

# 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"

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Bengaluru - 560001

## **Name and contact details of individual dealing with the submission**

**Name:** Col Krishna Vijay

**Position in the organisation:** Director, Standards & QA

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## **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

<b>Qualification Title</b>	Transit Mixer Operator		
<b>Qualification Code</b>	IES/Q0118		
<b>Nature and purpose of the qualification</b>	<p><b>Nature of Qualification</b></p> <ul style="list-style-type: none"> <li>• Qualification Pack</li> </ul> <p><b>Purpose of Qualification</b></p> <ul style="list-style-type: none"> <li>• To enable candidate to become a Transit Mixer Operator</li> </ul>		
<b>Body/bodies which will award the qualification</b>	Infrastructure Equipment Sector Council		
<b>Body which will accredit providers to offer courses leading to the qualification</b>	Infrastructure Equipment Sector Council		
<b>Body/bodies which will carry out assessment of learners</b>	Infrastructure Equipment Sector Council		
<b>Occupation(s) to which the qualification gives access</b>	Equipment operations- Transit Mixer Operator		
<b>Licensing requirements</b>	Light Commercial Vehicle Driving License (LCV)		
<b>Level of the qualification in the NSQF</b>	4		
<b>Anticipated volume of training/learning required to complete the qualification</b>	208 Hours		
<b>Entry requirements and/or recommendations</b>	Preferably Class VIII		
<b>Progression from the qualification</b>	Senior Transit Mixer Operator		
<b>Planned arrangements for the Recognition of Prior learning (RPL)</b>	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.		
<b>International comparability where known</b>	<p><b>US- Concrete-Mixing-Truck Driver- 900.683-010</b></p> <p>The standard is about loading hopper to receive sand, gravel, cement, and water and start mixer, drive the truck and unload the hoppers.</p>		
<b>Date of planned review of the qualification.</b>	30/04/18		
<b>Formal structure of the qualification</b>			
<b>Title of component and identification code.</b>	<b>Mandatory/ Optional</b>	<b>Estimated size (learning hours)</b>	<b>Level</b>

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IES/N0131 Carry out Pre-operation checks on a transit mixer	M	32	4
IES/N0132 Operate a transit mixer	M	102	4
IES/N0133 Perform routine maintenance and troubleshooting of a transit mixer	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** Transit Mixer Operator

**Qualification Pack** IES/Q0118

**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 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.

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Assessment Outcomes	Assessment Criteria for the outcome	Total Mark	Marks Allocation		
			Out Of	Theory	Skills Practical
1. IES/N0131 Carry out pre-operation checks on a transit mixer	PC1. Visually inspect the body components for cracks and bearing wear	<b>30</b>	3	1	2
	PC2. Check if tyre inflation pressure corresponds to that prescribed norms of the manufacturer		2	1	1
	PC3. Ensure that wheel nuts are firmly tightened as per prescribed norms of the manufacturer		2	1	1
	PC4. Check oil levels of engine transmission, radiator coolant and brake		2	1	1
	PC5. Check hydraulic oil levels as per the prescribed norms of the manufacturer		1.5	0.5	1
	PC6. Check water system for leaks and clean water pump filter per the prescribed norms of the manufacturer		2	1	1
	PC7. Drain water and sediment from the fuel tank as per operational manual		2.5	0.5	2
	PC8. Ensure that the mixer drums are clean and free from concrete		1	0.5	0.5
	PC9. Ensure not to fill the fuel tank while engine is running		1	0.5	0.5
	PC10. Check battery electrolyte level as per the prescribed norms of the manufacturer		1.5	0.5	1
	PC11. Check electronic weighing system for any malfunctioning		2	1	1
	PC12. Apply grease to all grease nipples as per the prescribed norms of the manufacturer		2.5	0.5	2

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	PC13. Ensure that the area is clear of all personnel and equipment before moving the equipment		1.5	0.5	1
	PC14. Ensure driver's seat, steps and handles are always clean and free from any foreign object or grease trials, oil mud and unfastened objects in the cabin		1.5	0.5	1
	PC15. Ensure proper condition of parking brake, main horn, reverse horn and head light		1	0	1
	PC16. Check all protection and safety for appropriate position for operation		1	0	1
	PC17. Maintain a checking/maintenance logbook to record all activities performed before starting the machine		1	0	1
	PC18. Report defects precisely to the supervisor if beyond scope of the role		1	0	1
		<b>Total</b>	<b>30</b>	<b>10</b>	<b>20</b>
2. IES/N0132 Operate a transit mixer	PC1. Plan and organize the job according to instructions from the supervisor	<b>35</b>	2	1	1
	PC2. Inspect the worksite to identify and loose soil hidden deep trenches or marshy patches where a mixer could get stuck		1.5	1	0.5
	PC3. Fill water tanks ready for daily use as per organizational standards		1	0.5	0.5
	PC4. Carry out all peruse and running checks as per organizational standards		2	1	1
	PC5. Wear seat belt and adjust seat position to one's comfort		1	0.5	0.5
	PC6. Start the engine using the starting key		0.5	0	0.5
	PC7. Ensure parking brake is engaged and electric gear selector is in neutral position before starting the engine		1	0.5	0.5

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	PC8. Select appropriate type of steering mechanism as per the situational requirements		1.5	0.5	1
	PC9. Load correct proportions of aggregates, cement, water and admixtures as per the production requirements		3	1	2
	PC10. Ensure mixer load and operating speed is within specified limits as per the manufacturer's		3	1	2
	PC11. Adjust the direction of drum rotation for mixing as per the requirement		2.5	0.5	2
	PC12. Adjust the concrete chute to the discharge position		2	0	2
	PC13. Discharge concrete to the desired location at the site		2	0	2
	PC14. Use the emergency stop button to disable all power to the transit mixer in case of a crisis as per operational manual		2	1	1
	PC15. Turn off ignition after finishing operations as per the instructions given in the instructional manual		1	0.5	0.5
	PC16. Ensure gear is in neutral position post usage		1	0.5	0.5
	PC17. Ensure bucket drum and concrete-skid are cleaned as per the manufacturer's instructional manual		2.5	0.5	2
	PC18. Remove attachments after use		1	0.5	0.5
	PC19. Ensure that the machine is secured when left unattended		1.5	0.5	1
	PC20. Maintain a production logbook to record all activities performed		1.5	0.5	1
	PC21. Report defects precisely to the supervisor if beyond scope of the role		1.5	0.5	1
		<b>Total</b>	<b>35</b>	<b>12</b>	<b>23</b>



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3. IES/N0133 Perform routine maintenance and troubleshooting of a transit mixer	PC1. Assess the right service schedule by tracking machine operating hours	<b>20</b>	1	0.5	0.5
	PC2. Read and observe all plates and instructions concerning safety that are attached onto the vehicle		1	0.5	0.5
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow at regular intervals		0.5	0	0.5
	PC4. Check and maintain the tire rims, air pressure, wheel nuts and treads as per manufacturer's indicators		1	0.5	0.5
	PC5. Replenish coolants, lubricants and fluids everyday as per instructions from the manufacturer		1.5	0.5	1
	PC6. Grease all greasing pins and pivot points everyday as per instructions from the manufacturer		1	0.5	0.5
	PC7. Clean and adjust windows mirrors, lights and reflectors daily as per the requirement		0.5	0	0.5
	PC8. Check battery levels and condition of the terminals		1	0.5	0.5
	PC9. Adjust alternator belt tension and feed pump while engine is off		1	0	1
	PC10. Keep the tools in the appropriate place after use		1.5	0.5	1
	PC11. Ensure the machine is on firm and level ground before attempting to carry out any maintenance; track machine operating hours to assess the right service schedule		1	0.5	0.5
	PC12. Turn off the main power from panel completely before carrying out maintenance work		1	0.5	0.5

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	PC13. Ensure that bucket arm is lowered before any maintenance operations		1	0.5	0.5
	PC14. Lubricate fifth wheel and pinion with grease or equivalent lubrication using a hard bristle brush		1	0.5	0.5
	PC15. Complete timely and legibly daily/weekly maintenance sheets as provided by the company		0.5	0	0.5
	PC16. Ensure that no maintenance task on the engine is performed when running or still hot		1	0.5	0.5
	PC17. Use appropriate tools are used while troubleshooting		1	0.5	0.5
	PC18. Diagnose the problem		0.5	0	0.5
	PC19. Handle and dispose waste based on environmental guidelines at the work place		1.5	0.5	1
	PC20. Follow reporting procedures as laid down by the employer		0.5	0	0.5
	PC21. Complete all documentation in the prescribed standards in a timely manner		0.5	0	0.5
	PC22. Report defects precisely to the supervisor if beyond scope of his role		0.5	0	0.5
		<b>Total</b>	<b>20</b>	<b>7</b>	<b>13</b>
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	<b>15</b>	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

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	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
		<b>Total</b>	<b>15</b>	<b>5</b>	<b>10</b>

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### SECTION 2

#### EVIDENCE OF LEVEL

Title/Name of qualification/component: <b>Transit Mixer Operator</b>			Level: 4
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	Transit Mixer Operator is expected to conduct pre-operation checks on Transit Mixer, select the appropriate attachment for the job, drives the transit mixer as per the job and do basic maintenance	The activities identified are the <b>familiar and routine activities</b> for him as these activities are independent of job and worksite he is deployed on. E.g. pre-operational checks, driving, loading and unloading. Considering the outcomes the job roles is pegged at level 04	4
Professional knowledge	Operator is expected to have <b>knowledge of the functioning and operation</b> of Transit Mixer. <b>Feature/specifications</b> of the various attachment used and <b>knowledge of transit mixer components, pre-operation checklist and routine maintenance</b>	Considering the in-depth <b>professional and factual knowledge</b> , which a transit mixer operator has for mixing operation and maintenance such as grade of materials, components of transit, mixer, basic repairs, etc., this QP is pegged at Level 4.	4
Professional skill	Transit Mixer Operator <b>identifies the appropriate attachment</b> for various job like feeding, drum mixing, discharging, material flow, etc. He <b>checks the Transit Mixer for operation readiness</b> using pre-operation checklist and <b>conducts the routine maintenance</b> 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 <b>practically engaged</b> in the transit mixing operation and maintenance. The major skills required are driving, inspection, planning, 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 transit mixer hence they are expected to be good in <b>communication skills</b> .  Jobholder is expected to conduct themselves in ways, which show a basic understanding of the <b>social and professional</b>	4

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Title/Name of qualification/component: <b>Transit Mixer Operator</b>		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"> <li>• Conduct pre-operation checks</li> <li>• Operate and drive transit mixer</li> <li>• Conduct routine maintenance</li> <li>• Comply with worksite health and safety</li> </ul> <p>For each work site there can be variations in usage and operation of the Transit Mixer. So the jobholder based on his <b>own learning and experience</b>, identify appropriate attachment and operation process to maximize the productivity efficiently. He is continuously engaged in the <b>self-learning process</b> and he has the <b>responsibility for own work</b>.</p>	<p><b>environment of working at construction, mining or other sites</b></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.

**Transit Mixer Operator (Level 4) > Senior Transit Mixer 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)