



# Model Curriculum

**QP Name: Junior Paver Operator**

**QP Code: IES/Q0121**

**QP Version: 3.0**

**NSQF Level: 4**

**Model Curriculum Version: 1.0**

Infrastructure Equipment Skill Council (IESC), Jubilee Building (Second Floor), No.45,  
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# Table of Contents

Training Parameters .....	3
Program Overview.....	4
Training Outcomes .....	4
Compulsory Modules.....	4
Module Details .....	5
Annexure.....	15
Trainer Requirements.....	15
Assessor Requirements .....	17
Assessment Strategy .....	188
References .....	19
Glossary .....	199
Acronyms and Abbreviations.....	20

## Training Parameters

Sector	Infrastructure Equipment
Sub-Sector	Equipment Operation
Occupation	Junior Operator
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8342.1800
<b>Minimum Educational Qualification and Experience</b>	Ability to Read and Write with 5 years of relevant experience OR 5th Class pass with 4 years of relevant experience OR 8th Class pass with 1 year of relevant experience OR 8th Class pass with 1 year of NTC/ NAC OR 8th Class pass and pursuing continuous schooling in regular school with vocational subject
<b>Pre-Requisite License or Training</b>	NIL
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	17/11/2022
<b>Next Review Date</b>	17/11/2025
<b>NSQC Approval Date</b>	17/11/2022
<b>QP Version</b>	3.0
<b>Model Curriculum Creation Date</b>	30/10/2022
<b>Model Curriculum Valid Up to Date</b>	17/11/2025
<b>Model Curriculum Version</b>	1.0
<b>Minimum Duration of the Course</b>	300 Hours
<b>Maximum Duration of the Course</b>	300 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:

- Describe the various controls in the Main Control Unit & Screed Control Unit.
- Understand the settings to be done for paving parameters before starting the Paver.
- Understand the various settings and be able to operate the Automatic Sensor System.
- 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 0161 NOS Name: Assist in pre-operation checks on paver NOS Version - 3.0 NSQF Level - 4	10	20	30	0	60
NOS Code – IES/N 0162 NOS Name – Assist in paver operations NOS Version - 3.0 NSQF Level - 4	30	60	30	0	120
NOS Code - IES/N 0163 NOS Name –Assist in routine maintenance and troubleshooting of a paver NOS Version - 3.0 NSQF Level - 4	10	20	30	0	60
NOS Code - IES/N 7601 NOS Name - Comply with worksite health and safety guidelines NOS Version - 3.0 NSQF Level - 4	10	20	0	0	30
NOS Code - DST/VSQ/N0101 NOS Name-Employability Skills 30 hrs NOS Version 1.0	0	30	0	0	30
<b>Total Duration</b>	<b>60</b>	<b>150</b>	<b>90</b>	<b>0</b>	<b>300</b>

## 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 about the different types of job roles available in IESC.
- Explain the roles and responsibilities of a Junior Paver Operator.

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

## Module 2: Assist in Pre-op checks on Paver

Mapped to NOS Code – IES/NO 161 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.
- Assist in preparing and updating of 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: <10:00>	Duration: <50:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Know the components of the tractor unit and screed unit (hopper - flow gates - conveyors – augers – burners) and their functioning.</li> <li>• Know the settings for the electrical screed heating system.</li> <li>• Know how to use the Auto Screed Heating function on the paver and its importance.</li> <li>• List various types of Pavers and their functions.</li> <li>• Read and understand the guidelines in the safety and operational manual of the OEM.</li> <li>• Understand the functioning of the sensors in the Auto Levelling System and their fitment procedure.</li> <li>• Explain the purpose for spraying cleaning solvent or release agent on the parts of the paver that come in contact with the asphalt.</li> <li>• Describe the use of various tools provided with the machine and where the tool kit is stored.</li> </ul>	<ul style="list-style-type: none"> <li>• Help to inspect the screed plate, tamping bar and screed angle of attack for any damages / corrections / setting.</li> <li>• Help to inspect the main control unit in the cabin and on the screed for proper functioning.</li> <li>• Help to 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.</li> <li>• Help to inspect the tow arms, and the tow cylinder for any cracks or damages.</li> <li>• Help to inspect the screed lift cylinders for proper functioning.</li> <li>• Help to check that the float switch is functioning properly.</li> <li>• Assist in daily top-up of engine and gearbox oil levels, radiator coolant, battery electrolyte level.</li> <li>• Assist in top up of the Ad Blue so that no error codes come.</li> <li>• Assist in testing the different controls, the instrument panel</li> </ul>

<ul style="list-style-type: none"> <li>• Know about all the typical occupational hazards and techniques to overcome them.</li> <li>• Know about the various types of hand signals &amp; emergency signs used on the site.</li> <li>• Explain the relevance of greasing and lubrication of the Paver components that require routine lubrication.</li> <li>• Record any deviations or occurrences that do not conform to the specified standards.</li> <li>• Know the escalation matrix for reporting unresolved problems.</li> <li>• List methods to enhance the operational efficiency of the Paver.</li> <li>• List parameters to be covered in the periodic maintenance sheet.</li> <li>• Explain the three-point climbing procedure.</li> <li>• Explain the meaning of the signs and symbols at the worksite.</li> <li>• Explain reason for walking around the Paver before starting it.</li> <li>• Describe need for adjusting the track tension to measurements prescribed in the manual.</li> <li>• Know how and when to use the various paving functions like Screed Lock, Screed Anti-climb, Screed Assist, Screed Load, Screed Tensioning.</li> <li>• Explain why the hopper wings must be kept open and emptied frequently or after every load.</li> <li>• Understand the importance of keeping paving speed constant during operation.</li> <li>• Understand the importance of the alarm button / horn on the screed control unit.</li> <li>• Explain why Regeneration policy of the engine should be done after</li> </ul>	<ul style="list-style-type: none"> <li>including all gauges, parking/service brake, main horn, reverse horn, headlights and warning light for mechanical damage for good working order.</li> <li>• Assist in visual inspection of the Exhaust After Treatment System (EATS).</li> <li>• Assist in preparation of a checklist for pre operation inspection of the Paver to detect damage, flaws, cracks or leaks in the gearbox, propulsion system and hydraulic hoses.</li> <li>• Demonstrate how to adjust the operator's seat, rear and side mirrors and seat belt for ease of operation.</li> <li>• Assist in inspection of the air filter indicator for any problems.</li> <li>• Help to check whether the dirt evacuator at the bottom of the air filter canister is clean.</li> <li>• Assist in cleaning the engine air filter dust bowls.</li> <li>• Help to 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.</li> <li>• Help to check that the front wheel assist relief pressure is configured in accordance with the operating surface.</li> <li>• Help to ensure that the fire extinguisher is properly calibrated and available at all times at the site during paving.</li> <li>• Assist in preparation of a logbook to record all actions completed prior to starting the Paver.</li> <li>• Help to arrange wooden blocks at site equal to the loose thickness to be paved and to place them under</li> </ul>
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<p>completion of 650 hours of operation.</p>	<p>the screed at a 45° angle to the screed plate.</p> <ul style="list-style-type: none"> <li>• Help to ensure that Head Of Material (HOM) is always kept constant &amp; covers 66% of the auger.</li> <li>• Help to check for worn out auger flights replacing them if necessary, prior to paving operations.</li> </ul>
<p><b>Classroom Aids:</b></p>	
<p>Computer, projector, printer, student table, whiteboard, flip chart, markers and duster Manufacturer's Service and Repair Manual</p>	
<p><b>Tools, Equipment and Other Requirements</b></p>	
<p>Safety Gear, Tool Kit, PPE</p>	



## Module 3: Assist in Operation of a Paver

Mapped to NOS Code – IES/N0 162 v 3.0

### Terminal Outcomes:

- Explain the responsibilities of the junior 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.
- Assist in performing 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"> <li>• Outline the organization’s performance standards &amp; procedures.</li> <li>• List the applications and functions of wheeled/ tracked Pavers</li> <li>• Describe the primary parts of the Paver - tractor unit - screed unit and the function of each.</li> <li>• Explain the use of controls to lower the screed auger, regulate the hopper, and steer the paver in the direction required by the surface.</li> <li>• Explain why the paving screed is preheated before placing the asphalt as per the set standards.</li> <li>• Explain the importance of monitoring and controlling temperature during the paving process.</li> <li>• Outline the procedure to notify the supervisor if a fault is found that is outside the scope of the operator’s job role.</li> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• Help to start the engine in extreme cold weather by utilising the priming pump and pre-heater.</li> <li>• Assist the operator with wearing the seatbelt and adjusting the seat position</li> <li>• Help to operate the emergency stop button.</li> <li>• Describe the instrument panel, its position, and its functionality.</li> <li>• Help to align the paving machine into position for receiving asphalt by dump truck, and to maintain constant flow of asphalt into the hopper.</li> <li>• Assist in the distribution of the asphalt materials along the breadth of the screed to eliminate voids at curbs and joints.</li> <li>• Help to attach extensions to the screed to change the width according to the surface thickness.</li> <li>• Help to clean components (such as hoppers, augers, conveyors, and extensions) in accordance with the manufacturer specifications and organisation’s rules and procedures.</li> <li>• Assist in checking the product load in order to avoid overloading during operations.</li> </ul>

<p>(includes the grade and slope sensor and the controller units)</p> <ul style="list-style-type: none"> <li>• Explain the 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 flat smooth area before turning it off.</li> <li>• Know the cost of the equipment and loss to the Organization resulting from its damage and the direct/indirect cost of accidents.</li> <li>• Know the importance of road safety rules and signs.</li> <li>• Know how to plan work according to the required schedule and location.</li> <li>• Understand why not to adjust the turn buckles on the tow arms during paving operation.</li> <li>• Explain the functioning of the EBDS (Electric Battery Cut-off Switch).</li> </ul>	<ul style="list-style-type: none"> <li>• Assist in monitoring hazards and risks to ensure safety of self, other personnel, plant and equipment.</li> <li>• Help to maintain a record of input and output flow as per the desired formats of the organization.</li> <li>• Help to ensure that the Auger &amp; Conveyors can operate in reverse.</li> <li>• Help to ensure that the paver moves forward to pick up the end dump truck if during operation the dump truck is stopped @25~30 cm before the push rollers.</li> <li>• Help the operator to check that the screed heating commences 20 minutes before the arrival of the first load and is discontinued after paving approx. 4to 5 loads when in manual mode of operation.</li> <li>• Help the operator to ensure that the hopper is always kept at least 1/3<sup>rd</sup> full to avoid segregation issues during paving.</li> </ul>
<p><b>Classroom Aids:</b></p>	
<p>Computer, projector, printer, student table, whiteboard, flip chart, markers and duster Manufacturer’s Service and Repair Manual</p>	
<p><b>Tools, Equipment and Other Requirements</b></p>	
<p>Safety Gear, Tool Kit, PPE</p>	

## Module 4: Assist in Routine maintenance and trouble shooting

Mapped to NOS Code: IES/N0 163 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: <10:00>	Duration: <50:00>
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> <li>• Elaborate the fundamental mechanical system at work in the different operations of the Paver.</li> <li>• Summarize the organization’s procedures and guidelines related to breakdown &amp; maintenance services.</li> <li>• Show how to monitor machine working hours to determine the best service plan.</li> <li>• Define safety protocols to be observed before undertaking any repair.</li> <li>• Define the scope of the position and when and to whom to escalate for help.</li> <li>• Identify common defects and general causes of breakdown.</li> <li>• Explain the importance of the optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature.</li> <li>• Identify the potential causes of any unusual noises coming from the paver.</li> <li>• Identify prominent places on the paver for display of safety and maintenance stickers.</li> <li>• Describe importance of daily greasing of all greasing pins and pivot points.</li> </ul>	<ul style="list-style-type: none"> <li>• Create daily / weekly maintenance sheets and carry out maintenance in conformance with the manual.</li> <li>• Check the auger chains, conveyor chain, lubricate and adjust if required.</li> <li>• Check and lubricate all the 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.</li> <li>• Help to remove debris from the screed.</li> <li>• Help to check the screws on the rod extensions and tilt screws on the screed pivot.</li> <li>• Clean the air filter dust bowls.</li> <li>• Prepare a daily top-up plan of coolants, lubricants, fluids-Ad blue etc. to ensure conformity with the manufacturer’s specifications.</li> <li>• Drain water and debris from the fuel tank.</li> <li>• Help to check for track tension and adjust to the operation manual specifications.</li> </ul>

<ul style="list-style-type: none"><li>• Explain why it is important that the wash-down pump for cleaning the machine should be working properly.</li></ul>	
<b>Classroom Aids:</b>	
Computer, projector, printer, student table, whiteboard, flip chart, markers and duster Manufacturer's Service and Repair Manual	
<b>Tools, Equipment and Other Requirements</b>	
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.
- Help with the emergency procedures to stop and shutdown machinery.
- Know basic first-aid treatment for common injuries.
- Help in the operation of fire-fighting equipment.
- Help to display various safety signs, decals, symbols and warnings at site.

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

<b>Duration: &lt;00:00&gt;</b>	<b>Duration: &lt;30:00&gt;</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>

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

## 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: Junior Paver Operator mapped to QP: IES/Q.0121- Version 2.0 Minimum accepted score 70%.	Certified for Job Role: Junior 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: Junior Paver Operator mapped to QP:IES/Q.0121- Version 2.0 Minimum accepted score 70%.</p>	<p>Certified for Job Role: Junior 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
<b>Declarative Knowledge</b>	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.
<b>Key Learning Outcome</b>	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).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	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.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of the training</b> .
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of a module</b> . 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