

# 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

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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

# NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

## SUMMARY

<b>Qualification Title</b>	Batching Plant Operator		
<b>Qualification Code</b>	IES/Q0116		
<b>Nature and purpose of the qualification</b>	<b>Nature of Qualification</b> <ul style="list-style-type: none"> <li>• Qualification Pack</li> </ul> <b>Purpose of Qualification</b> To enable candidate to become a Batching Plant Operator		
<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- Batching Plant Operations		
<b>Licensing requirements</b>	N/A		
<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 + Junior Batching Plant Operator (level 3)		
<b>Progression from the qualification</b>	Senior Batching Plant 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>	<b>US- Concrete Plant Standards of the Concrete Plant Manufacturers Bureau CPMB 100-00</b> The standard is about concrete plant equipment, including plants, controls and plant mixers.		
<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)</b>	<b>Level</b>

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

		hours)	
IES/N0125 Carry out Pre-operation checks on a batching plant	M	32	4
IES/N0126 Carry out batching plant operations	M	102	4
IES/N0127 Carry out maintenance and troubleshooting of the batching plant	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

# NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

## 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

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

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** Batching Plant Operator

**Qualification Pack** IES/Q0116

**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.

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

Assessment Outcomes	Assessment Criteria for the outcome	Total Mark	Marks Allocation		
			Out Of	Theory	Skills Practical
1. IES/N0125 Carry out pre-operation checks on a batching plant	PC1. Inspect oil and filter on air compressor, drain tank manifolds and all water traps as per the procedures set by the manufacturer	30	2	1	1
	PC2. Check the oil level in all gear boxes, hydraulic unit, drum motor oil and auto-roll as per the procedures set by the manufacturer		2	1	1
	PC3. Ensure that the cement bin aeration system is operating properly		1.5	0.5	1
	PC4. Ensure that all bins and silos are full as per the production requirement		1.5	0.5	1
	PC5. Inspect tension on all V-drive belts and other belts for wear and tear		1.5	0.5	1
	PC6. Ensure that liquid admixtures are stored as per the organizational standards to avoid contamination		1	0.5	0.5
	PC7. Check that admixture dispensers are in good working condition		0.5	0	0.5
	PC8. Ensure that safety equipment is present and securely mounted as per the organizational standards		2	1	1
	PC9. Check for wiring damage and loose electrical fitting for the electric drive motors		1	0.5	0.5
	PC10. Ensure mixer motor is turned off before carrying out mixer cleaning or chipping		1	0.5	0.5
	PC11. Ensure weigh hoppers are emptied from the previous day's operation		0.5	0	0.5
	PC12. Check the area under plant for spillage and trace source		0.5	0	0.5

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

	PC13. Ensure visual inspections are carried out for broken load cells, leaks, dust build-up in bag house, worn gates,		1.5	0.5	1
	PC14. Check conveyors, boom scrapers and bucket elevators for free running and wear, and adjust as necessary		1	0	1
	PC15. Check all hoppers and doors are in clean and efficient working order		1	0	1
	PC16. Check central mixer blades, strippers or arms for wear and tightness and adjust as necessary		1	0	1
	PC17. Check tightness of all hydraulic connections and the condition of flexible tubes		0.5	0	0.5
	PC18. Check and remove any cement or concrete build up in the mixer		1	0.5	0.5
	PC19. Check dust seals on cement hoppers for wear		0.5	0	0.5
	PC20. Ensure that bearings and gears are properly greased		1	0.5	0.5
	PC21. Check mixer drum for structural cracks or damage		0.5	0	0.5
	PC22. Inspect and tighten all bolts and bearing set screws		1	0	1
	PC23. Maintain power generator, monitor voltage and frequency at appropriate levels		1	0	1
	PC24. Check and ensure that all cabin controls including electronic display, sensors, etc. are functioning properly		1	0	1
	PC25. Ensure that before work, the machine should have an empty running		1	0.5	0.5
	PC26. Maintain a checking/maintenance logbook to record all activities performed before starting the batching plant		1.5	1	0.5
	PC27. Report defects precisely to the supervisor if beyond scope of his role		1.5	1	0.5
		<b>Total</b>	<b>30</b>	<b>10</b>	<b>20</b>

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

2. IES/N0126 Carry out batching plant operations	PC1. Plan and organize the job as per the organizational procedures	<b>35</b>	1	0.5	0.5
	PC2. Start genset and activate cross-over switch		0.5	0	0.5
	PC3. Check panel to ensure that controls are in correct position for starting		1.5	0.5	1
	PC4. Turn on control panel power as per the operational manual		0.5	0	0.5
	PC5. Enter and adjust values in computer system as per the mix design		1	0	1
	PC6. Start components in correct order through computer controls		1	0	1
	PC7. Ensure the production process and product complies with the appropriate quality procedures		1.5	0.5	1
	PC8. Monitor and regulate materials such as proportions of aggregates, cement, water, and admixtures		2.5	0.5	2
	PC9. Use the emergency stop button to disable all power to the batching plant in case of a crisis, as per operator manual		1.5	1	0.5
	PC10. Coordinate with ground personnel, loader operators and truck drivers		1	0.5	0.5
	PC11. Ensure that truck is properly positioned under sock to ensure correct direction of the drum		1.5	0.5	1
	PC12. Discharge batched concrete into delivery trucks/mixers using appropriate controls		1	0	1
	PC13. Ensure batches are produced on time and as per the specifications		2	1	1
	PC14. Ensure that sequential procedures for shut down		2	1	1
	PC15. Ensure that feed is stopped using appropriate controls as per the operational manual		1	0	1
	PC16. Clean drum mixer internally as per the operational manual		1.5	0.5	1



## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

	PC17. Wash the batching plant externally with water to remove all built-up deposits		1.5	0.5	1
	PC18. Conduct visual inspection of the equipment		1.5	0.5	1
	PC19. Ensure that the equipment is lubricated properly		1.5	0.5	1
	PC20. Ensure defective components are replaced immediately		1	0	1
	PC21. Clean the rubber chute that discharges the cement into the mixer		1	0	1
	PC22. Wear dust masks when working around the plant		2	1	1
	PC23. Make positive eye contact with other equipment operators at the site before crossing in front of or behind the equipment		1.5	1	0.5
	PC24. Wear all PPE while sampling concrete and for all operations		2	1	1
	PC25. Record input and output flow as per the desired formats of the organization		2	1	1
		<b>Total</b>	<b>35</b>	<b>12</b>	<b>23</b>
3. IES/N0127 Carry out maintenance and troubleshooting of the batching plant	PC1. Assess the right service schedule by tracking plant operating hours as per organizational procedures	<b>20</b>	1.5	1	0.5
	PC2. Perform basic housekeeping activities in the control room		2	1	1
	PC3. Lubricate all bearings including head and tail pulleys on all conveyors, head and tail bearing on cement feeder screws wheel bearing supports on turn head, aggregate gate pivot points etc.		3	1	2
	PC4. Inspect and /or adjust all belt wipers		1	0	1
	PC5. Blow clean all air filters on air compressor and aeration blowers		0.5	0	0.5
	PC6. Adjust tension of the chain and scoops unit		0.5	0	0.5
	PC7. Turn off the mains power from panel completely before carrying out maintenance work		0.5	0	0.5

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

	PC8. Keep all panels under shelter, water should not enter the panels		1	0.5	0.5
	PC9. Ensure that the mixer is stopped before making any adjustments		1	0.5	0.5
	PC10. Complete timely and legibly daily/ weekly maintenance sheets as provided by the company		1	0.5	0.5
	PC11. Ensure that defective parts are replaced immediately		1	0.5	0.5
	PC12. Clean magnetic oil plugs during each oil change		1	0.5	0.5
	PC13. Ensure that appropriate tools are used while troubleshooting		0.5	0	0.5
	PC14. Diagnose the problem		0.5	0	0.5
	PC15. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		0.5	0	0.5
	PC16. Handle and dispose waste based on environmental guidelines at the work place		2	0.5	1.5
	PC17. Follow reporting procedures as laid down by the employer		0.5	0	0.5
	PC 18. Complete all documentation in the prescribed standards in a timely manner		1	0	1
	PC 19. Report and escalate problems/ incidents as required in a timely manner		1	1	0
		<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

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

	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>

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

### SECTION 2 EVIDENCE OF LEVEL

Title/Name of qualification/component: <b>Batching Plant 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	Batching Operator is expected to conduct pre-operation checks on Batching Plant, select the appropriate attachment for the job, operate the Batching Plant 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 for e.g.: conducting pre-operational checks before starting the plant, checking conveyor belts, hoppers, operating batching plant, post operational checks, etc. 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 Batching Plant. <b>Feature/specifications</b> of the various attachment used and <b>knowledge of crushing components, pre-operation checklist and routine maintenance</b>	Considering the in-depth <b>professional and factual knowledge</b> , which a Batching Plant Operator has for mixing operation and maintenance such as components of batching plant and its functions, equipment operating systems, basics of lubrications, etc. this QP is pegged at Level 4.	4
Professional skill	Batching Plant Operator <b>identifies the appropriate attachment</b> for various job like feeding, mixing, conveying, etc. He <b>checks the Batching Plant for operation readiness</b> using pre-operation checklist and <b>conducts the routine maintenance</b> covering lubrication, oil levels, coolant, air filters, motors, body structure and keep the records as per the operations manual & standard operating procedures.	He is <b>practically engaged</b> in the batching plant operation and maintenance. The major skills required of the crushing 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 start components in correct order, enter and adjust values in computer systems. All of this requires <b>application of basic</b>	Operator has to continuously give and receive instruction and guidance from co-workers on-site for feeding in the batch mix in the batching plant, hence they are expected to be good in <b>communication skills</b> .  Jobholder is expected to conduct themselves in ways, which	4

## NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

Title/Name of qualification/component: <b>Batching Plant Operator</b>		Level: 4	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
	<i>arithmetic principles.</i>	show a basic understanding of the <i>social and professional environment of working at construction, mining or other sites</i>	
Responsibility	<p>The jobholder is responsible to:</p> <ul style="list-style-type: none"> <li>• Conduct pre-operation checks</li> <li>• Operate the batching plant</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 batching plant. So the jobholder based on his <i>own learning and experience</i>, identify appropriate attachment and operation process to maximize the productivity efficiently. He is continuously engaged in the <i>self-learning process</i> and he has the <i>responsibility for own work</i>.</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).	4

# NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

## 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

# NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

## 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.

**Batching Plant Operator (Level 4) > Senior Batching Plant 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)