



Model Curriculum

QP Name: Paver Operator

QP Code: IES/Q0120

QP Version: 3.0

NSQF Level: 4

Model Curriculum Version: 1.0

Infrastructure Equipment Skill Council (IESC), Jubilee Building (Second Floor), No.45, Museum Road,
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Training Parameters

Sector	Infrastructure Equipment
Sub-Sector	Equipment Operation
Occupation	Operator
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8342.1800
Minimum Educational Qualification and Experience	8th Grade pass with 2 year NTC plus 1 year NAC OR 10th Grade pass plus 1 year NTC/ NAC OR 10th Grade pass with 2 years of relevant experience OR 10th Grade pass and pursuing continuous schooling OR 11th Grade Pass OR IES/Q0121 - Junior Paver Operator/ Screed man NSQF Level 3 with minimum education as 5th Grade pass with 2 year relevant experience
Pre-Requisite License or Training	NIL
Minimum Job Entry Age	18 Years
Last Reviewed On	17/11/2022
Next Review Date	17/11/2025
NSQC Approval Date	17/11/2022
QP Version	3.0
Model Curriculum Creation Date	30/10/2022
Model Curriculum Valid Up to Date	17/11/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	420 Hours
Maximum Duration of the Course	420 Hours

Program Overview

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

Training Outcomes

At the end of the program, the learner should be able to:

- Outline the organization's procedures and guidelines related to Paver operations.
- Describe the controls, levers and switches in order to operate the Paver properly.
- Understand all the typical occupational hazards and techniques to be overcome.
- Employ safe practices to use the tools and equipment.
- Explain the roles and responsibilities of the Paver Operator.
- Explain the different types of Pavers and their applications.
- Demonstrate the procedure to carry out all pre-use and running checks.
- Describe the guidelines for health, safety and security requirements.
- Prepare and maintain the logbook to keep track of all maintenance actions.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	4	0	0	0	4
NOS Code – IES/N 0158 NOS Name: Carry out pre-operation checks on paver NOS Version - 3.0 NSQF Level - 4	30	30	60	0	120
NOS Code – IES/N 0159 NOS Name – Operate a paver NOS Version - 3.0 NSQF Level - 4	30	60	30	0	120
NOS Code - IES/N 0160 NOS Name - Perform routine maintenance and troubleshooting of a paver NOS Version - 3.0 NSQF Level - 4	30	30	60	0	120
NOS Code - IES/N 7601 NOS Name - Comply with worksite health and safety guidelines NOS Version - 3.0 NSQF Level - 4	0	30	0	0	30
NOS Code - DST/VSQ/N0101 NOS Name - Employability Skills 30 hrs NOS Version-1.0	0	30	0	0	30

Total Duration	90	180	150	0	420
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Module Details

Module 1: Orientation

Bridge Module

Terminal Outcomes:

- Describe the operations of the Infrastructure Industry in India.
- Outline the skill training schemes in the Skill Sector Councils.
- Discuss the different types of job roles available in IESC.
- Explain the roles and responsibilities of the Paver Operator.

Duration:<4:00>	Duration:<0:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the scope of employment opportunities in the industry. • Explain the roles and responsibilities of the Paver Operator. • Describe the different technical trainings conducted in SSC. 	NIL

Module 2: Pre-op checks on Paver

Mapped to NOS Code – IES/N0 158 v 3.0

Terminal Outcomes:

- Explain the organization's performance standards and procedures related to Paver operations.

- Know the basic working of engine, hydraulic and electrical systems of the Paver.
- Prepare and maintain a logbook to keep track of all maintenance activities.
- Understand the risks and consequences of not adhering to established processes and job instructions.
- Know the reporting structure in the organization, schedule for resolving the complaint/problem and escalation matrix for reporting unresolved problems.
- Know the emergency organization of the specific work site.

Duration: <30:00>	Duration: <90:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Know the components of the tractor unit and screed unit (hopper - flow gates - conveyors - augers- burners and their functioning. • List various types of Pavers and their functions. • Read and understand the guidelines in the safety and operational manual of the OEM. • Read and understand the safety policy of the organization. • Explain the working of the controls, levers and switches required to effectively operate the Paver. • Explain the purpose for spraying cleaning solvent or release agent on parts of the paver that come in contact with the asphalt. • Describe the use of various tools provided with the machine and where the tool kit is stored. • Know about all the typical occupational hazards and techniques to overcome them. • Know about the various types of hand signals & emergency signs used on the site. • Explain the relevance of greasing and lubrication of the Paver components that require routine lubrication. 	<ul style="list-style-type: none"> • Inspect the screed plate, tamping bar and screed attack angle for any damages. • Inspect the main control unit in the cabin and on the screed for proper functioning. • Check that the different controls, gauges, feeders, conveyors, feed control gates, augers, screed, screed heater, sensing and control equipment and emergency stop are in working condition. • Inspect the tow arms, and the tow cylinder for any cracks or damages. • Prepare daily top-up plan of engine, gearbox oil levels, radiator coolant, battery electrolyte level. • Test that the different controls, the instrument panel including all gauges, parking/service brake, main horn, reverse horn, headlights and warning light for mechanical damage, are in good working order. • Create a checklist for pre operation inspection of the Paver to detect damage, flaws, cracks or leaks in the gearbox, propulsion system, and hydraulic hoses. • Demonstrate how to adjust the operator’s seat, rear and side mirrors and seat belt for ease of operation.

<ul style="list-style-type: none"> • Record any deviations or occurrences that do not conform to the specified standards. • Know the escalation matrix for reporting unresolved problems. • List methods to enhance operational efficiency of the Paver. • List parameters to be covered in the periodic maintenance sheet. • Explain the three-point climbing procedure. • Explain the meaning of the signs and symbols at the worksite. • Explain reason for walking around the Paver before starting it. • Describe need for adjusting the track tension to measurements prescribed in the manual. 	<ul style="list-style-type: none"> • Inspect the air filter indicator for any problems. • Check whether the dirt evacuator at the bottom of the air filter canister is clean. • Show how to clean the engine air filter dust bowls. • Check that the propane/LPG cylinder regulator and pressure gauges, the electronic / manual burner system, the ignition control components and the heating system are properly installed and in working order. • Check that the front wheel assist relief pressure is configured in accordance with the operating surface. • Ensure that the fire extinguisher is properly calibrated and available at all times at the site during paving. • Prepare a log book to record all actions completed prior to starting the Paver.
Classroom Aids:	
Computer, projector, printer, student table, whiteboard, flip chart, markers and duster Manufacturer’s Service and Repair Manual	
Tools, Equipment and Other Requirements	
Safety Gear, Tool Kit, PPE	

Module 3: Operation of a Paver

Mapped to NOS Code – IES/N0 159 v 3.0

Terminal Outcomes:

- Explain the responsibilities of the operator in his assigned job role.
- Explain the controls, levers and switches for proper operation of the Paver.

- Explain the screed mechanism and its uses.
- List the different types of machine guards for the Paver.
- Know how to perform all pre-use and on-the-job inspections.
- Outline the reporting structure of the company.
- Outline the safety standards & procedures followed in the organization.

Duration:<30:00>	Duration:<90:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Outline the organization’s performance standards & procedures. • List the applications and functions of wheeled/ tracked Pavers • Describe the primary parts of the Paver - tractor unit - screed unit and the function of each. • Explain the use of controls to lower the screed auger, regulate the hopper, and steer the paver in the direction required by the surface. • Explain why the paving screed is preheated before placing the asphalt as per the set standards. • Explain the importance of monitoring and controlling temperature during the paving process. • Outline the procedure to notify the supervisor if a fault is found that is outside the scope of the operator’s job role. • List various types of paver attachments and their applications - reference ski / big-ski - cut-off plates / strike-off plates - auger tunnel extension plates, screed and auger extensions, and safety guard frames - lighting at night - Sensor system that operates automatically (includes the grade and slope sensor and the controller units) • Explain reason for running the engine at 1/2 speed (RPM) without load for 3 to 5 minutes, ensuring that the joystick is in neutral position before switching on the Paver and parking the Paver on a 	<ul style="list-style-type: none"> • Demonstrate how to utilise the priming pump and pre-heater to start the engine in extreme cold weather. • Show how to wear the seatbelt and adjust the seat position • Know position and operation of the emergency stop button. • Describe the instrument panel, its position, and its functionality. • Demonstrate how to align the paving machine into position for receiving asphalt by dump truck, and to maintain constant flow of asphalt into the hopper. • Show how to distribute the asphalt materials along the breadth of the screed to eliminate voids at curbs and joints. • Demonstrate how to attach extensions to the screed to change the width according to the surface thickness. • Show how to clean components (such as hoppers, augers, conveyors, and extensions) in accordance with the manufacturer specifications and organisation’s rules and procedures. • Show how to test check product load in order to avoid overloading during operations. • Show how to monitor hazards and risks to ensure safety of self, other personnel, plant and equipment. • Give examples of all signs, warnings, and other emergency signals.

<p>flat smooth area before turning it off.</p> <ul style="list-style-type: none"> • Know the cost of the equipment and loss to the Organization resulting from its damage and the direct/indirect cost of accidents. • Know the importance of road safety rules and signs. • Know how to plan work according to the required schedule and location. 	<ul style="list-style-type: none"> • Maintain a record of input and output flow as per the desired formats of the organization.
<p>Classroom Aids:</p>	
<p>Computer, projector, printer, student table, whiteboard, flip chart, markers and duster Manufacturer’s Service and Repair Manual</p>	
<p>Tools, Equipment and Other Requirements</p>	
<p>Safety Gear, Tool Kit, PPE</p>	

Module 4: Routine maintenance and trouble shooting

Mapped to NOS Code: IES/N0 160 v 3.0

Terminal Outcomes:

- Explain the responsibilities of the assigned job role.
- Communicate the reporting structure in the company.
- Show how to monitor machine working hours to determine the best service plan.
- List all the typical occupational hazards and techniques to overcome them.

Duration: <30:00>	Duration: <90:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Elaborate the fundamental mechanical system at work in the different operations of the Paver. • Summarize the organizations procedures and guidelines related to breakdown & maintenance services. • Show how to monitor machine working hours to determine the best service plan. • Define safety protocols to be observed before undertaking any repair. • Define the scope of the position and when and to whom to escalate for help. • Identify common defects and general causes of breakdown. • Explain the importance of the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature. • Describe the importance of regular cleaning of air filter dust bowls. • Identify the potential causes of any unusual noises coming from the engine. • Identify prominent places on the equipment for display of safety and maintenance stickers. • Describe importance of daily greasing of all greasing pins and pivot points. • Explain why it is important that the wash-down pump for cleaning the machine should be working properly. 	<ul style="list-style-type: none"> • Create daily / weekly maintenance sheets and carry out maintenance in conformance with the manual. • Check auger chains, conveyor chain, lubricate and adjust if required. • Check and lubricate all screed points, the auger flight screw, the fitting on the depth screw, and the fittings on the flange bearings located on top of the extension screed. • Demonstrate how to remove any debris from the screed. • Check for screws on the rod extensions and tilt screws on the screed pivot. • Demonstrate how to clean the air filter dust bowls. • Prepare a daily top-up plan of coolants, lubricants and fluids to ensure conformity with the manufacturer’s specifications. • Demonstrate how to drain water and debris from the fuel tank. • Check for track tension and adjust to the Operation manual specifications.
<p>Classroom Aids:</p>	

Computer, projector, printer, student table, whiteboard, flip chart, markers and duster
Manufacturer's Service and Repair Manual

Tools, Equipment and Other Requirements

Safety Gear, Tool Kit, PPE

Module 5: Health and safety

Mapped to NOS Code: IES/N 7601 v3.0

Terminal Outcomes:

- Describe the guidelines for health, safety and security requirements.
- Identify the common hazards and risks at site.
- Employ safe practices to use the tools and machines.
- Explain emergency procedures to stop and shutdown machinery.
- Know basic first-aid treatment for common injuries.
- Demonstrate the operation of fire-fighting equipment.

- Design various safety signs, symbols and warnings for use in the workplace.

Duration: <10:00>	Duration: <20:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the Health, safety, environmental (HSE) policies of the organization. • Explain the reporting procedure for all HSE activities. • Display the contact details of HSE personnel, in case of emergencies. • Report all health and safety related incidents/accidents. • Explain safe working practices to avoid common hazards and risks. • Know the importance of following road safety rules and signs. • Categorize waste based on non-recyclable, hazardous and recyclable material. 	<ul style="list-style-type: none"> • Prepare a hazard log register to report incidents and accidents. • Show the correct use of Personal Protective Equipment (PPE) while handling the hot asphalt. • Demonstrate the operation of fire extinguishers. • Demonstrate how to give basic first aid. • Conduct a mock drill for dealing with emergencies like fires and other calamities. • Demonstrate safe storage and disposal of waste.
Classroom Aids:	
Computer, projector, printer, student table, whiteboard, flip chart, marker and duster	
Tools, Equipment and Other Requirements	
Fire Extinguishers, Personal Protective Equipment and other safety gears	

Module 6: Employability Skills

Mapped to NOS: DST/VSQ/N0101

Terminal Outcomes:

At the end of this module, the learner should have acquired the listed knowledge and skills.

- Discuss the importance of Employability Skills in meeting the job requirements
- Show how to practice different environmentally sustainable practices
- Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mind-set in different situations
- Demonstrate how to communicate in a well -mannered way with others
- Demonstrate working with others in a team

- Show how to conduct oneself appropriately with all genders and PwD
- Discuss the significance of reporting sexual harassment issues in time
- Discuss the significance of using financial products and services safely and securely
- Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws
- Show how to operate digital devices and use the associated applications and features, safely and securely
- Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely
- Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges
- Explain the significance of identifying customer needs and addressing them
- Create a biodata
- Use various sources to search and apply for jobs
- Discuss the significance of dressing up neatly and maintaining hygiene for an interview
- Discuss how to search and register for apprenticeship opportunities
- Describe opportunities as an entrepreneur

Duration: <00:00>	Duration: <30:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes

<ul style="list-style-type: none"> • NA 	<ul style="list-style-type: none"> • Discuss the importance of Employability Skills in meeting the job requirements • Show how to practice different environmentally sustainable practices • Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mind-set in different situations • Demonstrate how to communicate in a well -mannered way with others • Demonstrate working with others in a team • Show how to conduct oneself appropriately with all genders and PwD • Show how to operate digital devices and use the associated applications and features, safely and securely • Explain the significance of identifying customer needs and addressing them • Create a biodata • Use various sources to search and apply for jobs • Discuss the significance of dressing up neatly and maintaining hygiene for an interview • Describe opportunities as an entrepreneur
Classroom Aids:	
Computer, projector, printer, student table, whiteboard/flip chart, marker, duster	
Tools, Equipment and Other Requirements	

Annexure

Trainer Requirements

Trainer Prerequisites

Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Class VIII		3	2	1		

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: Paver Operator mapped to QP: IES/Q.0120–Version 2.0 Minimum accepted score 70%.	Certified for Job Role: Paver Operator Minimum accepted score 70%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Class VIII		3	2	1		

Assessor Certification	
Domain Certification	Platform Certification
<p>Certified for Job Role: Paver Operator mapped to QP:IES/Q.0120–Version 2.0 Minimum accepted score 70%.</p>	<p>Certified for Job Role: Paver Operator Minimum accepted score 70%.</p>

Assessment Strategy

Criteria for assessment for Qualification Pack has been laid down based on the NOS's.

Each Performance Criteria (PC) has been assigned marks proportional to its importance within NOS and weightages have also been given among the NOSs accordingly.

The assessment of the theory/knowledge will be based on written test/viva or both while skill test shall be hands on practical.

Behavior and attitude will be assessed while performing the assigned task.

The assessment shall be done as per the guidelines formulated by IESC.

The assessment agencies in consultation with IESC will create unique question papers for theory/knowledge and practical skills at each IESC accredited testing centers (as per assessment criteria below)

To pass the Qualification Pack, every trainee should score a minimum of 70%.

In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification pack.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training .
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module . A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
PMKVY	Pradhan Mantri Kaushal Vikas Yojana
QRC	Qualification Review Committee
SSC	Sector Skill Council
SDMS	Skill Development Management System
SIP	Skill India Portal
HSE	Health Safety Environment
PPE	Personal Protective Equipment
PwD	Persons with disabilities