

Model Curriculum

QP Name:	**Construction Fabricator** **Electives: Metal Working**
QP Code:	**ICE/CON/Q0501-SI003**
Version:	**1.0**
NSQF Level:	**4**
Model Curriculum Version:	**1.0**

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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 3: Metal Working

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/N0513: Plan and Execute Metal Fabrication NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 17: Plan and Execute Metal Fabrication	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0514: Cut, Bend and Assemble Reinforcement Bars NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 18: Cut, Bend and Assemble Reinforcement Bars	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0515: Install and Weld Metal Structural Components NOS Version: 1.0 NSQF Level: 4	**20:00**	**30:00**	**10:00**	**00:00**	**60:00**
Module 19: Install and Weld Metal Structural Components	20:00	30:00	10:00	00:00	60:00
ICE/CON/N0516: Apply Surface Coatings and Treatments NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 20: Apply Surface Coatings and Treatments	10:00	15:00	05:00	00:00	30:00
ICE/CON/N0517: Install Energy-Efficient Metal Cladding Systems NOS Version: 1.0 NSQF Level: 4	**10:00**	**15:00**	**05:00**	**00:00**	**30:00**
Module 21: Install Energy-Efficient Metal Cladding Systems	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 17: Plan and Execute Metal Fabrication

Mapped to ICE/CON/N0513, v1.0

Terminal Outcomes:

- Explain fundamental properties of metals and their classification for fabrication.
- Demonstrate the ability to read and interpret fabrication drawings, including GD&T symbols.
- Apply metal cutting, shaping and welding techniques for fabrication.
- Utilize CAD and CAM software for precision metal design and CNC machining.
- Operate automated fabrication systems, including CNC machines and robotic welding.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe fundamental properties of metals: strength, ductility, malleability and corrosion resistance. • Explain the classification of metals: ferrous (steel, cast iron) vs. non-ferrous (aluminum, copper, brass). • Describe methods of cutting and shaping metal: sawing, shearing, plasma cutting, laser cutting, bending and rolling. • Explain different welding techniques: MIG, TIG, arc welding and spot welding. • Interpret fabrication drawings, symbols and geometric dimensioning and tolerancing (GD&T). • Describe the use of CAD software (AutoCAD, SolidWorks, Fusion 360) for metal design and drafting. • Explain the application of CAM software for generating tool paths and CNC programming. • Describe CNC machining principles, including milling, turning and laser cutting. • Explain automation in metal fabrication, including robotic welding, automated bending and precision assembly. • Describe quality control methods in metal fabrication, including dimensional checks and tolerance inspections.	• Show how to read and interpret technical drawings, blueprints and material specifications. • Show how to identify dimensions, tolerances and material requirements for metal fabrication. • Show how to prepare fabrication plans based on project requirements and structural integrity. • Show how to select appropriate metal types based on strength, corrosion resistance and application. • Show how to measure, mark and cut metal sheets, rods and beams according to specifications. • Show how to apply shaping techniques such as bending, rolling and pressing for component preparation. • Show how to design metal components and assemblies using CAD software. • Show how to generate CNC machining programs using CAM software for automated cutting and shaping. • Show how to simulate and verify machining operations to ensure accuracy before production. • Show how to operate CNC machines for precision metal cutting, drilling and shaping. • Show how to integrate robotic welding and automated assembly systems in fabrication. • Show how to monitor and adjust automated fabrication processes for consistency and efficiency.

Classroom Aids
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements
Measuring tools (calipers, micrometers, rulers, gauges), metal cutting tools (plasma cutters, laser cutters, shears, saws), welding equipment (MIG, TIG, arc welders), bending and rolling machines, CNC machines (milling, turning, drilling), CAD software (AutoCAD, SolidWorks), CAM software (Fusion 360, Mastercam), robotic welding systems, quality inspection tools (coordinate measuring machines, dial indicators, height gauges) and safety gear (gloves, welding masks, goggles, fire-resistant clothing).

Module 18: Cut, Bend and Assemble Reinforcement Bars

Mapped to ICE/CON/N0514, v1.0

Terminal Outcomes:

- Explain types of reinforcement bars and their applications.
- Demonstrate cutting, bending and assembling reinforcement bars according to structural drawings.
- Apply different rebar tying and securing techniques for reinforcement structures.
- Use advanced shuttering and alignment techniques for precision placement.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe types of reinforcement bars: mild steel, deformed bars, epoxy-coated bars and fiber-reinforced polymer (FRP) bars. • Explain reinforcement cutting techniques: manual cutting (hacksaws, bolt cutters), machine cutting, plasma cutting and shear cutting. • Describe bending methods: cold bending, hot bending and CNC-controlled bending. • Explain reinforcement tying techniques: binding wire method, welded reinforcement cages and mechanical couplers. • Describe rebar placement patterns: single-layer, double-layer, spiral and grid patterns. • Explain Mivan shuttering system: aluminum formwork assembly, modular design and efficiency benefits. • Describe laser alignment principles: using laser levels for precise rebar positioning and vertical alignment. • Explain the impact of reinforcement detailing on structural integrity and load-bearing capacity. • Describe the role of reinforcement in seismic-resistant and high-rise constructions	• Show how to measure and mark rebar lengths according to structural drawings. • Demonstrate cutting reinforcement bars using manual tools (hacksaws, bolt cutters) and automated machines. • Apply manual bending techniques using rebar bending levers and hydraulic benders. • Operate CNC-controlled bending machines for precision bends. • Shape rebars to required angles and curves based on reinforcement detailing. • Assemble reinforcement structures based on layout plans. • Secure rebar connections using binding wire and mechanical couplers. • Install reinforcement mesh, cages and columns for concrete structures. • Use Mivan shuttering techniques for assembling steel formwork. • Apply laser alignment techniques to ensure accurate reinforcement placement. • Inspect reinforcement structures and adjust before concrete pouring
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	

Tools, Equipment and Other Requirements
Measuring tapes, calipers, steel rulers, hacksaws, bolt cutters, rebar shears, plasma cutters, automated cutting machines, manual bending levers, hydraulic benders, CNC bending machines, binding wires, mechanical couplers, welding equipment, steel and aluminum formwork panels, laser levels, plumb bobs, spirit levels, rebar scanners, load-testing equipment, structural verification instruments, gloves, goggles, hard hats, steel-toe boots and high-visibility vests.

Module 19: Install and Weld Metal Structural Components

Mapped to ICE/CON/N0515, v1.0

Terminal Outcomes:

- Explain types of metal structural components, fabrication techniques and welding processes.
- Demonstrate the ability to measure, cut, install and secure metal structures using appropriate tools and fastening methods.
- Apply different welding techniques, including manual and automated processes, for structural assembly.

Duration: 20:00	**Duration: 30:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe types of metal structural components, including beams, columns, trusses and sheet metal. • Explain metal fabrication techniques such as shearing, punching, rolling and bending. • Describe different welding processes, including Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), Tungsten Inert Gas (TIG) welding, Submerged Arc Welding (SAW) and Friction Stir Welding (FSW). • Explain the selection and properties of welding materials like mild steel, stainless steel, aluminum and alloys. • Describe heat treatment effects on welded joints and their impact on strength and durability. • Explain robotic welding systems, their programming and benefits in automation. • Describe welding defect detection techniques and corrective measures. • Explain structural reinforcement methods using welded connections. • Describe the importance of metal finishing for corrosion resistance and durability. • Explain welding codes and standards applicable to structural fabrication. • Describe principles of load-bearing metal structures and their assembly. • Explain the integration of welding automation with CAD/CAM software for high-precision fabrication.	• Show how to measure, mark and cut metal sheets and structural sections using hand tools and CNC cutting machines. • Show how to position and secure metal components using clamps, jigs and tack welding. • Show how to drill and fasten structural metal sections using bolts, rivets and welding. • Show how to align and level metal structures using laser-guided tools. • Show how to install temporary supports to hold metal components in place during assembly. • Show how to assemble and install sheet metal for walls, roofing and facade applications. • Show how to secure sheet metal structures using riveting, bolting and welding methods. • Show how to shape and bend sheet metal using hydraulic press brakes and rollers. • Show how to install expansion joints and apply corrosion-resistant coatings like galvanization and powder coating. • Show how to execute welding techniques, including SMAW, GMAW, TIG, SAW and oxy-fuel welding. • Show how to inspect welds for defects such as porosity, cracks and incomplete fusion. • Show how to repair defective welds using grinding, rewelding and filler techniques. • Show how to operate CNC-controlled and robotic welding systems for precision welding. • Show how to program automated welding machines for repetitive production tasks. • Show how to inspect and adjust weld parameters such as heat input, speed and electrode angle.

	• Show how to perform laser welding and friction stir welding for specialized applications. • Show how to integrate automated welding processes with real-time monitoring and quality control systems. • Show how to troubleshoot robotic welding system errors and recalibrate equipment.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Measuring tapes, steel rulers, calipers, marking gauges, clamps, jigs, hacksaws, angle grinders, plasma cutters, oxy-fuel cutting torches, CNC cutting machines, drill presses, riveting tools, hydraulic press brakes, metal rollers, sheet metal benders, SMAW welders, GMAW welders, TIG welders, SAW machines, friction stir welding equipment, laser welding machines, robotic welding systems, welding electrodes, shielding gases, filler metals, galvanization and powder coating equipment, laser levels, spirit levels, welding defect inspection tools, CAD/CAM software, welding helmets, gloves, heat-resistant clothing, safety goggles and steel-toe boots.	

Module 20: Apply Surface Coatings and Treatments

Mapped to ICE/CON/N0516, v1.0

Terminal Outcomes:

- Explain surface preparation methods for coating applications.
- Demonstrate the application of various protective coatings on metal surfaces.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe types of surface coatings: organic (paints, varnishes) and inorganic (metallic, ceramic). • Explain surface preparation techniques such as abrasive blasting, wire brushing and chemical cleaning. • Describe methods of applying protective coatings, including spray, dip, brush and electrostatic techniques. • Explain the role of primers and adhesion promoters in coating durability. • Describe corrosion mechanisms and how protective treatments counteract them. • Explain advanced coating technologies such as powder coating, anodizing and electroplating. • Describe thermal spray coatings and their applications in industrial settings. • Explain principles of cathodic protection and its role in metal preservation. • Describe testing methods for coating thickness, adhesion and durability. • Explain environmental considerations in surface treatment processes, including waste management and emission control. • Describe the benefits of automation in coating and treatment applications for precision and efficiency.	• Show how to clean metal surfaces using chemical and mechanical methods to remove rust, grease and contaminants. • Show how to use abrasive blasting, wire brushing and sanding for optimal surface profiling. • Show how to apply etching and priming treatments for better adhesion of coatings. • Show how to inspect surfaces for defects such as pitting, scaling and oxidation before coating. • Show how to mask off areas that should not be coated using tapes, stencils, or temporary coverings. • Show how to apply liquid coatings such as primers, paints and varnishes using spray, brush and dip methods. • Show how to use powder coating techniques for durable and uniform surface finishes. • Show how to apply industrial coatings like epoxy, polyurethane and fluoropolymers for enhanced protection. • Show how to ensure even distribution and proper curing of coatings using heat or UV treatments. • Show how to check coating thickness and adhesion using micrometers and adhesion testers. • Show how to apply galvanization techniques, including hot-dip and electro-galvanization. • Show how to use anodizing for aluminum components to enhance wear and corrosion resistance. • Show how to perform passivation treatments for stainless steel to prevent oxidation. • Show how to apply cathodic protection methods using sacrificial anodes and

	impressed current systems. • Show how to use chemical conversion coatings such as chromating and phosphating. • Show how to apply thermal spraying techniques, including plasma, arc and flame spraying. • Show how to use physical vapor deposition (PVD) and chemical vapor deposition (CVD) for specialized coatings. • Show how to perform electroplating with metals like zinc, nickel and chromium. • Show how to conduct nano-coating applications for enhanced scratch resistance and self-cleaning properties. • Show how to integrate robotic and automated coating systems for precision and efficiency in large-scale production.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Abrasive blasting equipment, wire brushes, sanders, etching solutions, chemical degreasers, priming tools, masking tapes, stencils, air spray guns, dip tanks, powder coating systems, UV curing equipment, industrial ovens, coating thickness gauges, adhesion testers, hot-dip galvanization tanks, electro-galvanization units, anodizing baths, passivation chemicals, sacrificial anodes, cathodic protection systems, thermal spray guns (plasma, arc, flame), PVD/CVD chambers, electroplating tanks, nano-coating applicators, robotic and automated coating systems, safety gear (gloves, respirators, goggles, protective suits).	

Module 21: Install Energy-Efficient Metal Cladding Systems

Mapped to ICE/CON/N0517, v1.0

Terminal Outcomes:

- Explain the principles of metal cladding installation and its role in energy efficiency.
- Demonstrate the preparation of surfaces for metal cladding installation.

Duration: 10:00	**Duration: 15:00**
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the properties and types of metal cladding materials, including aluminum, zinc, copper and steel. • Describe principles of thermal insulation and energy efficiency in building envelopes. • Explain advanced insulation technologies such as vacuum insulation panels (VIPs) and phase-change materials. • Describe the importance of air and vapor barriers in preventing condensation and thermal bridging. • Explain installation methods for different metal cladding systems, including standing seam, interlocking panels and cassette systems. • Describe the role of cool roofing and solar reflective coatings in energy-efficient buildings. • Explain techniques for integrating solar panels into metal cladding systems. • Describe the impact of ventilated façades on energy performance and indoor comfort. • Explain the use of advanced tools such as laser levels, thermal imaging cameras and BIM software for precision installation. • Discuss environmental sustainability considerations in metal cladding, including recyclability and embodied carbon reduction.	• Show how to inspect and prepare the substrate by cleaning and leveling surfaces before installation. • Show how to select appropriate metal cladding materials based on project specifications. • Demonstrate how to measure and mark the installation area using laser leveling tools. • Show how to cut and shape metal panels using mechanical and automated cutting tools. • Demonstrate the application of primers and protective coatings to metal surfaces before installation. • Show how to install metal cladding panels using direct fixing, rail systems, or concealed fasteners. • Demonstrate integration of insulation materials such as mineral wool, polyurethane foam, or vacuum-insulated panels (VIP). • Show how to ensure airtight sealing of joints using high-performance sealants, tapes and thermal breaks. • Demonstrate the application of vapor barriers and breather membranes to prevent condensation and thermal bridging. • Show how to apply reflective coatings and surface treatments for solar heat reduction. • Demonstrate integration of ventilated façade systems to improve thermal comfort and air circulation. • Show how to install photovoltaic (PV) cladding systems for renewable energy generation. • Conduct thermal imaging tests to identify and rectify insulation gaps or heat leaks. • Demonstrate the installation of pre-

	fabricated modular metal cladding systems for faster construction. • Use 3D laser scanning and BIM (Building Information Modeling) for precise placement and material optimization. • Demonstrate how to install self-healing and nano-coated metal cladding for durability and reduced maintenance. • Show how to integrate smart building sensors into metal cladding for real-time thermal performance monitoring. • Demonstrate proper drainage and water management techniques by incorporating weep holes and flashing systems.
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
Laser leveling tools, mechanical and automated cutting tools, measuring tape, air spray guns, thermal imaging cameras, insulation materials (mineral wool, polyurethane foam, VIPs), sealants, tapes, thermal breaks, vapor barriers, breather membranes, photovoltaic (PV) panels, 3D laser scanners, BIM software, nano-coating applicators, drainage and flashing tools, safety gear (gloves, respirators, goggles, protective suits).	

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/N0513	**Plan and Execute Metal Fabrication**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Interpret basic fabrication drawings under supervision. • Assist in cutting, bending, drilling, and grinding metal components. • Observe CNC, plasma, and laser-cutting operations in real settings. • Support pre-welding preparation including surface cleaning and alignment.	
ICE/CON/N0514	**Cut, Bend and Assemble Reinforcement Bars**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in bar cutting, bending, and tying using site tools. • Identify rebar codes, diameters, spacing, and bar bending schedules. • Support assembling reinforcement cages for beams, slabs, and columns. • Follow safety practices during rebar handling.	

ICE/CON/N0515	**Install and Weld Metal Structural Components**
Mandatory OJT duration (in Hours)	**10:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in positioning and aligning structural steel elements on-site. • Observe welding operations (MIG/TIG/Arc) and support the welder. • Handle tools for grinding, clamping, and surface preparation. • Conduct basic post-weld inspection for continuity and defects.	
ICE/CON/N0516	**Apply Surface Coatings and Treatments**
Mandatory OJT duration (in Hours)	**10:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in cleaning, sanding, and preparing metal surfaces for coating. • Observe and support application of primer, anti-rust coatings, and protective paints. • Maintain tools and storage conditions for coating materials. • Identify coating defects like blistering, peeling, or uneven thickness.	
ICE/CON/N0517	**Install Energy-Efficient Metal Cladding Systems**
Mandatory OJT duration (in Hours)	**05:00**
Terminal Outcomes:	
During the OJT period, the candidate will be able to: • Assist in installation of insulated metal cladding panels. • Support alignment, joint sealing, and fastening of cladding systems. • Identify thermal insulation materials and their handling procedures. • Perform basic sealing tasks to improve building envelope efficiency.	

Annexure

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 (metal Working)"*, mapped to the Qualification Pack: "ICE/CON/Q0501-SI003, v1.0". The minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: *"Trainer (VET and skills)"*, mapped to the Qualification Pack: "MEP/Q2601, v3.0". The minimum accepted score is 80%.

Assessor Requirements

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 (Metal Working)"*, mapped to the Qualification Pack: "ICE/CON/Q0501-SI003, v1.0". The minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: *"Assessor (VET and skills)"*, mapped to the Qualification Pack: "MEP/Q2701, v3.0". The minimum accepted score is 80%.

Assessment Strategy

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

1. **Assessment System Overview:**

   Assessment is done through 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