

QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR INFRASTRUCTURE EQUIPMENT INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Contents

1. Introduction and Contacts..... Page no. 1
2. Qualifications Pack.....Page no.2
3. OS Units.....Page no.2
4. Glossary of Key TermsPage no.3
5. Annexure- Nomenclature for QP & NOS.....
Page no. 26
6. Assessment Criteria.....Page no.28

Introduction

Qualification Pack - Paver Operator

SECTOR:	INFRASTRUCTURE EQUIPMENT
SUB SECTOR:	Equipment Operations
OCCUPATION:	Operator
REFERENCE ID:	IES/Q0120
ALIGNED TO:	NCO-2004/8332.50 /3112.40

Brief Job Description: The paver operator is required to operate the pavers to spread and level hot bituminous paving materials on areas such as highways, streets and parking areas.

Personal Attributes: The job requires an individual to be physically agile, strong and should have good eye sight. He should maintain constant alertness to the multiple concurrent activities during the operation at the construction site, including the activities of other employees, contractors, etc. He should possess basic math skills and is required to be mentally alert at all times.

Qualifications Pack Code	IES/Q0120		
Job Role	Paver Operator		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	14/04/16
Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18
NSQC Clearance on	NA		

Job Role	Paver Operator
Role Description	The paver operator is required to operate the pavers to spread and level hot bituminous paving materials on areas such as highways, streets and parking areas.
NSQF level	4
Minimum Educational Qualifications	Class VIII preferably for existing operators and Class X for fresh operators
Maximum Educational Qualifications	NA
Training (Suggested but not mandatory)	Certification Training in Paver Operations preferred Must have a valid Heavy Commercial Vehicle Driving License (HCV).
Minimum Job Entry Age	18 years
Experience	Preferably 2 year of experience as junior paver operator
Applicable National Occupational Standards (NOS)	<p>Compulsory</p> <ol style="list-style-type: none"> IES/N0158Carry out Pre-operational checks on a paver IES/N0159Operate a paver IES/N0160Perform routine maintenance and troubleshooting of the paver IES/N7601Comply with worksite health and safety guidelines <p>Optional: N.A.</p>
Performance Criteria	As described in the relevant OS units

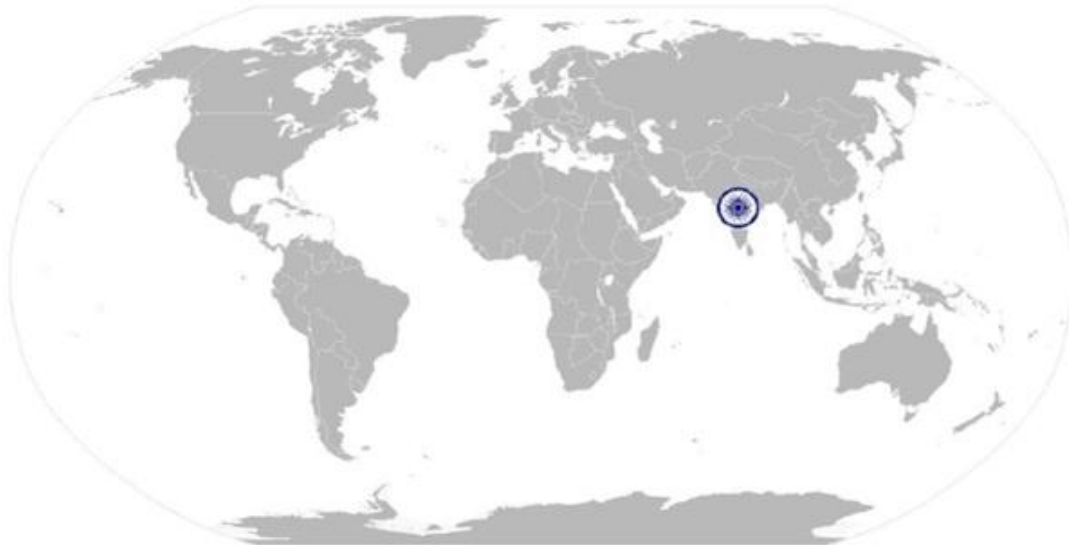
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential to fulfil achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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; he/she needs to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria 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 Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification 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 find the required one.
Scope	Scope is the 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 the quality of required performance.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform up to the required standard.

Acronyms	Keywords /Terms	Description
	OS	Occupational Standard(s)
	NOS	National Occupational Standard(s)
	QP	Qualifications Pack
	NSQF	National Skill Qualifications Framework
	ITI	Industrial Training Institute
	HCV	Heavy Commercial Vehicle
	SHE	Safety Health and Environment
	SOP	Standard Operating Procedure
TBD	To Be Determined	

IES/N0158

Carry out Pre-operational checks on a paver

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that need to be carried out to carry out pre-operational checks on the paver machines.

IES/N0158
Carry out Pre-operational checks on a paver

Unit Code	IES/N0158
Unit Title (Task)	Carry out Pre-operational checks on a paver
Description	This unit insight into activities that need to be carried out to carry out pre-operational checks on the paver machines.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Pre-operational Checks • Wheeled Paver • Tracked Paver • Reporting and documentation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Pre-operational Checks	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. Visually inspect the machine for any malfunctioning, missing or broken parts PC2. Ensure all covers and guards are in place PC3. Check conditions of parking brake / service brake, main horn, reverse horn, head light and warning lights PC4. Inspect screed plate, tamping bar and screed attack angle for any damages PC5. Check the various controls (including governor on engine), gauges, feeders, conveyors, feed control gates, augers, screed, screed heater, and sensing and control equipment PC6. Ensure oil levels of engine, transmission, radiator, and coolant and battery electrolyte level are as per the required levels PC7. Check the alternator and brackets for tightness PC8. Check for leaks in transmission / propulsion system / hydraulic hoses and take necessary actions as per the operational manual PC9. Inspect the air-induction system to ensure that all connections are tight and intact PC10. Check the air filter indicator for any malfunctioning PC11. Inspect screed assembly and sensor assembly for damage, wear and hose leaks PC12. Inspect hopper system for wear or damage PC13. Inspect operator's cabin, control console steps, and hand holds are clean and free of grease, oil, dirt, mud and asphalt PC14. Inspect instrument panel including all gauges for any indicators of malfunctioning PC15. Enter operating platform using step and grab handles for safety (3point climbing procedure) PC16. Check for the dirt evacuator which is located at the bottom of the air filter canister PC17. Check all the conveyor belts for wear, tension, crack and frays PC18. Check the pumps, motors, electrical wires and connections, steps and

IES/N0158

Carry out Pre-operational checks on a paver

	<p>support for any repairs</p> <p>PC19. Ensure that the propane/ LPG cylinder regulator is properly fitted and the pressure gauges are in good working condition</p> <p>PC20. Spray cleaning solvent or release agent on any part of the paver that comes in contact with asphalt</p> <p>PC21. Ensure daily maintenance checks and greasing as per manufacturer specifications is carried out</p> <p>PC22. Check if the safety by-pass valve is kept at correct setting</p> <p>PC23. Check the engine safety switch for any malfunctioning</p> <p>PC24. Inspect the main control unit in cabin and on the screed for proper functioning</p> <p>PC25. Ensure fire extinguisher is properly calibrated and available in the site at all times during paving</p> <p>PC26. Check the electronic / manual burner system and all ignition control units and heating system</p> <p>PC27. Check the electrical heating system for the screed if fitted</p> <p>PC28. Check and inspect the main control unit in cabin and on the screed for proper functioning of all machine systems and buttons functionality and Emergency stop</p> <p>PC29. Check the Front Wheel assist relief pressure. It should be set according to the operating surface.(addition)</p> <p>PC30. Inspect the tow arms, and the tow cylinder for any cracks or damages(addition)</p> <p>PC31. Check for general hydraulic hoses/fittings for any leaks(addition)</p>
Wheeled Paver	PC32. Check the inflation pressure of the tyres as per the prescribed norms/ the requirement of the ground
Tracked Paver	PC33. Check for track tension and adjust them to measurements prescribed in the manual
Reporting and documentation	<p>PC34. Maintain a checking/maintenance logbook to record all activities performed before starting the operation</p> <p>PC35. Report defects precisely to the supervisor if beyond scope of the role</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to breakdown & maintenance services</p> <p>KA2. The performance standards & procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Contact person in case of queries on procedure or equipment's</p> <p>KA6. Location and process for storage and disposal of waste material</p> <p>KA7. Safety policy of the company; includes the customer and manufacturer policy</p> <p>KA8. Location of tools</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Types of pavers</p>

IES/N0158

Carry out Pre-operational checks on a paver

	<ul style="list-style-type: none"> - Wheeled pavers - Tracked pavers <p>KB2. Primary parts of Paver</p> <ul style="list-style-type: none"> - Tractor unit - Screed unit <p>KB3. Components of Tractor unit and screed unit and its functioning</p> <ul style="list-style-type: none"> - Truck push rollers - Mixture receiving hopper - Material flow gates - Two side conveyors - A pair of distributor augers - Burners, - Rod-extensions and auger extension flights, strike-off plates and safety guards for the auger tunnel - Match-height - Straight Line indicator rod kept below the push rollers in front of machine - Vibration, Pressure Bar and Tamping system on the screed <p>KB4. Attachments for Paver and its uses</p> <ul style="list-style-type: none"> - Reference ski - Also known as Big-Ski - Cut-off Plates / Strike-off plates - Screed and auger extensions, auger tunnel extension plates and safety guard frames - Night Lights - Automatic sensor system (Includes the Grade and Slope sensor and the controller units) <p>KB5. Basics of screed heating</p> <p>KB6. Basics of engine transmission, propulsion / drive system & their use and function</p> <p>KB7. Basic Hydro-electrical functioning and repairs</p> <p>KB8. Different types of hydraulic mechanisms and principles of friction</p> <p>KB9. Significance and methods of lubricating different parts of the paver</p> <p>KB10. Procedure of filling diesel, coolant in the machine</p> <p>KB11. Optimal engine oil pressure, radiator coolant temperature</p> <p>KB12. Different types of machine guards for equipment</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Record any deviations/ incidents as per prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. Read and comprehend basic English and regional as applicable to read manuals of operations, guidelines, etc. SA3. Comprehend basic sign and symbols at the worksite

IES/N0158

Carry out Pre-operational checks on a paver

	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. Give clear instructions to co-workers, subordinates and other persons SA5. Use correct technical terms while interacting with supervisor
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. Decide when to conduct maintenance checks as per manufacturer specifications
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB2. Work with supervisors/ team mates to carry out work related tasks SB3. Plan work according to the required schedule and location SB4. Plan for cleaning and lubricating the appropriate equipment every day
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. Provide service of the highest order to ensure customer satisfaction SB6. Compliance to the set standards given by the customer
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB7. Identify immediate or temporary solutions to resolve mechanical issues SB8. Judge when to seek assistance from supervisor
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB9. Identify cause and effect relations in his area of work
Critical Thinking	
The user/ individual on the job needs to know and understand how to: SB10. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, and communication to act efficiently	

IES/N0158

Carry out Pre-operational checks on a paver

NOS Version Control

NOS Code	IES/N0158		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

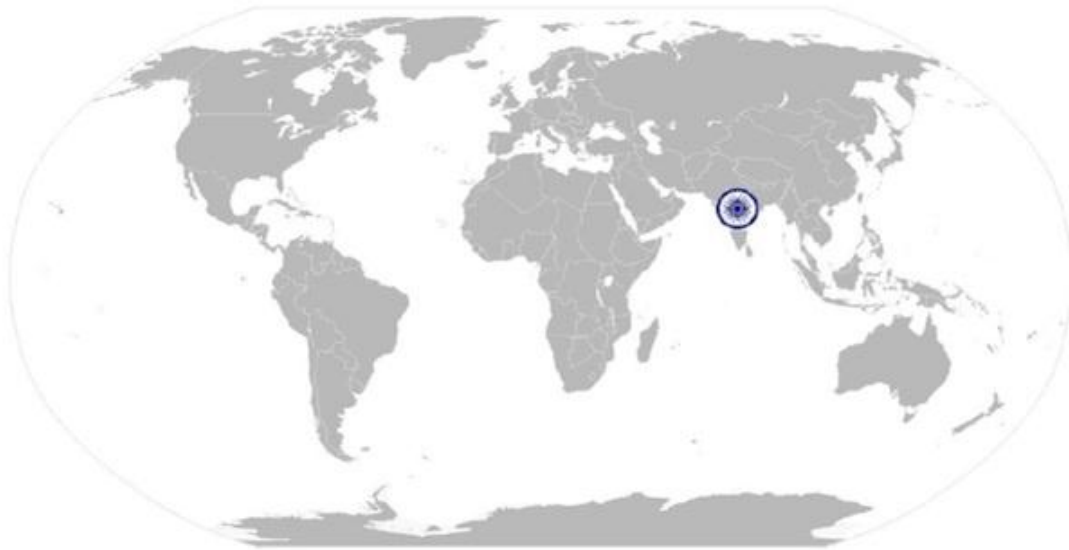
[Back To Top](#)



IES/N0159

Operate a paver

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for starting and running the paver machine

IES/N0159
Operate a paver

Unit Code	IES/N0159
Unit Title (Task)	Operate a paver
Description	This unit provides insight into activities that are required for starting and running the paver machine
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Starting and driving the paver machine • Shut down procedures • Reporting and documentation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Starting and driving the paver machine	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. Ensure the joystick is in neutral position before turning on the paver PC2. Fasten seat belt and adjusts seat position as per one's comfort and safety PC3. Place the throttle in idle position or by pressing and holding throttle switch in the up and down position. PC4. Start the engine using the starting key on instrument panel PC5. Re-checks all gauges when engine starts for any inappropriate noise or malfunctioning PC6. Preheat paving screed before placing the asphalt as per the set standards PC7. Monitor and control temperature during the process to suit the requirements PC8. Operate the paver controls to lower the screed auger, control the hopper, and navigate the direction of the paver as per the requirement of the surface PC9. Align the paving machine into position when receiving asphalt by dump truck, and maintain constant flow of asphalt into hopper; ease paver forward, safely pushing dump truck along construction surface PC10. Observe distribution of asphalt materials from the hopper to the conveyor and to the auger along the screed width PC11. Observe distribution of asphalt materials along the screed and control the direction of the screed to eliminate voids at curbs and joints PC12. Attach extensions to screed to adjust width as per the surface thickness requirement
Shut down procedure	<ul style="list-style-type: none"> PC13. Park the paver on a flat even surface before shutting down the equipment PC14. Lower all attachments to ground level as per the operational manual PC15. Place transmission in neutral PC16. Run engine at 1/2 speed (RPM) without load for 3 to 5 minutes PC17. Clean components (such as hopper, augers, conveyors, extensions) according to manufacturers' specifications and company policies and procedures PC18. Shut down equipment according to manufacturers' specifications

IES/N0159

Operate a paver

<p>Reporting and documentation</p>	<p>PC19. Record input and output flow as per the desired formats of the organization</p> <p>PC20. Report to the supervisor of any problems while operating the paver</p>
<p>Knowledge and Understanding (K)</p>	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to breakdown & maintenance services</p> <p>KA2. The performance standards & procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Contact person in case of queries on procedure or equipment's</p> <p>KA6. Location and process for storage and disposal of waste material</p> <p>KA7. Safety policy of the company; includes the customer and manufacturer policy</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Types of pavers-</p> <ul style="list-style-type: none"> - Wheeled pavers - Tracked pavers <p>KB2. Primary parts of Paver</p> <ul style="list-style-type: none"> - Tractor unit - Screed unit <p>KB3. Components of Tractor unit and screed unit and its functioning</p> <ul style="list-style-type: none"> - Truck push rollers, - Mixture receiving hopper, - Material flow gates, - Two slat conveyors and - A pair of distributor augers. - Burners, - Rod-extensions and auger extension flights, strike-off plates and safety guards for the auger tunnel - Match-height - Straight Line indicator rod kept below the push rollers in from of machine - Vibration, Pressure Bar and Tamping system on the screed <p>KB4. Attachments for Paver and its uses</p> <ul style="list-style-type: none"> - Reference ski - Also known as Big-Ski - Cut-off Plates / Strike-off plates - Screed and auger extensions, auger tunnel extension plates and safety guard frames - Night Lights - Automatic sensor system (Includes the Grade and Slope sensor and the controller units) <p>KB5. Basics of screed heating</p> <p>KB6. Road layers, materials and characteristics</p> <p>KB7. Basics of engine transmission, propulsion / drive system & their use and function</p>

IES/N0159

Operate a paver

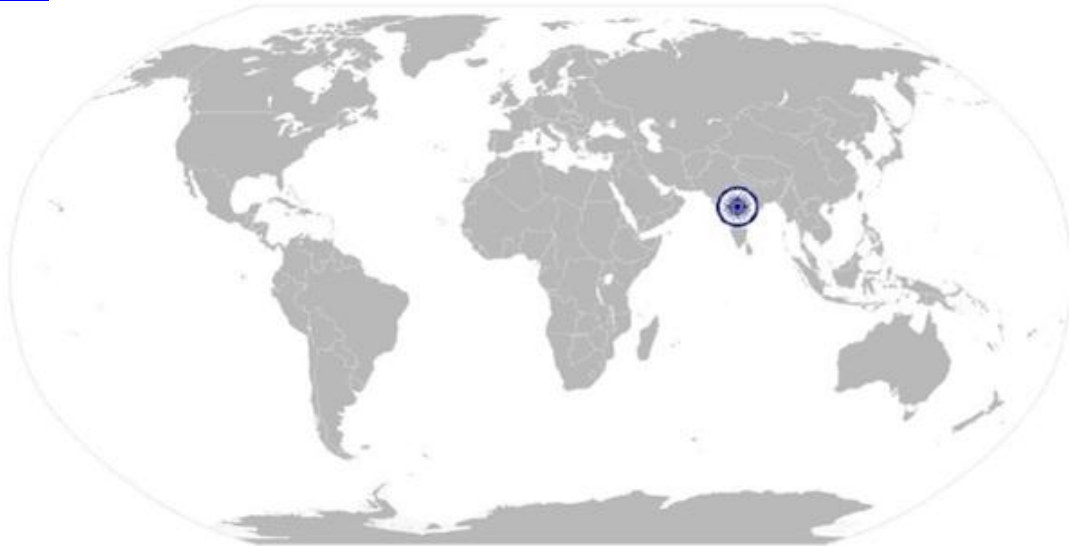
	<p>KB8. Basic Hydro-electrical functioning and repairs.</p> <p>KB9. Different types of hydraulic mechanisms and principles of friction</p> <p>KB10. Steering mechanisms and correct way of steering on roads</p> <p>KB11. Screed mechanism and its uses</p> <p>KB12. Controls, levers and switches in order to operate the paver</p> <p>KB13. The various types of hand signals used on the site</p> <p>KB14. Optimal engine oil pressure, radiator coolant temperature</p> <p>KB15. Different types of machine guards for equipment</p> <p>KB16. Road safety rules and signs</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Record any deviations/ incidents as per prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. Read and comprehend basic English and regional language as applicable to read manuals of operations, guidelines, etc. SA3. Comprehend basic sign and symbols at the worksite
	Oral Communication (Listening and Speaking Skills)
B. Professional Skills	The user/ individual on the job needs to know and understand how to: SA4. Give clear instructions to co-workers, subordinates and other persons SA5. Use correct technical terms while interacting with supervisor
	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. Decide when to conduct maintenance checks as per manufacturer specifications
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB2. Work with supervisors/ team mates to carry out work related tasks SB3. Plan work according to the required schedule and location
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB4. Provide service of the highest order to ensure customer satisfaction
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB5. Identify immediate or temporary solutions to resolve mechanical issues SB6. Judge when to seek assistance from supervisor
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB7. Identify cause and effect relations in his area of work
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, and communication to act efficiently

IES/N0159
NOS Version Control

Operate a paver

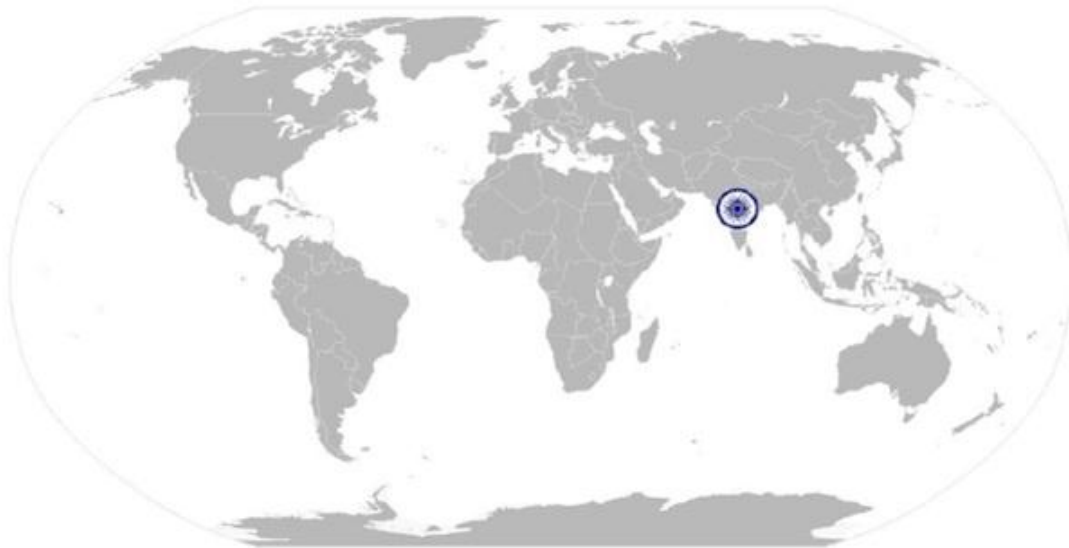
NOS Code	IES/N0159		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

[Back To Top](#)



IES/N0160 Perform routine maintenance and troubleshooting of the paver

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for performing routine maintenance and troubleshooting of paver.

IES/N0160 Perform routine maintenance and troubleshooting of the paver

National Occupational Standard

Unit Code	IES/N0160
Unit Title (Task)	Perform routine maintenance and troubleshooting of the paver
Description	This unit provides insight into activities that are required for performing routine maintenance and troubleshooting of paver.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Routine maintenance of paver machine • Repair an trouble shooting • Documentation and reporting
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Routine maintenance of the paver machine	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. Assess the right service schedule by tracking machine operating hours PC2. Check the electronic control unit of the paver for any service / maintenance information PC3. Follow instructions concerning safety that are attached onto the vehicle PC4. Clean air filter dust bowls, footplates, pedals and steps regularly and drain water and sediment/ fuel separators PC5. Replenish coolants, lubricants and fluids as per the running of the machine or as per the schedule PC6. Check auger chains, conveyor chain, lubricate and adjust if required PC7. Check and lubricate all screed points as per manufacturer specifications PC8. Remove any debris from screed and check for hose leaks / cylinders leaks PC9. Check battery electrolyte levels and condition of the terminals and make minor adjustments if required PC10. Lubricate all grease fittings on the auger flight screw, the fitting on the depth screw, and the fittings on the flange bearings located on top of the extension screed PC11. Ensure all the tools are kept in the designated place after usage PC12. Check screws on the rod extensions, tilt screws on the screed pivot PC13. Ensure the diesel operated wash-down pump is functioning properly for cleaning the machine
Wheeled Paver	PC14. Check and maintain the hydraulic fluid level, tire rims, air pressure, wheel nuts and treads as per manufacturer's specifications and guidelines
Tracked paver	PC15. Check for track tension and adjust them to measurements prescribed in the manual
Repair and trouble shooting	PC16. Turn off the mains power from panel completely before carrying out maintenance work, ensure that the battery cut-off switch is used PC17. Ensure that no maintenance task on the engine is performed when running or still hot PC18. Ensure that appropriate tools are used while troubleshooting

IES/N0160 Perform routine maintenance and troubleshooting of the paver

	<p>PC19. Diagnose the problem</p> <p>PC20. Dispose waste as per the guidelines of the site/ organization</p> <p>PC21. Ensure that the battery is disconnected if performing any welding on the machine</p>
Documentation and reporting	<p>PC22. Complete all documentation in the prescribed standards in a timely manner</p> <p>PC23. Report defects precisely to the supervisor if beyond scope of his role</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to breakdown & maintenance services</p> <p>KA2. The performance standards & procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Location of tools</p> <p>KA6. Contact person in case of queries on procedure or products</p> <p>KA7. Location and process for storage and disposal of waste material</p> <p>KA8. Safety policy of the company includes the customer and manufacturer policy</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Responsibilities of the assigned job role</p> <p>KB2. Control and switches needed to operate the paver appropriately</p> <p>KB3. Basic physics and mechanics involved in various functions of the paver</p> <p>KB4. Common defects and general causes of breakdown.</p> <p>KB5. Response to emergency situations.</p> <p>KB6. The optimal levels of control indicators e.g. fuel gauge, engine oil pressure and temperature and all buttons on the main control unit and screed control units</p> <p>KB7. Possible sources of any unusual sound emanating from the engine / drive system / hydraulic system</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to:
	SA1. Record any deviations/ incidents as per prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to:
	SA2. Read and comprehend basic English and regional language as applicable to read manuals of operations, guidelines, etc
SA3. Comprehend basic sign and symbols at the worksite	
SA4. Comprehend and understand the electronic functionality of the paver	
B. Professional Skills	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to:
	SA5. Give clear instructions to co-workers, subordinates and other persons
	SA6. Use correct technical terms while interacting with supervisor
Decision Making	Decision Making
	The user/ individual on the job needs to know and understand how to:

IES/N0160 Perform routine maintenance and troubleshooting of the paver

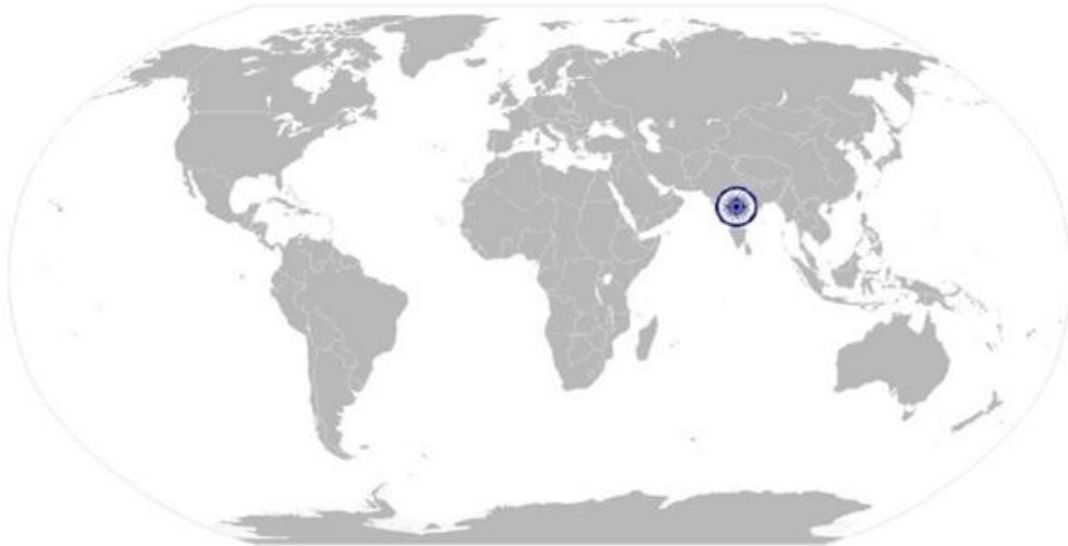
	SB1. Decide when to conduct maintenance checks
	Plan and Organize
	The user/ individual on the job needs to know and understand how to:
	SB2. Work with supervisors/ team mates to carry out work related tasks
	SB3. Plan work according to the required schedule and location
	SB4. Plan for cleaning and lubricating the appropriate equipment every day
	Customer Centricity
	The user/ individual on the job needs to know and understand how to:
	SB5. Provide service of the highest order to ensure customer satisfaction
	Problem Solving
The user/ individual on the job needs to know and understand how to:	
SB6. Identify immediate or temporary solutions to resolve mechanical issues	
SB7. Judge when to seek assistance from supervisor	
Analytical Thinking	
The user/ individual on the job needs to know and understand how to:	
SB8. Identify cause and effect relations in his area of work	
Critical Thinking	
The user/ individual on the job needs to know and understand how to:	
SB9. Analyze, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently	



IES/N0160 Perform routine maintenance and troubleshooting of the paver NOS Version Control

NOS Code	IES/N0160		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

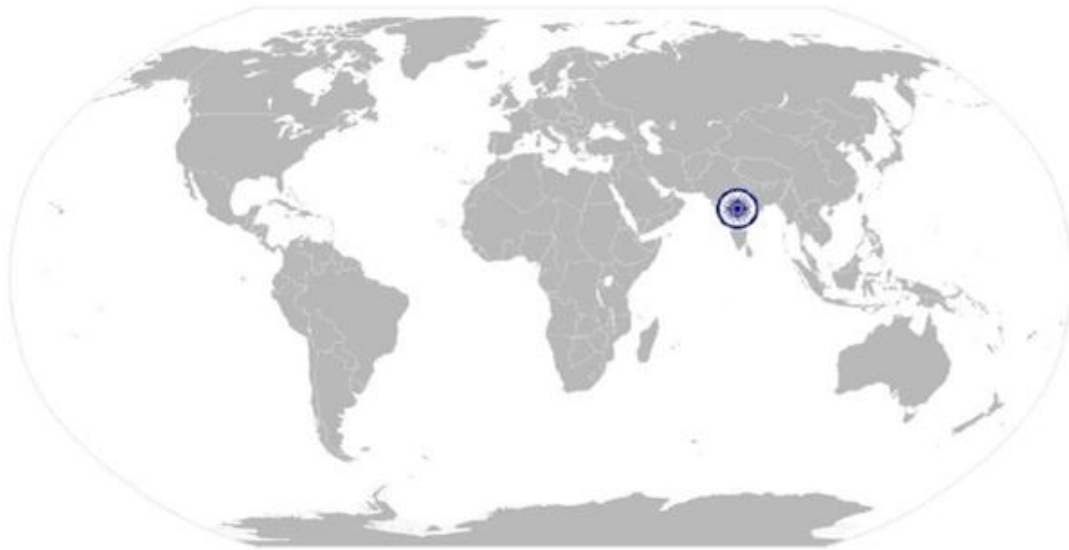
[Back To Top](#)



IES/N7601

Comply with worksite health and safety guidelines

National Occupational Standard



Overview

This unit is about adhering to health and safety requirements at the worksite during equipment operations.

IES/N7601

Comply with worksite health and safety guidelines

Unit Code	IES/N7601
Unit Title (Task)	Comply with worksite health and safety guidelines
Description	This unit is about adhering to health and safety requirements at the worksite during equipment operations.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Worksite health and safety
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Worksite health and safety	To be competent, the user/individual on the job must be able to: <p>PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site</p> <p>PC2. Use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite</p> <p>PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk</p> <p>PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines</p> <p>PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines</p> <p>PC6. Operate various grades of fire extinguishers, as applicable</p> <p>PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident</p> <p>PC8. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility</p> <p>PC9. Record and report details related to operations, incidents or accidents, as applicable</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: <p>KA1. Health, safety, environmental(HSE) and security related policies/ guidelines of the organization and the worksite and its importance</p> <p>KA2. Personnel responsible for Health, Safety and environment (HSE) related matters and their contact details</p> <p>KA3. Location of worksite storage, HSE team and safe assembly points</p> <p>KA4. Reporting and documentation procedures for HSE and security matters</p>
B. Technical Knowledge	The user/individual on the job needs to know and understand: <p>KB1. Manufacturer's guidelines related to health and safety requirements</p> <p>KB2. Common types of health, safety, environment and security risks related to the worksite and operations</p> <p>KB3. Types, use and importance of Personal Protective Equipment (PPE) and other safety gear</p> <p>KB4. Safe working practices to avoid common hazards and risks</p> <p>KB5. Guidelines for transport, storage and disposal of hazardous materials</p>

IES/N7601

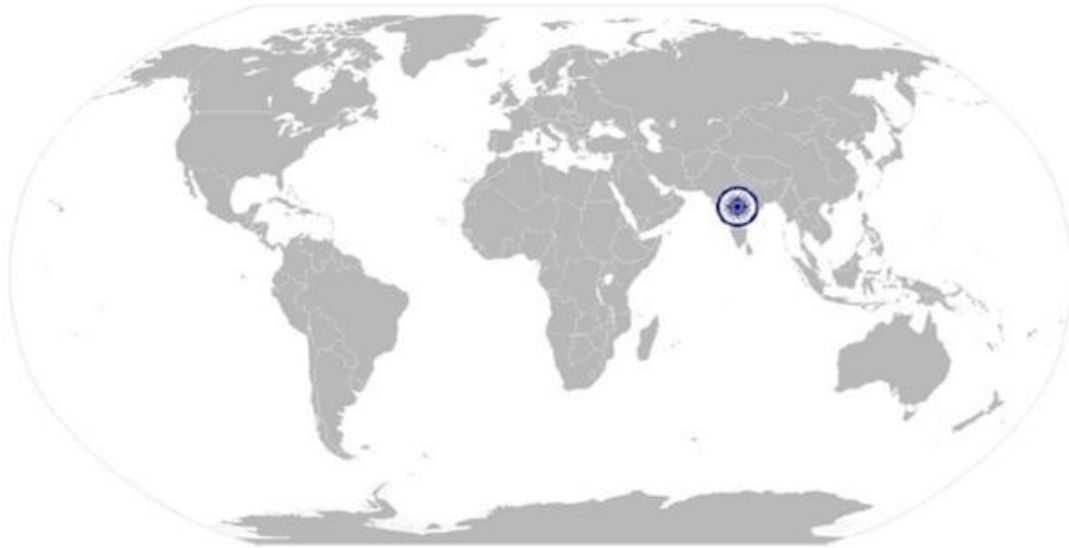
Comply with worksite health and safety guidelines

	<p>and waste</p> <p>KB6. Types of common hazards and risks at the worksite including fire, electrical, gas emergencies, accidents, incidents, structure collapse, machine breakdown</p> <p>KB7. Knowledge of safe lockdown/ stop of machinery use in case of emergencies and incidents/ accidents</p> <p>KB8. Types of fire extinguishers and their use</p> <p>KB9. Common injuries and appropriate basic first aid treatment e.g. electrical shock, bleeding, wounds, fractures, minor burns, eye injuries</p>
Skills (S)	
<p>A. Core Skills / Generic Skills</p>	<p>Writing Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Document and report any health and safety related incidents/ accidents</p>
	<p>Reading Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. Read and comprehend basic symbols and signage related health and safety</p> <p>SA3. Read organizational and equipment related health and safety manuals and documents</p> <p>SA4. Read instructions, guidelines/procedures/rules related to the worksite and equipment operations</p>
	<p>Oral Communication (Listening and Speaking Skills)</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA5. Give clear instructions to co-workers, subordinates and other personnel</p> <p>SA6. Use correct technical terms while interacting with supervisor</p>
<p>B. Professional Skills</p>	<p>Decision Making</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. Make an appropriate timely decision in responding to emergencies/accidents in line with organizational/ worksite guidelines</p> <p>SB2. Use correct PPE and other safety gear while at the worksite</p>
	<p>Plan and Organize</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB3. Work with supervisors/ team mates to carry out work related tasks</p> <p>SB4. Plan work according to the required schedule and location</p>
	<p>Customer Centricity</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB5. Build and maintain positive and effective relationships with colleagues and customers</p>
	<p>Problem Solving</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB6. Seek appropriate assistance from other sources to resolve problems</p>
<p>Analytical Thinking</p>	
<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB7. Assess the intensity of the fire accident and operate fire extinguishers</p>	

IES/N7601

Comply with worksite health and safety guidelines

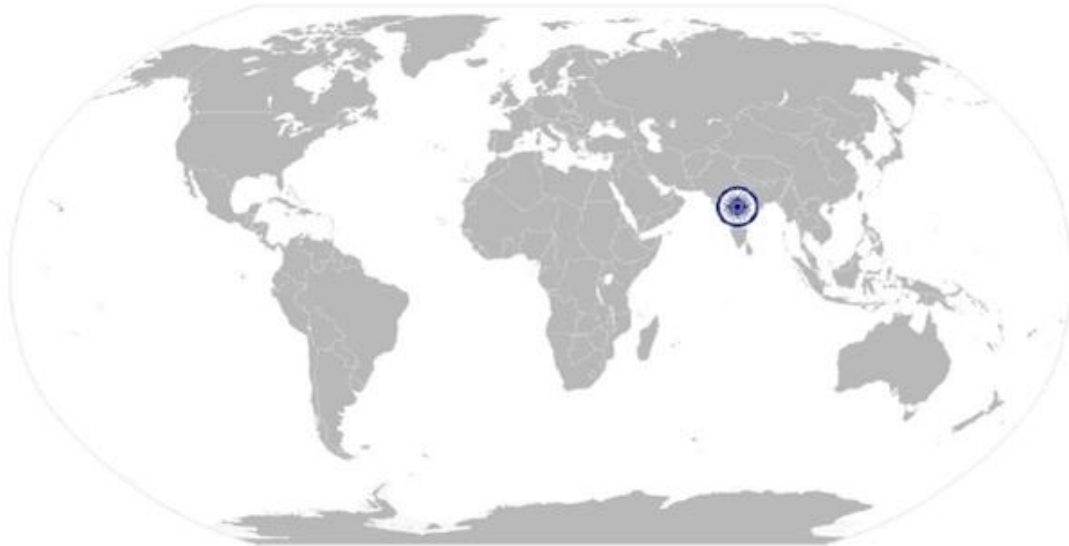
	Critical Thinking
	The user/ individual on the job needs to know and understand how to: SB1. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently



IES/N7601 **Comply with worksite health and safety guidelines**
NOS Version Control

NOS Code	IES/N7601		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure Equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

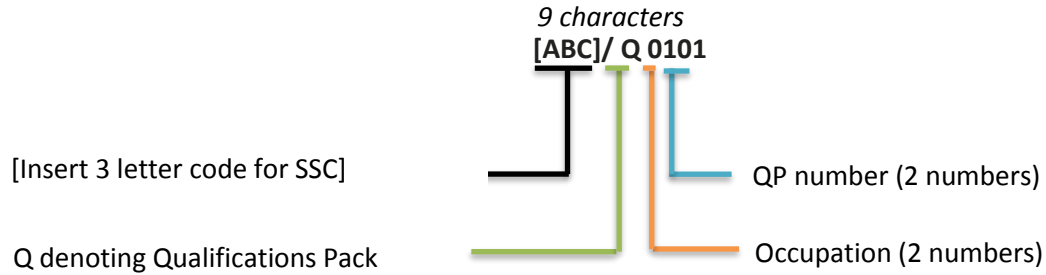
[Back To Top](#)



Annexure

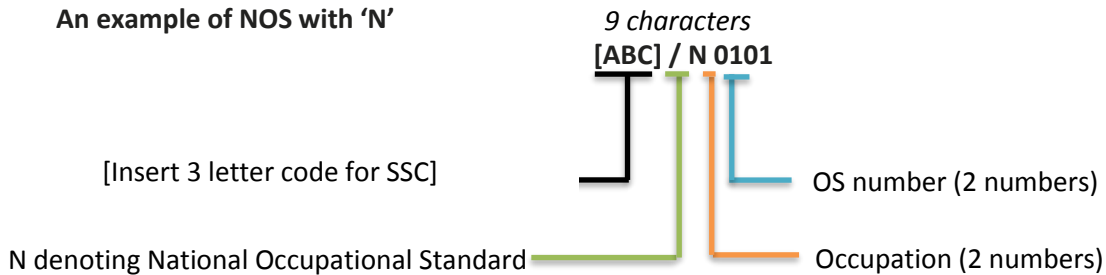
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Equipment Operations	1 to 10
Equipment Service and spares	11 to 20
Equipment Production	21 to 40
Equipment Sales	41 to 50
Equipment Financing	51 to 55
Core Enablers	56 to 65
Other Enablers	66 to 75
Common Occupations	76 to 85

Sequence	Description	Example
Three letters	Industry name	IES
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Paver Operator

Qualification Pack IES/Q0120

Sector Skill Council IESC

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 40% in each NOS and 60% aggregate.
6. 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.

Total Marks:100				Marks Allocation	
Assessment Outcomes	Assessment Criteria for the outcome	Total Marks	Out Of	Theory	Skills Practical
1. IES/N0158 Carry out pre-operational checks on a paver	PC1. Visually inspect the machine for any malfunctioning, missing or broken parts	30	1	0.5	0.5
	PC2. Ensure all covers and guards are in place		1	0.5	0.5
	PC3. Check conditions of parking brake / service brake, main horn, reverse horn, head light and warning lights		1	0.5	0.5
	PC4. Inspect screed plate, tamping bar and screed attack angle for any damages		1.5	0.5	1

	PC5. Check the various controls (including governor on engine), gauges, feeders, conveyors, feed control gates, augers, screed, screed heater, and sensing and control equipment
	PC6. Ensure oil levels of engine, transmission, radiator, and coolant and battery electrolyte level are as per the required levels
	PC7. Check the alternator and brackets for tightness
	PC8. Check for leaks in transmission / propulsion system / hydraulic hoses and take necessary actions as per the operational manual
	PC9. Inspect the air-induction system to ensure that all connections are tight and intact
	PC10. Check the air filter indicator for any malfunctioning
	PC11. Inspect screed assembly and sensor assembly for damage, wear and hose leaks
	PC12. Inspect hopper system for wear or damage
	PC13. Inspect operator's cabin, control console steps, and hand holds are clean and free of grease, oil, dirt, mud and asphalt
	PC14. Inspect instrument panel including all gauges for any indicators of malfunctioning
	PC15. Enter operating platform using step and grab handles for safety (3point climbing procedure)
	PC16. Check for the dirt evacuator which is located at the bottom of the air filter canister
	PC17. Check all the conveyor belts for wear, tension, crack and frays
	PC18. Check the pumps, motors, electrical wires and connections, steps and support for any repairs

1.5	0.5	1
1.5	0.5	1
0.5	0	0.5
1	0	1
0.5	0	0.5
0.5	0	0.5
0.5	0	0.5
0.5	0	0.5
1	0.5	0.5
1	0.5	0.5
1	0.5	0.5
0.5	0	0.5
0.5	0	0.5
0.5	0	0.5

	PC19. Ensure that the propane/ LPG cylinder regulator is properly fitted and the pressure gauges are in good working condition
	PC20. Spray cleaning solvent or release agent on any part of the paver that comes in contact with asphalt
	PC21. Ensure daily maintenance checks and greasing as per manufacturer specifications is carried out
	PC22. Check if the safety by-pass valve is kept at correct setting
	PC23. Check the engine safety switch for any malfunctioning
	PC24. Inspect the main control unit in cabin and on the screed for proper functioning
	PC25. Ensure fire extinguisher is properly calibrated and available in the site at all times during paving
	PC26. Check the electronic / manual burner system and all ignition control units and heating system
	PC27. Check the electrical heating system for the screed if fitted
	PC28. Check and inspect the main control unit in cabin and on the screed for proper functioning of all machine systems and buttons functionality and Emergency stop
	PC29. Check the Front Wheel assist relief pressure. It should be set according to the operating surface.(addition)
	PC30. Inspect the tow arms, and the tow cylinder for any cracks or damages(addition)
	PC31. Check for general hydraulic hoses/fittings for any leaks(addition)
	PC32. Check the inflation pressure of the tyres as per the prescribed norms/ the requirement of the ground

1	0.5	0.5
1	0.5	0.5
1	0.5	0.5
0.5	0	0.5
0.5	0	0.5
0.5	0	0.5
1	0.5	0.5
1	0.5	0.5
1	0.5	0.5
1.5	0.5	1
1	0.5	0.5
1	0.5	0.5
0.5	0	0.5
0.5	0	0.5

	PC33. Check for track tension and adjust them to measurements prescribed in the manual		0.5	0	0.5
	PC34. Maintain a checking/maintenance logbook to record all activities performed before starting the operation		1	0.5	0.5
	PC35. Report defects precisely to the supervisor if beyond scope of the role		1	0.5	0.5
		Total	30	10	20
2. IES/N0159 Operate a paver	PC1. Ensure the joystick is in neutral position before turning on the paver	35	1	0.5	0.5
	PC2. Fasten seat belt and adjusts seat position as per one's comfort and safety		1.5	1	0.5
	PC3. Place the throttle in idle position or by pressing and holding throttle switch in the up and down position.		1.5	0.5	1
	PC4. Start the engine using the starting key on instrument panel		1.5	1	0.5
	PC5. Re-checks all gauges when engine starts for any inappropriate noise or malfunctioning		2	1	1
	PC6. Preheat paving screed before placing the asphalt as per the set standards		2	1	1
	PC7. Monitor and control temperature during the process to suit the requirements		1.5	0.5	1
	PC8. Operate the paver controls to lower the screed auger, control the hopper, and navigate the direction of the paver as per the requirement of the surface		3.5	0.5	3
	PC9. Align the paving machine into position when receiving asphalt by dump truck, and maintain constant flow of asphalt into hopper; ease paver forward, safely pushing dump truck along construction surface		3.5	0.5	3
	PC10. Observe distribution of asphalt materials from the hopper to the conveyor and to the auger along the screed width		1.5	0.5	1

	PC11. Observe distribution of asphalt materials along the screed and control the direction of the screed to eliminate voids at curbs and joints		1.5	0.5	1
	PC12. Attach extensions to screed to adjust width as per the surface thickness requirement		1	0.5	0.5
	PC13. Park the paver on a flat even surface before shutting down the equipment		1.5	0.5	1
	PC14. Lower all attachments to ground level as per the operational manual		2.5	0.5	2
	PC15. Place transmission in neutral		1	0.5	0.5
	PC16. Run engine at 1/2 speed (RPM) without load for 3 to 5 minutes		1	0.5	0.5
	PC17. Clean components (such as hopper, augers, conveyors, extensions) according to manufacturers' specifications and company policies and procedures		2.5	0.5	2
	PC18. Shut down equipment according to manufacturers' specifications		1.5	0.5	1
	PC19. Record input and output flow as per the desired formats of the organization		1.5	0.5	1
	PC20. Report to the supervisor of any problems while operating the paver		1.5	0.5	1
		Total	35	12	23
3. IES/N0160 Perform routine maintenance and troubleshooting of the paver	PC1. Assess the right service schedule by tracking machine operating hours	20	1	0.5	0.5
	PC2. Check the electronic control unit of the paver for any service / maintenance information		1	0.5	0.5
	PC3. Follow instructions concerning safety that are attached onto the vehicle		1	0.5	0.5

	PC4. Clean air filter dust bowls, footplates, pedals and steps regularly and drain water and sediment/ fuel separators		1	0.5	0.5
	PC5. Replenish coolants, lubricants and fluids as per the running of the machine or as per the schedule		1	0.5	0.5
	PC6. Check auger chains, conveyor chain, lubricate and adjust if required		1	0.5	0.5
	PC7. Check and lubricate all screed points as per manufacturer specifications		0.5	0	0.5
	PC8. Remove any debris from screed and check for hose leaks / cylinders leaks		0.5	0	0.5
	PC9. Check battery electrolyte levels and condition of the terminals and make minor adjustments if required		1.5	0.5	1
	PC10. Lubricate all grease fittings on the auger flight screw, the fitting on the depth screw, and the fittings on the flange bearings located on top of the extension screed		1.5	0.5	1
	PC11. Ensure all the tools are kept in the designated place after usage		1	0.5	0.5
	PC12. Check screws on the rod extensions, tilt screws on the screed pivot		0.5	0	0.5
	PC13. Ensure the diesel operated wash-down pump is functioning properly for cleaning the machine		0.5	0	0.5
	PC14. Check and maintain the hydraulic fluid level, tire rims, air pressure, wheel nuts and treads as per manufacturer's specifications and guidelines		1	0.5	0.5
	PC15. Check for track tension and adjust them to measurements prescribed in the manual		0.5	0	0.5
	PC16. Turn off the mains power from panel completely before carrying out maintenance work, ensure that the battery cut-off switch is used		0.5	0	0.5
	PC17. Ensure that no maintenance task on the engine is performed when running or still hot		1	0.5	0.5

	PC18. Ensure that appropriate tools are used while troubleshooting		1	0.5	0.5
	PC19. Diagnose the problem		1	0	1
	PC20. Dispose waste as per the guidelines of the site/ organization		1	0.5	0.5
	PC21. Ensure that the battery is disconnected if performing any welding on the machine		1	0.5	0.5
	PC22. Complete all documentation in the prescribed standards in a timely manner		0.5	0	0.5
	PC23. Report defects precisely to the supervisor if beyond scope of his role		0.5	0	0.5
		Total	20	7	13
4. IES/N7601 Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site	15	1.5	0.5	1
	PC2. Use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite		1.5	0.5	1
	PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk		1.5	0.5	1
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		1.5	0.5	1
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	1	1
	PC6. Operate various grades of fire extinguishers, as applicable		2.5	0.5	2

	PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		1.5	0.5	1
	PC8. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		1.5	0.5	1
	PC9. Record and report details related to operations, incidents or accidents, as applicable		1.5	0.5	1
		Total	15	5	10
Grand Total			100	34	66