • Explain types of paving materials, including concrete blocks, stone pavers, clay bricks and permeable pavers. • Describe properties and durability of various paving materials under different climatic conditions. • Explain selection criteria for appropriate paving materials based on load-bearing capacity and aesthetics. • Describe methods of site assessment for drainage, soil conditions and stability. • Explain techniques for grading, compacting and leveling the base for a stable foundation. • Describe the importance of geotextile membranes and bedding layers in paving systems. • Explain laying patterns and techniques, such as herringbone, running bond and basket weave. • Describe methods for aligning, spacing and securing pavers to maintain uniformity. • Explain the role of jointing materials like	• Show how to assess site conditions, including soil type, drainage and load-bearing capacity. • Show methods for clearing debris, vegetation and obstructions from the paving area. • Show marking of layout and levels based on construction drawings and specifications. • Show compaction and leveling techniques to create a stable base foundation. • Show selection of appropriate paving materials based on site requirements and design specifications. • Show laying of pavers in prescribed patterns while maintaining uniform alignment and spacing. • Show use of jointing materials such as polymeric sand or mortar to secure pavers. • Show compaction and stabilization of pavers using a plate compactor or manual tamping. • Show installation of permeable paving materials for stormwater drainage and runoff reduction. • Show incorporation of gravel layers and drainage channels for improved water infiltration. • Show techniques for ensuring proper spacing and grading to maintain permeability and prevent clogging. • Show inspection of paving surfaces for defects such as sinking, cracking, or misalignment. • Show replacement of damaged pavers without disturbing the surrounding layout.

polymeric sand and mortar in enhancing stability. • Describe the working principles of permeable paving for stormwater management and eco-friendly construction. • Explain types of permeable paving materials and their water infiltration capacity. • Describe techniques for maintaining permeability by preventing clogging and sediment buildup. • Explain common paving defects, including sinking, cracking and weed growth. • Describe procedures for replacing damaged or misaligned pavers without affecting the entire surface. • Explain techniques for re-leveling, compacting and sealing joints for long-term stability. • Describe occupational hazards related to masonry paving, including lifting injuries and tripping risks. • Explain proper usage and maintenance of paving tools and equipment, such as plate compactors and rubber mallets.	• Show re-leveling and compacting of loose or uneven sections for restored stability. • Show removal of weeds, debris and sediment buildup from paved surfaces and joints. • Show safe handling and transportation of pavers to prevent injuries and breakage. • Show final inspection to ensure alignment, durability and compliance with design specifications.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Trowels, rubber mallets, hammers, chisels, jointing tools, plate compactors, manual tampers, measuring tapes, chalk lines, string lines, levels, screeds, shovels, rakes, wheelbarrows, mixing buckets, geotextile membranes, polymeric sand, mortar, gravel, drainage channels, power saws, dust masks, safety goggles, gloves and knee pads.	

Module 11: Implement Advanced Construction Technologies in Masonry

Mapped to ICE/CON/N0507, v1.0

Terminal Outcomes:

- Explain the principles and applications of 3D printing in masonry construction.
- Demonstrate the operation and troubleshooting of masonry-specific 3D printers.
- Apply automated and digital fabrication methods, including robotic bricklaying and CNC-cutting.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the principles of 3D printing and its applications in masonry construction and repairs. • Explain the types of 3D printing materials suitable for masonry, including geopolymer concrete and specialized mortars. • Describe the workflow of digital modeling, slicing and printing for masonry structures. • Explain troubleshooting methods for common defects in 3D-printed masonry structures. • Describe fundamentals of robotic bricklaying and automated block assembly techniques. • Explain the benefits and limitations of digital fabrication in masonry. • Describe the role of prefabricated masonry components in modular construction. • Explain the integration of BIM (Building Information Modeling) in masonry for precision and efficiency. • Describe how AI and IoT technologies optimize automated masonry processes. • Explain sustainability principles related to modern masonry construction methods. • Compare the environmental impact of traditional masonry with advanced construction technologies. • Describe strategies for reducing waste and improving resource efficiency through automation. • Explain the properties and benefits of advanced masonry materials, such as self-healing concrete and nanotechnology-based coatings. • Describe the importance of adhering to	• Show how to identify the principles and working mechanisms of 3D printing in masonry construction. • Show how to interpret 3D digital models and convert them into printable masonry structures. • Show how to set up and calibrate masonry-specific 3D printers for on-site and off-site applications. • Show how to prepare raw materials such as geopolymer concrete and specialized mortar for 3D printing. • Show monitoring techniques to ensure structural accuracy and material consistency during the printing process. • Show troubleshooting methods for printing defects like layer misalignment, cracking, or material inconsistencies. • Show operation of robotic bricklaying and automated block assembly systems. • Show how to program and control robotic masonry systems for efficient and precise construction. • Show how to implement prefabricated masonry components using digital design and CNC-cutting methods. • Show how to utilize BIM (Building Information Modeling) to optimize masonry layouts and workflow efficiency. • Show integration of sensor-based monitoring systems to track construction accuracy and material usage. • Show assessment of the environmental impact of traditional versus advanced masonry techniques. • Show techniques to optimize material usage by reducing waste through automated and digital fabrication

green building standards and certification programs. • Explain occupational health and safety considerations when working with automated machinery. • Describe standard safety procedures for operating 3D printers and robotic masonry equipment. • Explain maintenance practices for prolonging the life of digital and automated masonry tools. • Identify the latest trends and innovations in masonry automation and construction technology.	methods. • Show application of energy-efficient masonry solutions, such as self-healing concrete and smart insulation. • Show evaluation of cost-effectiveness and return on investment (ROI) when using advanced construction technologies. • Show compliance with green building standards and certifications when applying digital masonry techniques.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
3D printers for masonry, robotic bricklaying systems, CNC cutting machines, BIM software, AI-integrated monitoring systems, geopolymer concrete mixers, automated block assembly tools, laser measurement devices	

On-the-Job Training

Mapped to Construction Fabricator, v 1.0

All the On-the-Job Training Program must be conducted only at On-Site of relevant Industry. The details mentioned below are NOS wise Terminal Outcomes of OJT Period.

ICE/CON/N0501	**Identify Construction Building Materials and Components**
Mandatory OJT duration (in Hours)	**30:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Identify and classify construction materials (metals, non-metals, aggregates, concrete, wood, polymers) at an actual construction site. • Inspect materials for defects such as cracks, deformation, corrosion, improper curing, and dimensional inaccuracies. • Verify material specifications using datasheets, IS codes, labels, and supplier documentation. • Handle and store materials safely using site equipment like trolleys, forklifts, and racks. • Recognize structural components (beams, columns, trusses, panels) from drawings and match them with site materials. • Assist in site-level documentation of received materials, recording shortages and quality deviations. • Coordinate with storekeepers and site engineers for material issuance, tagging, stacking, and traceability.	
ICE/CON/N0503	**Plan and Execute Masonry Layouts and Foundations**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in laying bricks/blocks maintaining alignment, plumb, joints, and mortar consistency. • Mix and place mortar as per instruction ensuring workable mix and proper joint thickness. • Support construction of corners, openings, and reinforcement zones. • Identify defects such as bulging, misalignment, and uneven joints during execution.	
ICE/CON/N0530	**Construct Masonry Walls and Blocks**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in laying bricks/blocks maintaining alignment, plumb, joints, and mortar consistency. • Mix and place mortar as per instruction ensuring workable mix and proper joint thickness. • Support construction of corners, openings, and reinforcement zones. • Identify defects such as bulging, misalignment, and uneven joints during execution.	

ICE/CON/N0504	**Construct and Assemble Masonry Staircases**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in marking staircase dimensions including rise, tread, landing, and slope. • Support installation of formwork and reinforcement for masonry staircases. • Handle masonry units for step formation and alignment. • Maintain accuracy in levels and layout of staircase geometry.	
ICE/CON/N0505	**Apply Plastering and Finishing Techniques**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in surface preparation (dusting, slurry application, cleaning) prior to plastering. • Handle tools such as trowels, floats, and screeds for basic plaster application. • Maintain even thickness and smooth finish in plaster through guided practice. • Identify surface defects such as cracks, hollowness, and uneven patches.	
ICE/CON/N0506	**Install and Maintain Masonry Paving Systems**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in surface preparation (dusting, slurry application, cleaning) prior to plastering. • Handle tools such as trowels, floats, and screeds for basic plaster application. • Maintain even thickness and smooth finish in plaster through guided practice. • Identify surface defects such as cracks, hollowness, and uneven patches.	
ICE/CON/N0507	**Implement Advanced Construction Masonry Techniques**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Observe and assist in techniques such as cavity walls, reinforced masonry, and composite masonry. • Handle special blocks (AAC, CLC, hollow) and observe their installation patterns. • Support preparation of reinforcement cages in enhanced masonry applications. • Maintain quality checks as instructed during advanced masonry work.	

Annexures

Trainer Requirements

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training Experience	
		Years	Specialization	Years	Specialization
Post Graduation	Civil Engineering	2	Site Execution (Civil Work)	1	Site Execution (Civil Work)
OR					
Graduation	Civil Engineering	4	Site Execution (Civil Work)	1	Site Execution (Civil Work)
OR					
Diploma	Civil Engineering	6	Site Execution (Civil Work)	1	Site Execution (Civil Work)

Trainer Certification	
Domain Certification	**Platform Certification**
Recommended that the Trainer is certified for the Job Role: *"Construction Fabricator or Construction Fabricator (Masonry)"*, mapped to the Qualification Pack: "ICE/CON/Q0501, v1.0 or ICE/CON/Q0501-SI001, v1.0" respectively. The minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: *"Trainer (VET and skills)"*, mapped to the Qualification Pack: "MEP/Q2601, v3.0". The minimum accepted score is 80%.

Assessor Requirements

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Preferable Training Experience	
		Years	Specialization	Years	Specialization
Post Graduation	Civil Engineering	2	Site Execution (Civil Work)	1	Site Execution (Civil Work)
OR					
Graduation	Civil Engineering	4	Site Execution (Civil Work)	1	Site Execution (Civil Work)
OR					
Diploma	Civil Engineering	6	Site Execution (Civil Work)	1	Site Execution (Civil Work)

Assessor Certification	
Domain Certification	**Platform Certification**
Recommended that the Assessor is certified for the Job Role: *"Construction Fabricator or Construction Fabricator (Masonry)"*, mapped to the Qualification Pack: "ICE/CON/Q0501, v1.0 or ICE/CON/Q0501-SI001, v1.0" respectively. The minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: *"Assessor (VET and skills)"*, mapped to the Qualification Pack: "MEP/Q2701, v3.0". The minimum accepted score is 80%.

Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the Candidate on the required competencies of the program.

1. **Assessment System Overview:**

   Assessment is done through ICES affiliated Assessment Agencies. Assessors are trained & certified by ICES after Training of Assessor (ToA) program. Assessments are conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas.

   The assessment will have both theory, practical and viva components as per ratio specified in each NOS for **Construction Fabricator** job role.

   During the practical task, trainees are assessed on their workmanship, quality of finished product and time management. They will be graded for all their assessments based on the approved assessment strategy which is signed off by ICES. The Assessor submits an assessment plan to ICES prior to assessments.

   The assessment plan contains the following information:

   - What will be assessed, i.e. the competency based on each NOS based on theory, practical and viva questions
   - How assessment will occur i.e. methods of assessment
   - When the assessment will occur
   - Duration of assessment
   - Where the assessment will take place i.e. context of the assessment (workplace/simulation)
   - The criteria for decision making i.e. those aspects that will guide judgments
   - Where appropriate, any supplementary criteria are used to make a judgment on the level of performance.

   ICES will be monitoring thoroughly the complete Assessment process.

2. **Testing Environment:**

   - Training partner shares the batch start date and end date, number of trainees and the job role.
   - Assessment will be fixed for a day after the end date of training. It could be next day or later. Assessment will be conducted at the training venue/test center only.
   - The knowledge/theory assessments are conducted with proper seating arrangements with enough space between the candidates to prevent mal practicing.
   - Question set for Theory and Practical will be distributed to each candidate by the Assessor.
     - Theory testing will include MCQ type questions, pictorial questions etc. which will test the trainee on his theoretical knowledge of the subject.

- Practical assessments will be conducted in the approved test centers. The training provider will ensure adequate tools and materials are available to conduct the practical test.
- Viva Testing will be conducted during or post to the practical assessment by the assessor concerned. This Viva Assessment is applicable to understand the outcomes from OJT attended by the concerned candidate.

- One (1) Assessor is eligible to conduct assessments of a batch of maximum 30 candidates.
- The assessment must comprise of two components, namely:
  - Knowledge assessment (Theory and Viva assessment)
  - Skill assessment (Practical / Hands-on Skill assessment)

3. Mode of assessment

- Demonstration/Practical Performance /Skill Assessment
- Synoptic multiple-choice question test for Theory Assessment
- Viva for Knowledge Assessment (Applicable to note the outcomes from OJT only)

4. Performance/skill assessment:

- The performance/skill assessment will be conducted through demonstration/practical
- For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.
- The assessment is conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

5. Knowledge Assessment:

- The knowledge assessments are conducted through Theory (written) Test and Viva Test
- Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which is prepared externally and externally marked, meaning by agency having no link with training partners.
- The Viva test will be conducted by the assessor in the oral mode considering the communication and domain understanding of skills of trainees.
- The assessment strategy, weightage and duration of assessment for **Construction Fabricator** is summarized below

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ	30	1 hour
Knowledge	Summative	Viva	10	1 hour
Skill	Summative	Structured practical Task	60	7 hours

6. Assessment Quality Assurance levels/Framework

- ICES has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criterion under knowledge and skill. The criteria ensure quality assurance as they ensure valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment Body develops questions based on ICES's approved assessment criteria.
- The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit may be conducted by ICES to monitor assessment.
- Continuous Monitoring through virtual and In-person mode are conducted to ensure the assessment is conducted as per stipulated process
- Process and Technical audit of assessment batches by quality team are conducted to avoid errors in assessment process
- A well -defined comprehensive framework of NON-COMPLIANCE MATRIX is defined and implemented to identify the non-compliance made by assessor and AA and punitive actions are taken correspondingly.
- The capacity building sessions are conducted regularly for assessors and assessment agencies to update them about best practices in assessment

7. Types of evidence or evidence-gathering protocol:

- Evidence in the form of answer sheets in case of knowledge assessments (Theory only) is collected.
- For Practical and Viva assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. ICES does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.
- Post Assessment, the evidence are uploaded by Assessor to assessment agency and further assessment agency to ICES as per stipulated TAT
- Evidence are broadly photographic and video graphics in nature (Geo-Tagged)
- Results along with evidence to be submitted to ICES by the concerning Assessment Agency in the prescribed format and on Digital Format and Physical Format (As required)
- Results to be uploaded on SIDH and other relevant portals for collective data management.

8. Method of verification or validation:

- The process and technical audit of assessment batches are done by Awarding Body
- Attendance of each candidate is verified and it is ensured that only those candidates are assessed by assessors who are meeting the stipulated minimum percentage of attendance
- The result of each candidate is verified; it is verified that that result on SIP is matched with respect to summary sheet submitted by AAs
- Under detailed technical audit for sample batches, the knowledge and skill assessment results for each candidate are checked in technical aspect.
- All the evidence of batches are preserved on server of Awarding Body digital platform

9. On the Job:

- On job training (OJT), candidates undergo training and leaning at actual workplace for a fixed period of time and a certain weightage of assessment is allocated out of total skill weightage of Qualification Pack for undergoing OJT as stipulated by ICES. This OJT score and assessors' end point score are combined to arrive at final Marking/grading of trainees' skill test. The OJT score is determined by Supervisor / Engineer / other authorized head of departments of relevant industry under which candidates undergo on job training.
- The Assessment is subject to take place only after submission of OJT data (in case of STT only) approved by concerned industry and training provider.
- The Hard copy of the OJT report (on trainings, outcomes, exposures learnt and feedback certified by Supervisor / Engineer / other authorized head of departments of relevant industry) will be submitted to the Assessor by the concerned candidate on the Assessment date only, failing which the candidate may not be allowed for attending the Assessment.
- As OJT is mandatory for this QP, the TP should ensure the correct submission of all relevant reports pertaining to OJT of each trained candidate. The Assessment agency is responsible for collecting all the relevant information and submit the same to ICES in future (if required).

References

Glossary

Term	Description
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.
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.

Acronyms and Abbreviations

Acronym	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualification Framework
QP	Qualification Pack
TVET	Technical and Vocational Education and Training
MSDE	Ministry of Skill Development and Entrepreneurship
NCVET	National Council for Vocational Education and Training
NSDC	National Skill Development Corporation
ICES	Integrated Council for Entrepreneurship and Skilling (erstwhile The Institution of Civil Engineers Society)
AB	Awarding Body
AA	Assessment Agency
TP	Training Partner
TC	Training Centre
ITI	Industrial Training Institute
ISCO	International Standard Classification of Occupations
NCO	National Classification of Occupations
NCrF	National Credit Framework
NEP	New Education Policy
Q-File	Qualification File
MC	Model Curriculum
PC	Performance Criteria
KU	Knowledge and Understanding
GS	Generic Skills
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
DDUGKY	Deen Dayal Upadhyaya Grameen Kaushalya Yojana
STT	Short Term Training
RPL	Recognition of Prior Learning
NAPS	National Apprenticeship Promotion Scheme
NQR	National Qualification Register
OJT	On the Job Training
NSQC	National Skill Qualification Committee
IS	Indian Standard
BBS	Bar Bending Schedule
RCC	Reinforced Cement Concrete
AAC	Autoclaved Aerated Concrete

CLC	Cellular Lightweight Concrete
PVC	Polyvinyl Chloride
HDPE	High-Density Polyethylene
GI	Galvanized Iron
MS	Mild Steel
SS	Stainless Steel
FRP	Fiber Reinforced Plastic
HSS	High-Speed Steel
MDF	Medium Density Fibreboard
HDF	High Density Fibreboard
WBP	Waterproof Boiling Proof (Plywood Grade)
MR	Moisture Resistant
CP	Commercial Plywood
LVL	Laminated Veneer Lumber
OSB	Oriented Strand Board
CNC	Computer Numerical Control
MIG	Metal Inert Gas Welding
TIG	Tungsten Inert Gas Welding
SMAW	Shielded Metal Arc Welding
GMAW	Gas Metal Arc Welding
GTAW	Gas Tungsten Arc Welding
FCAW	Flux Cored Arc Welding
NDT	Non-Destructive Testing
UT	Ultrasonic Testing
RT	Radiographic Testing
PT	Penetrant Testing
MT	Magnetic Particle Testing
W/C Ratio	Water–Cement Ratio
OPC	Ordinary Portland Cement
PPC	Pozzolanic Portland Cement
ISMC	Indian Standard Medium Channel
ISMB	Indian Standard Medium Beam
ISJB	Indian Standard Junior Beam
CIS	Cast-in-Situ
PCC	Plain Cement Concrete
AFS	Aluminium Formwork System
WTF	Wall Tie Fixture
DFC	Deck Formwork Component

TFP	Tie Rod Fixing Pin
EHS	Environment, Health and Safety
SOP	Standard Operating Procedure
PPE	Personal Protective Equipment
TRA	Task Risk Assessment
JSA	Job Safety Analysis
QA	Quality Assurance
QC	Quality Control
HIRA	Hazard Identification and Risk Assessment
HPT	High Potential Task
BOQ	Bill of Quantities
DPR	Detailed Project Report
CAD	Computer-Aided Design
DWG	Drawing File Format
CL	Center Line
FGL	Finished Ground Level
FFL	Finished Floor Level
DL	Datum Level
RL	Reduced Level