

NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

NSDA Reference

To be added by NSDA

Name and address of submitting body:

Infrastructure Equipment Sector Council

23-29, FF5, First Floor, "White House Building"

St. Marks Road, (Opp SBI)

Bengaluru - 560001

Name and contact details of individual dealing with the submission

Name: Col Krishna Vijay

Position in the organisation: Director, Standards & QA

Address if different from above: Same as above

Tel number(s): +91 80 4212 6666

E-mail address: standards@iescindia.com

List of documents submitted in support of the Qualifications File

1. Annexure 1: Qualification Pack
2. Annexure 2: IESC & LabourNet Agreement for development of Occupational Standards
3. Annexure 3: Approval of GC on the classification of small, medium and large companies for NOS development
4. Annexure 4: GC resolution for formation of NOS Sub-committee
5. Annexure 5: Occupational Analysis, List of companies and Industry associations participated in the development of these qualification packs (part of Occupational Analysis)
6. Annexure 6: List of QP/NOS validating companies
7. Annexure 7: NSDC QRC observation and feedback sheet
8. Annexure 8: Standard protocol for accreditation & assessments

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SUMMARY

Qualification Title	Paver Operator
Qualification Code	IES/Q0120
Nature and purpose of the qualification	<p>Nature of Qualification</p> <ul style="list-style-type: none"> • Qualification Pack <p>Purpose of Qualification</p> <ul style="list-style-type: none"> • To enable candidate to become a Paver Operator
Body/bodies which will award the qualification	Infrastructure Equipment Sector Council
Body which will accredit providers to offer courses leading to the qualification	Infrastructure Equipment Sector Council
Body/bodies which will carry out assessment of learners	Infrastructure Equipment Sector Council
Occupation(s) to which the qualification gives access	Equipment operations- Paver Operator
Licensing requirements	N/A
Level of the qualification in the NSQF	4
Anticipated volume of training/learning required to complete the qualification	208 Hours
Entry requirements and/or recommendations	Preferably Class VIII
Progression from the qualification	Senior Paver Operator
Planned arrangements for the Recognition of Prior learning (RPL)	Presently the industry has a large work force of operators and mechanics who are trained and experienced but not certified as per the NSQF norms. It is proposed to certify them under the RPL (Recognition of Prior Learning) program which will go a long way in facilitating their career progression.
International comparability where known	<p>UK- COSVR393 Operate plant or machinery to lay and distribute</p> <p>The standards is about interpreting information, adopting safe and healthy working practices; selecting and/or using materials, components and equipment for plant or machinery operations 4 setting up, operating and shutting down plant or machinery for laying and distribution work.</p>
Date of planned review of the qualification.	30/04/18
Formal structure of the qualification	

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Title of component and identification code.	Mandatory/ Optional	Estimated size (learning hours)	Level
IES/N0137 Carry out pre-operational checks on a paver	M	32	4
IES/N0138 Operate a paver	M	102	4
IES/N0139 Perform routine maintenance and troubleshooting of the paver	M	42	4
IES/N7601 Comply with worksite health and safety guidelines	M	32	4

Please attach any document giving further detail about the structure of the qualification – eg a Curriculum Document or a Qualification Pack.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information. Qualification Pack is attached as Annexure 1

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SECTION 1 **ASSESSMENT**

Body/Bodies which will carry out assessment:

Confederation of Indian Industries (CII)

How will RPL assessment be managed and who will carry it out?

RPL program is designed to assess and certify those personnel with the requisite qualifications and experience. In the first step, individuals are screened and assessed, both through theory and practical tests, based on the same Assessment Criteria of the approved Qualification Pack. The skill gaps are thus identified and individuals undergo 'bridge training' as applicable. Then at the end of the short course they are finally assessed and certified.

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria.

The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performance and assessment criteria mentioned in the Qualification Pack. The assessments papers are also checked for the various outcome based parameters such as quality, time taken, precision, tools & equipment requirement etc. The assessment sets are then reviewed by IESC official for consistency.

The assessments are designed so as to assess maximum parts during the practical hands on work. The technical limitations at the training centres are taken care in theory and viva to assess the conceptual understanding, Criteria such as use of lift to pick heavy objects or selection of fire extinguisher during a fire are also assessed under theory/viva.

The assessment agencies are instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments. The assessment agencies are instructed to ideally have assessor with minimum 15 years industry experience as an ITI graduate / minimum 10 years' industry experience as diploma engineer and minimum 5 years' industry experience as graduate engineer.

The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to IESC Assessment Framework, competency based assessments, assessors guide etc.

The assessors are provided with assessors guide developed by the Subject Matter Expert of the assessment agency as per the assessment framework. The assessment guides are developed to ensure the maximum possible consistency in the assessment by different assessors and elaborate on the following

Qualification Pack Structure

Guidance for the assessor to conduct theory, practical and viva assessments

Guidance for trainees to be given by assessor before the start of the assessments.

Guidance on assessments process, practical brief with steps of operations practical observation checklist and mark sheet

Viva guidance for uniformity and consistency across the batch.

The assessment by assessment agency will be completely based on the assessment criteria as mentioned in the Qualification Pack. Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for

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assessment based on the criticality of the NOS- unique (functional)/ common NOS for job roles at the same levels. Therein each Performance Criteria in the NOS will be assigned marks for or practical based on relative importance, criticality of function and training infrastructure.

The following tools are proposed to be used for final assessment:

Each NOS in the QP will be assigned a relative weightage for assessment based on the functional importance of each. Further each Performance Criteria in the NOS will be assigned marks based on relative functional importance; which is in turn divided into theory and practical assessment. Overall practical constitutes 70% and written 30% of total marks.

Viva/Structured Interview: This tool will be used to assess select conceptual understandings related to practical handling of equipment and procedures with specific tasks at hand; and behavioral aspects of the job role. It will also include questions on tools & equipment; safety and environment

Written Test: This tool will be used to assess general conceptual knowledge / understanding and other aspects of the job role which are either not feasible or difficult to assess practically. The written assessment will comprise of

True / False Statements

Multiple Choice Questions

Matching Type Questions.

Optical Mark Recognition (OMR)/ Online System for this will be preferred.

ASSESSMENT EVIDENCE

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Paver Operator

Qualification Pack IES/Q0120

Sector Skill Council Infrastructure Equipment

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 evaluation 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.

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Assessment Outcomes	Assessment Criteria for the outcome	Total Mark	Marks Allocation		
			Out Of	Theory	Skills Practical
1. IES/N0137 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		1.5	0.5	1
	PC6. Ensure oil levels of engine, transmission, radiator, and coolant and battery electrolyte level are as per the required levels		1.5	0.5	1
	PC7. Check the alternator and brackets for tightness		0.5	0	0.5
	PC8. Check for leaks in transmission / propulsion system / hydraulic hoses and take necessary actions as per the operational manual		1	0	1
	PC9. Inspect the air-induction system to ensure that all connections are tight and intact		0.5	0	0.5
	PC10. Check the air filter indicator for any malfunctioning		0.5	0	0.5
	PC11. Inspect screed assembly and sensor assembly for damage, wear and hose leaks		0.5	0	0.5

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	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
	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 bypass 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

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
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

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	PC26. Check the electronic / manual burner system and all ignition control units and heating system		1	0.5	0.5
	PC27. Check the electrical heating system for the screed if fitted		1	0.5	0.5
	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		1.5	0.5	1
	PC29. Check the Front Wheel assist relief pressure. It should be set according to the operating surface.(addition)		1	0.5	0.5
	PC30. Inspect the tow arms, and the tow cylinder for any cracks or damages(addition)		1	0.5	0.5
	PC31. Check for general hydraulic hoses/fittings for any leaks(addition)		0.5	0	0.5
	PC32. Check the inflation pressure of the tyres as per the prescribed norms/ the requirement of the ground		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/N0138 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

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	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

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	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/N0139 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

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	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

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		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

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SECTION 2

EVIDENCE OF LEVEL

Title/Name of qualification/component: Paver Operator		Level: 4	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	Paver Operator is expected to conduct pre-operation checks on Paver, select the appropriate attachment for the job, operates and drives the Paver as per the job and do basic maintenance	The activities identified are the familiar and routine activities for him as these activities are independent of job and worksite he is deployed on, for e.g.: checks on screed and hopper, electrical and heating systems, aligning the paver, etc. Considering the outcomes of the job roles is pegged at level 04	4
Professional knowledge	Operator is expected to have knowledge of the functioning and operation of Paver. Feature/specifications of the various attachment used and knowledge of paver components, screed, pre-operation checklist and routine maintenance	Considering the in-depth professional and factual knowledge , which a paver operator has for paving operation and maintenance such as attachments, basics of screed heating, hydraulic mechanism, method of lubrication, etc., this QP is pegged at Level 4.	4
Professional skill	Paver Operator identifies the appropriate screed plates, tamping bar for various job like aligning the paver, distribution of asphalt, discharging, material flow, etc. He checks the Paver for operation readiness using pre-operation checklist and conducts the routine maintenance covering lubrication, oil levels, coolant, air filters, motors, tyre, body structure, checks and keep the records as per the operations manual & standard operating procedures.	He is practically engaged in the paving operation and maintenance. The major skills required of a junior paver operator are recording of deviations, comprehension of sign symbols, communication, etc. Therefore the QP is set at level 4	4
Core skill	Operator is expected to read and understand the various instrument panel, fluid levels and other indicators for pre-operation checks and routine maintenance. He has to use appropriate driving speed and follow road safety rules.	Operator has to continuously give and receive instructions and guidance from co-workers on-site for starting and stopping the paving machine hence they are expected to be good in communication skills . Jobholder is expected to conduct themselves in ways, which	4

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Title/Name of qualification/component: Paver Operator		Level: 4	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Responsibility	<p>The jobholder is responsible to:</p> <ul style="list-style-type: none"> • Conduct pre-operation checks • Operate and drive the paving machine • Conduct routine maintenance • Comply with worksite health and safety <p>For each work site there can be variations in usage and operation of the paver. So the jobholder based on his own learning and experience, identify appropriate attachment and operation process to maximize the productivity efficiently. He is continuously engaged in the self-learning process and he has the responsibility for own work.</p>	<p>show a basic understanding of the social and professional environment of working at construction or other sites</p> <p>Jobholder is majorly responsible for his own job and self-learning process which justifies the pegging of the QP at level 4 and not directly responsible for learning of others (which is a requirement for Level 5). In his routine activity he is free from supervision (which is a requirement of level 3).</p>	4

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SECTION 3

EVIDENCE OF NEED

What evidence is there that the qualification is needed?

The job roles have been formulated based on 'occupational mapping and functional analysis' involving manufacturers and customers/ end users of the infrastructure equipment sector products. Further these have been validated by all segments of the industry i.e. small, medium and large customers. The methodology / questionnaire and certificates in support for all have been enclosed.

What is the estimated uptake of this qualification and what is the basis of this estimate?

The Occupational Analysis Report in support of these job roles has taken into account the industry growth and expected demand over the coming years. These statistics and other details have been covered in depth under the relevant sections of the same.

What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF?

- NSDC list of Approved and Under-Development QPs was checked prior to commissioning the work
- Consultations with Skill Councils for Construction and Mining Sector
- NSDC QRC team also confirmed the same

What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

- Employer feedback will be sought post-placement
- A formal review is scheduled in two years time

Please attach any documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

Annexure 5: Section 3 and 4.1 of Occupational Analysis

Annexure 7: NSDC QRC observation and feedback sheet

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SECTION 4

EVIDENCE OF PROGRESSION

What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

While designing the national occupational standards, occupational mapping was done on a large sample size and validated across the country. The career progression for roles in each occupation was also analysed and decided, based on industry validation across the country. The current challenges faced by the industry, at large, was also kept in mind.

Paver Operator (Level 4) > Senior Paver Operator (Level 5) > Master Operator/Trainer Operator (Level 6) > Supervisor (Level 7)

**Level= NSQF level*

Please attach any documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

Annexure 5: Section 5 of Occupational Analysis

Annexure 5: List of companies and Industry associations participated in development of these qualifications (Annexure B)