

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:

Infrastructure Equipment Skill Council
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List of documents submitted in support of the Qualifications File

- Qualification Pack
- Occupational Map Tracker
- List of QP/NOS validating companies
- Recommendation from the concerned Line Ministry of the Government/Regulatory Body - Mailed
- Model Curriculum

NSQF QUALIFICATION FILE

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- SUMMARY

1	Qualification Title	Hot Mix Plant Operator
2	Qualification Code, if any	IES/Q0114
3	NCO code and occupation	NCO-2015/8342.1800 Hot Mix Plant Operator
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	<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 certified Hot Mix Plant Operator
5	Body/bodies which will award the qualification	Infrastructure Equipment Skill Council
6	Body which will accredit providers to offer courses leading to the qualification	Infrastructure Equipment Skill Council
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	N/A
8	Occupation(s) to which the qualification gives access	Equipment operations- Hot Mix Plant Operator
9	Job description of the occupation	Hot Mix Plant operator is responsible for preparing asphalt in a safe and secured manner depending on the requirement
10	Licensing requirements	N/A
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)	N/A
12	Level of the qualification in the NSQF	4
13	Anticipated volume of training/learning required to complete the qualification	390 hours
14	Indicative list of training tools required to deliver this qualification	<ul style="list-style-type: none"> • Operational Hot Mix Plant • Other items as listed in the model curriculum
15	Entry requirements and/or recommendations and minimum age	<ul style="list-style-type: none"> • 8th Class Pass+ ITI (2years) OR 10th Class Pass with 2 years of relevant experience • OR • 10th Class Pass + ITI (1year after Class 10th) with 1 year of relevant experience

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		<ul style="list-style-type: none"> • OR • 10th Class Pass + ITI (2years after Class 10th) • OR • 10th Class Pass and pursuing continuous regular schooling • OR • 3 Year Diploma (After 10th)12th Class Pass with 6 months of relevant experience • OR • Previous relevant Qualification of NSQF Level 3 with 2 years of relevant experience <p>Minimum entry age – 18 years</p>	
16	Progression from the qualification (Please show Professional and academic progression)	Senior Hot Mix Plant Operator	
17	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	
18	International comparability where known (research evidence to be provided)	<p>US- Asphalt Plant Operator I- Classification Specification 600801</p> <p>This standard is about interpreting information, adopting safe, healthy and environmentally responsible work practices, selecting and using materials, components and equipment, setting up, operating and shutting down plant or machinery for lifting and transferring loads</p>	
19	Date of planned review of the qualification.	31/05/2025	
20	Formal structure of the qualification		
	Mandatory components		
	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
(i)	Bridge Module	4	4

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(ii)	IES/N0140 Carry out Pre-operation checks on Hot Mix Plant	56	4
(iii)	IES/N0141 Carry out Hot Mix Plant operations	90	4
(iv)	IES/N0142 Carry out maintenance and troubleshooting of the Hot Mix Plant	60	4
(v)	IES/N7601 Comply with worksite health and safety guidelines	60	4
	Sub Total (A)	270	
(v)	On the Job Training - OJT	120	4
	Sub Total (B)	120	

	Total (A+B)	390	
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SECTION 1
ASSESSMENT

21	<p>Body/Bodies which will carry out assessment:</p> <ol style="list-style-type: none"> 1. Confederation of Indian Industries (CII) 2. IRIS Corporate Solutions Pvt Ltd 3. Demorgia Consulting Services Pvt Ltd
22	<p>How will RPL assessment be managed and who will carry it out?</p> <p>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.</p>
23	<p>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.</p> <p>The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria.</p> <p>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.</p> <p>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.</p> <p>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 will empanel assessors with requisite industry/sectorial experience.</p> <p>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.</p> <p>The assessors are provided with assessor's 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</p>

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 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 behavioural 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

24. Assessment evidence

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Hot Mix Plant Operator

Qualification Pack Code: IES/Q0114

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 these criteria
5. To pass the Qualification Pack, trainee should score a minimum of 70% marks to successfully clear the assessment
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 outcomes	Total Marks	Out of	Theory	Skill Practical
IES/N0140: Carry out pre-operation checks on a hot mix plant	PC1. visually check the machine for any damaged,missing or malfunctioning parts	30	2	1	1

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	PC2. examine the various electrical connections,including the plant's motors		2	-	2
	PC3. ensure that the conveyor belts are in properoperating order according to the manufacturer's specifications		2	1	1
	PC4. examine the roller filters for contaminants		2	-	2
	PC5. check whether the bolts and other valves areappropriately fixed		2	1	1
	PC6. ensure that the power generator has enoughamount of diesel as per the plant requirement		1	-	1
	PC7. inspect all incoming electrical connectionsand the motors in the plant		2	1	1
	PC8. check the panel to confirm that the controlsare in the proper position for starting		3	1	2
	PC9. check to see if the fuel and lubricant levels inthe burners are adequate		2	1	1
	PC10. examine the cabin visually for anyobstructions		1	-	1
	PC11. check monitoring and warning systems asper the operational manual		2	1	1
	PC12. ensure that the required amount and size ofcourse aggregate and gravels are present in the hoppers		2	1	1
	PC13. check if the quantity of the bitumen in theplant is as per the requirement of the mix design		1	-	1

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	PC14. ensure all the hoppers are clear and freefrom the obstructions		2	-	2
	PC15. maintain a inspection/maintenance logbookto record all activities performed before starting the compactor		2	1	1
	PC16. notify the supervisor immediately if a defectis discovered that is outside the scope of the position		2	1	1
IES/N0141:	PC1. heat the pipeline of the bitumen before starting the operation to clear the residual from previous operations		1	-	1
Carry out hot mix plant operations	PC2. heat the bitumen for 12 hours before mixingat 150-160 degrees Celsius or according to the manufacturer's recommendations		1	-	1
	PC3. as per the instructions, start the exhaust motor to remove the dust from the filler elevators		2	1	1
	PC4. turn on the exhaust motor to clear the dust from the filler elevators as per the set procedures	35	0.5	-	0.5
	PC5. turn on the hot mix plant by pressing on theappropriate switches		2	1	1
	PC6. test run the hot mix plant for checking thenormal functioning		1	-	1
	PC7. check the control panel to ensure that thereis enough hot bitumen in the tank		1	-	1
	PC8. input numeric and operational data into acomputer system for asphalt plant production activities in		0.5	-	0.5

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	accordance with the mix design			
	PC9. turn on the hot mix plant as per the manufacturer's instructions	2	1	1
	PC10. start components in correct order manually or through computer controls	1	-	1
	PC11. ensure proper flow of materials into the mixing drum visually and by monitoring the indicators on the control panel	1	-	1
	PC12. regulate the speed and flow of various materials in the drum based on the desired output	1.5	1	0.5
	PC13. inspects gauges, dials and machinery operation to ensure compliance to processing standards	2	1	1
	PC14. monitor the temperature of the bitumen regularly by checking the indicators on the control panel	0.5	-	0.5
	PC15. coordinate with the co-workers to ensure regular supply of raw materials in the appropriate hoppers	2	1	1
	PC16. ensure removal of obstructions if any during the operations	1	-	1
	PC17. ensure water supply in the mixing drum and pollution bank as per the manufacturer's instructions	1	-	1
	PC18. check that the output is in accordance with the mix design/customer requirements	1.5	1	0.5
	PC19. keep an eye on the weigh hopper to ensure that the output is	1		

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	flowing properly			-	1
	PC20. maintain appropriate hot mix flow in hotmix surge silo as required		2	1	1
	PC21. coordinate with the vehicle operators for collecting the output		1	-	1
	PC22. monitor for proper functioning of the hotmix plant as per the requirement		0.5	-	0.5
	PC23. turn off the plant operation during emergencies by pressing the emergency switchbutton		1	-	1
	PC24. inform supervisor of any problems while operating the hot mix plant		2	1	1
	PC25. when working near the facility, use dustmask		1	-	1
	PC26. before walking in front of or behind the equipment, make positive eye contact with other equipment operators on the site		1	-	1
	PC27. wear all PPE while sampling asphalt binder and for all operations		1	-	1
	PC28. capture input and output flow in accordance with the organization's preferred formats		2	1	1
IES/N0142: Carry out routine maintenance and troubleshooting of the hot mix plant	PC1. assess the right service schedule by tracking machine operating hours	20	2	1	1

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	PC2. plan and carry out planned maintenance, such as replacing worn parts such as belts, roller bearings, and so on		1	-	1
	PC3. conduct basic maintenance such as spark plug replacement, grease control and conveyorbelt cleaning		1	-	1
	PC4. refill coolants, lubricants, and fluids on aregular basis as directed by the manufacturer		1	0.5	0.5
	PC5. replenish coolants, lubricants and fluids regularly as per the manufacturer's instructions		2	1	1
	PC6. change filter, clean and change regularly as per the operating hours/ manufacturer's instructions		1	-	1
	PC7. regularly examine silos and fuel tanks forleaks or concrete or limestone dispersion		0.5	-	0.5
	PC8. lubricate all pins and pivot points regularly asper the machine manuals/manufacturer's instructions		2	1	1
	PC9. check battery levels and condition of theterminals and carry out minor adjustments if required		1	-	1
	PC10. visual inspection is used to discover service requirements, flaws and dangerous circumstances		1	-	1
	PC11. arrange for and assist repair or replacementof defective components, such as motor, burner, temperature control		2	1	1

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	PC12. read indicators that signal need for replacement, such as air filter on compressor		1.5	0.5	1
	PC13. identify missing or defective components or controls as per the equipment drawings		0.5	-	0.5
	PC14. comply with safety requirements, such as confined space, lock-out procedures		1.5	0.5	1
	PC15. maintain service-related records and documentation, such as logbooks, repair lists and so on		1	-	1
	PC16. adhere to the reporting procedures established by the employer		1	0.5	0.5
IES/N76 01: Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/guidelines at the work site		1.5	0.5	1
	PC2. use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite	15	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		2	1	1

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	environmental guidelines			
	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, 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

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SECTION 2

25. EVIDENCE OF LEVEL

Title/Name of qualification/component: Hot Mix Plant Operator			Level: 4
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	Hot Mix Plant Operator is expected to conduct pre-operation checks on Hot Mix Plant and run the equipment 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.: conducting pre-operational checks before starting the equipment, checks on hydraulic systems. Considering the outcomes, the job role is pegged at level 04	4
Professional knowledge	Operator is expected to have knowledge of the functioning and operation of the Hot Mix Plant equipment. Feature/specifications of the various attachment used and knowledge of lifting components, pre-operation checklist and routine maintenance	Considering the in-depth professional and factual knowledge , which an Hot Mix Plant Operator carryout maintenance such as basics of hydraulic systems, engine and motors, , method of lubricating, etc. this QP is pegged at Level 4.	4
Professional skill	Hot Mix Plant operator checks the equipment for operation readiness using pre-operation checklist and conducts the routine maintenance covering lubrication, oil levels, coolant, air filters, motors, body structure and keep the records as per the operations manual & standard operating procedures.	He is practically engaged in the Hot Mix Plant operation and maintenance. The major skills required of the operators are determining the safe operation. Therefore, the QP is set at level 4	4

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Title/Name of qualification/component: Hot Mix Plant Operator			Level: 4
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Core skill	Operator is expected to be read and understand the various instrument panel, fluid levels and other indicators for pre-operation checks and routine maintenance. He has to monitor pressure gauge, engine and determine the operating range. All of this requires application of basic arithmetic principles .	Operator has to continuously give and receive instruction and guidance from co-workers on-site hence they are expected to be good in communication skills . Jobholder is expected to conduct themselves in ways, which show a basic understanding of the social and professional environment of working at construction, mining or other sites	4
Responsibility	The jobholder is responsible to: <ul style="list-style-type: none"> • Conduct pre-operation checks • Carry out Hot Mix Plant operations • Conduct routine maintenance • Comply with worksite health and safety For each work site there can be variations in usage and operation of the Hot Mix Plant equipment. So, the jobholder based on his own learning and experience has to 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.	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 and work 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

SECTION 3

EVIDENCE OF NEED

26	What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?		
	Basis	In case of SSC	Evidence
	Need of the qualification	The SSC would undertake market study and would enclose demand forecast for the proposed job role both on short-term and long-term basis to substantiate the requirement of the Qualification proposed. The SSC can produce the data from primary or authorized secondary sources as well.	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.
	Industry Relevance	The SSC would undertake validation of the job roles with actual end-user industry where such employment is going to be generated and absorbed instead of generic validation of industry. The SSC would submit the endorsements from users/intended users of the qualification clearly supporting or otherwise the need for trained people against specific job role. (<i>The industry validation format to be used</i>)	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. Validations have been received from various stakeholders including end- user companies, associations and dealers of the equipment.
Usage of the qualification	The SSC would submit details of the	Covered in Occupational Mapping	

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		<p>employment generated (wherever applicable) and realised by virtue of training in the Qualifications of the sector earlier submitted for NSQF alignment.</p> <p>In case of unorganized sector, case studies or evidence may be given</p>	
	Estimated uptake	<p>The SSC would submit the estimated uptake of the qualification and What steps were carried out to test the likely uptake of the qualification? The basis of this estimate should include data about the number of jobs or places in courses of learning which will be available to people who are awarded the qualification.</p>	Covered in Occupational Mapping
27	<p>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences</p> <p>Mail sent to ministry of Heavy Industries</p>		
28	<p>What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification</p> <ul style="list-style-type: none"> • NSDC list of Approved and Under-Development QPs was checked prior to commissioning the work • Consultations with Skill Councils for Construction and Mining Sector 		
29	<p>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? Specify the review process here</p> <ul style="list-style-type: none"> • Employer feedback will be sought post-placement • A formal review is scheduled in three years' time 		

SECTION 4

EVIDENCE OF PROGRESSION

30	<p>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? <i>Show the career map here to reflect the clear progression</i></p> <p>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.</p> <p style="text-align: center;">Hot Mix Plant Operator (Level 4) > Supervisor (Level 5)</p> <p><i>*Level= NSQF level</i></p>
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