

QUALIFICATION PACK – OCCUPATIONAL STANDARD FOR INFRASTRUCTURE EQUIPMENT INDUSTRY

What are Occupational Standards(OS)?

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

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Introduction

Qualification Pack - Hot Mix Plant Operator

SECTOR:	INFRASTRUCTURE EQUIPMENT
SUB SECTOR:	Equipment Operations
OCCUPATION:	Operator
REFERENCE ID:	IES/Q0114
ALIGNED TO:	NCO-2004/8332.60

Brief Job Description: The operator is required to operate asphalt plant for the production of hot mix asphalt based on the mix designs used in the construction, roadways and maintenance of roadways.

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

Qualifications Pack Code	IES/Q0114		
Job Role	Hot Mix Plant Operator		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure equipment	Drafted on	14/04/16
Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18
NSQC Clearance on	NA		

Job Role	Hot Mix Plant Operator
Role Description	The operator is required to operate asphalt plant for the production of hot mix asphalt based on the mix designs used in the construction, roadways and maintenance of roadways
NSQF level	4
Minimum Educational Qualifications	Class VIII preferably.
Maximum Educational Qualifications	NA
Training (Suggested but not mandatory)	Certification Training in Hot Mix Plant Operations preferred
Minimum Job Entry Age	18 years
Experience	Preferably 2 year of experience as junior hot mix plant operator
Applicable National Occupational Standards (NOS)	<p>Compulsory</p> <ol style="list-style-type: none"> IES/N0140 Carry out pre-operation checks on a hot mix plant IES/N0141 Carry out hot mix plant operations IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant IES/N7601 Comply with worksite health and safety guidelines <p>Optional: N.A.</p>
Performance Criteria	As described in the relevant OS units

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-functions	Sub-functions are sub-activities essential to fulfill achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding; he/she needs to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack(QP)	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to find the required one.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of required performance.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform up to the required standard.

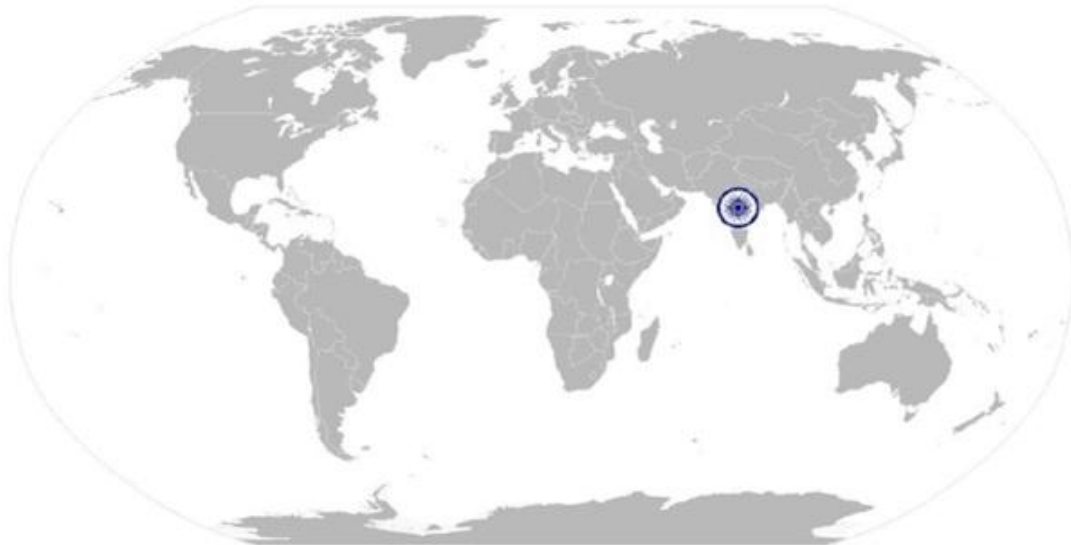
Acronyms

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

IES/N0140

Carry out pre-operation checks on a hot mix plant

National Occupational Standard



Overview

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

IES/N0140
Carry out pre-operation checks on a hot mix plant

Unit Code	IES/N0140
Unit Title (Task)	Carry out pre-operation checks on a hot mix plant
Description	This unit provides insight into activities that need to be carried out to carry out pre-operational checks on the hot mix plant.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> • Hot Mix Plant Checks • Material Checks • Reporting and Documentation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Hot Mix Plant Checks	To be competent, the user/individual on the job must be able to: <ul style="list-style-type: none"> PC1. Conduct visual inspection around the hot mix plant for oil leaks in different parts of the plant PC2. Check for various electrical connection including the motors used in the plant PC3. Ensure the conveyor belts is in proper working condition as per the manufacturer's instructions PC4. Check if the roller filters are free of impurities PC5. Check whether the bolts and other valves are appropriately fixed PC6. Ensure that the power generator has enough amount of diesel as per the plant requirement PC7. Inspect all incoming electrical connections and the motors in the plant PC8. Check panel to ensure that controls are in correct position for starting PC9. Check if the fuel and lubricant levels in the burners is as per the requirement PC10. Visually check the cabin for any obstructions PC11. Check monitoring and warning systems as per the operational manual
Material Checks	<ul style="list-style-type: none"> PC12. Ensure that the required amount and size of course aggregate and gravels are present in the hoppers PC13. Check if the quantity of the bitumen in the plant is as per the requirement of the mix design PC14. Ensure all the hoppers are clear and free from the obstructions PC15. Check for water levels in the drum and the pollution control bank as per the manufacturer's instructions
Reporting and Documentation	<ul style="list-style-type: none"> PC16. Maintain a checking/maintenance logbook to record all activities performed before starting the operation PC17. Report defects precisely to the supervisor if beyond scope of the role
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and	The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. The organization's procedures and guidelines related to breakdown & maintenance services KA2. The performance standards and procedures followed in the company KA3. Reporting structure in the company

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Carry out pre-operation checks on a hot mix plant

its processes)	<p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Location of tools</p> <p>KA6. Contact person in case of queries on procedure or equipments</p> <p>KA7. Location and process for storage and disposal of waste material</p> <p>KA8. Safety policy of the company</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different types of hot mix plants, its uses and functions- drum mix and batch mix plant</p> <p>KB2. Components of hot mix plant and its functioning-</p> <ul style="list-style-type: none"> - Cold bin feeder - Automatic weighing system - Mixing drums - Screeners - Exhaust control system - Bitumen unit - Pollution control device - Conveyor belts- hot mix, aggregate, gravel, gathering, charging, etc. - Hot mix surge silo - Filler systems <p>KB3. Basics of engine and motor functions</p> <p>KB4. Types of aggregates and its physical qualities</p> <p>KB5. Different types of motor and their respective capacities used in hot mix plant- drum, exhaust, conveyor, gathering conveyor, drum hydraulic, slinger, pollution bank, etc.</p> <p>KB6. Significance and methods of lubricating different parts of hot mix plant</p> <p>KB7. Instrument panel / cabin controls, their location and operation</p> <p>KB8. Basic electrical functioning and repairs</p> <p>KB9. Basic of hot mix plant installation procedures</p>
Skills (S)	
A. Core Skills / Generic Skills	<p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Record any deviations/ incidents as per prescribed norms</p> <p>Reading Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. Read and comprehend basic English and regional language as applicable to read manuals of operations, guidelines, etc.</p> <p>Oral Communication (Listening and Speaking Skills)</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. Give clear instructions to co-workers, subordinates and other persons</p> <p>SA4. Use correct technical terms while interacting with supervisor</p>
B. Professional Skills	<p>Decision Making</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. Decide when to conduct maintenance checks</p> <p>Plan and Organize</p>

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Carry out pre-operation checks on a hot mix plant

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



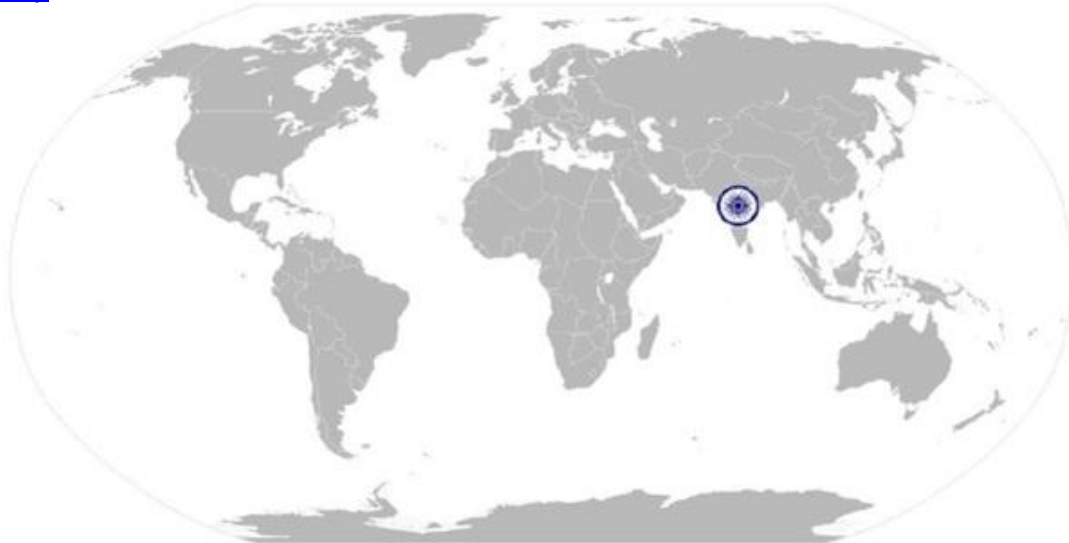
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Carry out pre-operation checks on a hot mix plant

NOS Version Control

NOS Code	IES/N0140		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

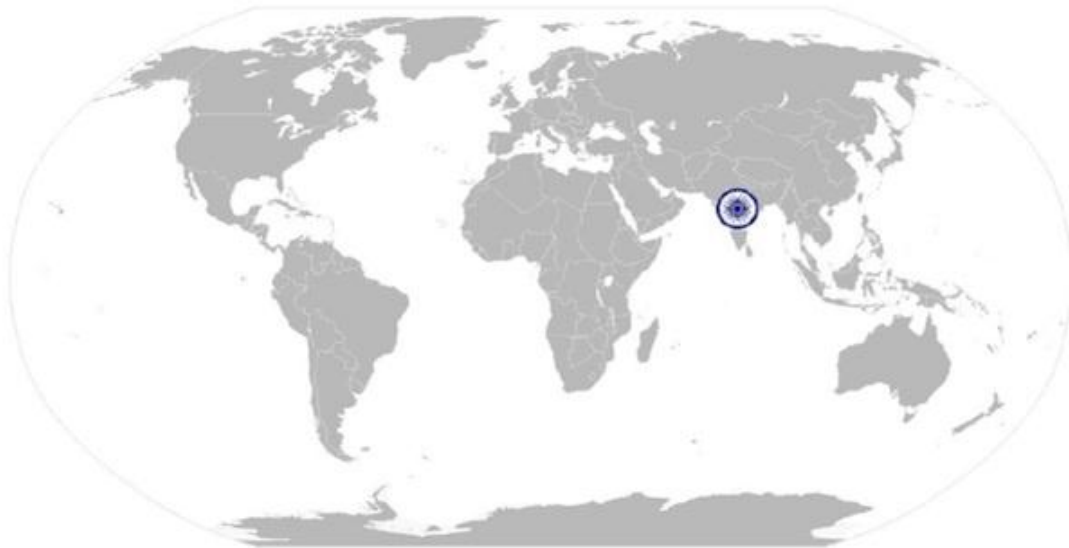
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IES/N0141

Carry out hot mix plant operations

National Occupational Standard



Overview

This unit provides Performance Criteria, Knowledge & Understanding and Skills & Ability for activities that are required for starting and running the hot mix plant.

IES/N0141

Carry out hot mix plant operations

Unit Code	IES/N0141
Unit Title (Task)	Carry out hot mix plant operations
Description	This unit provides insight into activities that are required for starting and running the hot mix plant.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Preparatory activities • Hot Mix plant Operation • Safety during operations • Reporting and Documentation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Preparatory activities	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Heat the pipeline of the bitumen before starting the operation to clear the residual from previous operations</p> <p>PC2. Heat the bitumen 12 hours before mixing at a temperature of 150-160 degrees Celsius or as per the manufacturer's instructions</p> <p>PC3. Turn on the exhaust motor to clear the dust from the filler elevators as per the set procedures</p> <p>PC4. Turn on the power generator switch to supply power to the hot mix plant</p> <p>PC5. Turn on the hot mix plant by pressing on the appropriate switches</p> <p>PC6. Test run the hot mix plant for checking the normal functioning</p> <p>PC7. Ensure there is enough heated bitumen in the tank by checking on the control panel</p>
Hot Mix Plant Operation	<p>PC8. Feed the numeric data and operational data into a computer system for asphalt plant production activities as per the mix design</p> <p>PC9. Turn on the hot mix plant as per the manufacturer's instructions</p> <p>PC10. Start components in correct order manually or through computer controls</p> <p>PC11. Ensure proper flow of materials into the mixing drum visually and by monitoring the indicators on the control panel</p> <p>PC12. Control the speed and flow of different materials in the drum as per the required output</p> <p>PC13. Observes gauges, dials, and operation of machinery to ensure conformance to processing specifications.</p> <p>PC14. Monitor the temperature of the bitumen regularly by checking the indicators on the control panel</p> <p>PC15. Coordinate with the co-workers to ensure regular supply of raw materials in the appropriate hoppers</p> <p>PC16. Ensure removal of obstructions if any during the operations</p> <p>PC17. Ensure water supply in the mixing drum and pollution bank as per the manufacturer's instructions</p> <p>PC18. Check the output is as per the mix design/ customer requirements</p> <p>PC19. Monitor the weigh hopper for appropriate flow of output</p>

IES/N0141

Carry out hot mix plant operations

	<p>PC20. Ensure proper flow of hot mix in hot mix surge silo as per the requirement</p> <p>PC21. Coordinate with the vehicle operators for collecting the output</p> <p>PC22. Monitor for proper functioning of the hot mix plant as per the requirement</p> <p>PC23. Turn off the plant operation during emergencies by pressing the emergency switch button</p> <p>PC24. Inform supervisor of any problems while operating the hot mix plant</p>
Safety during operations	<p>PC25. Wear dust masks when working around the plant</p> <p>PC26. Make positive eye contact with other equipment operators at the site before crossing in front of or behind the equipment</p> <p>PC27. Wear all PPE while sampling asphalt binder and for all operations</p>
Reporting and Documentation	<p>PC28. Record input and output flow as per the desired formats of the organization</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to breakdown & maintenance services</p> <p>KA2. The performance standards & procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Contact person in case of queries on procedure or equipments</p> <p>KA6. Location and process for storage and disposal of waste material</p> <p>KA7. Safety policy of the company</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different types of hot mix plants, its uses and functions: Drum mix plant and batch type plant</p> <p>KB2. Components of hot mix plant and its functioning-</p> <ul style="list-style-type: none"> - Cold bin feeder - Automatic weighing system - Mixing drums - Screeners - Exhaust control system - Bitumen unit - Pollution control device - Conveyor belts- hot mix, aggregate, gravel, gathering, charging, etc. - Hot mix surge silo - Filler systems <p>KB3. Basics of engine and motor functions</p> <p>KB4. Types of raw materials and its physical qualities- gravel, aggregate, limestone, bitumen, etc.</p> <p>KB5. Different types of motor used in hot mix plant- drum, exhaust, conveyor, gathering conveyor, drum hydraulic, slinger, pollution bank, etc.</p> <p>KB6. Sequence of activities for starting the operation</p>

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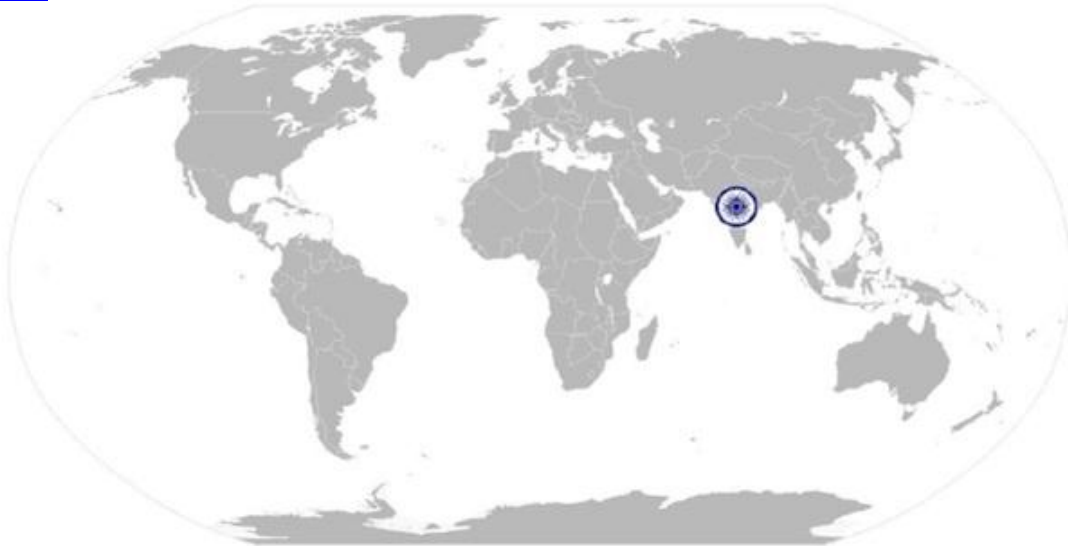
Carry out hot mix plant operations

	<p>KB7. Instrument panel / cabin controls, their location and operation</p> <p>KB8. Basic electrical functioning and repairs</p> <p>KB9. Basic MS Office applications and print settings</p> <p>KB10. Basics of SCADA or other systems if applicable</p>
Skills (S)	
A. Core Skills / Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Record any deviations/ incidents as per prescribed norms
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. Read and comprehend Basic English and regional language as applicable to read manuals of operations, guidelines, etc. SA3. Comprehend basic sign and symbols at the worksite
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. Give clear instructions to co-workers, subordinates and other persons SA5. Use correct technical terms while interacting with supervisor
B. Professional Skills	Decision Making
	The user/ individual on the job needs to know and understand how to: SB1. Assess for any damage/faulty component in the hot mix plant and take actions accordingly SB2. Decide on when to start and stop the operations based on the machine functioning
	Plan and Organize
	The user/ individual on the job needs to know and understand how to: SB3. Work with supervisors/ team mates to carry out work related tasks SB4. Plan work according to the required schedule and location
	Customer Centricity
	The user/ individual on the job needs to know and understand how to: SB5. Provide service of the highest order to ensure customer satisfaction
	Problem Solving
	The user/ individual on the job needs to know and understand how to: SB6. Identify immediate or temporary solutions to resolve mechanical issues SB7. Judge when to seek assistance from supervisor
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to: SB8. Identify cause and effect relations in his area of work
Critical Thinking	
	The user/ individual on the job needs to know and understand how to: SB9. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently

IES/N0141 Carry out hot mix plant operations NOS Version Control

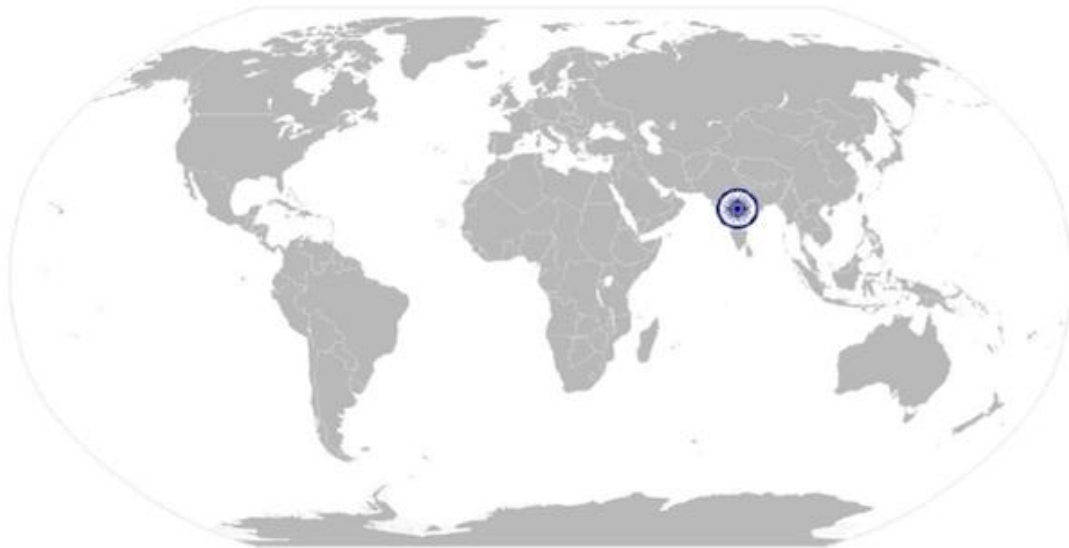
NOS Code	IES/N0141		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

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IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant

National Occupational Standard



Overview

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

IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant

Unit Code	IES/N0142
Unit Title (Task)	Carry out routine maintenance and troubleshooting of the hot mix plant
Description	This unit provides insight into activities that are required for performing routine maintenance and troubleshooting hot mix plant.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Routine maintenance • Repair and troubleshooting • Reporting and documentation
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Routine maintenance	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Assess the right service schedule by tracking machine operating hours</p> <p>PC2. Arrange for and perform scheduled maintenance, such as replace worn parts such as belts, roller bearings, etc.</p> <p>PC3. Perform basic maintenance, such as change spark plug, grease controls, cleaning of conveyor belts</p> <p>PC4. Check bearings at the burner end of the slinger conveyor for excessive heating</p> <p>PC5. Replenish coolants, lubricants and fluids regularly as per the manufacturer's instructions</p> <p>PC6. Change filter, clean and change flame-eye regularly as per the operating hours/ manufacturer's instructions</p> <p>PC7. Inspect silos, fuel tanks for leaks or scattering of concrete or limestone regularly</p> <p>PC8. Lubricate all pins and pivot points regularly as per the machine manuals/manufacturer's instructions</p> <p>PC9. Check battery levels and condition of the terminals and carry out minor adjustments if required</p>
Repair and troubleshooting	<p>PC10. Identify service needs, defects, and hazardous conditions through visual inspection</p> <p>PC11. Arrange for and assist repair or replacement of defective components, such as motor, burner, temperature control</p> <p>PC12. Read indicators that signal need for replacement, such as air filter on compressor</p> <p>PC13. Identify missing or defective components or controls as per the equipment drawings</p> <p>PC14. Comply with safety requirements, such as confined space, lock-out procedures</p>
Reporting and documentation	<p>PC15. Maintain records and documentation relating to service, such as log books, repair lists, etc.</p> <p>PC16. Follow reporting procedures as laid down by the employer</p>
Knowledge and Understanding (K)	
A. Organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. The organization's procedures and guidelines related to breakdown &</p>

IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant

<p>(Knowledge of the company / organization and its processes)</p>	<p>maintenance services</p> <p>KA2. The performance standards & procedures followed in the company</p> <p>KA3. Reporting structure in the company</p> <p>KA4. Timeframe in which the complaint/problem should be resolved</p> <p>KA5. Location of tools</p> <p>KA6. Contact person in case of queries on procedure or equipments</p> <p>KA7. Location and process for storage and disposal of waste material</p> <p>KA8. Safety policy of the company</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different types of hot mix plants, its uses and functions- drum type and batch type</p> <p>KB2. Components of hot mix plant and its functioning-</p> <ul style="list-style-type: none"> - Cold bin feeder - Automatic weighing system - Screeners - Mixing drum - Exhaust control system - Bitumen unit - Pollution control device - Conveyor belts- hot mix, aggregate, gravel - Hot mix surge silo - Filler systems <p>KB3. Basics of engine and motor functions</p> <p>KB4. Different types of motor used in hot mix plant- drum, exhaust, conveyor, gathering conveyor, drum hydraulic, slinger, pollution bank, etc.</p> <p>KB5. Significance and methods of lubricating different parts of hot mix plant</p> <p>KB6. Basic electrical functioning and repairs</p> <p>KB7. Basic plant maintenance procedures</p> <p>KB8. Basic of hot mix plant installation procedures</p>
<p>Skills (S)</p>	
<p>A. Core Skills / Generic Skills</p>	<p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Record any deviations/ incidents as per prescribed norms</p> <p>Reading Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. Read and comprehend basic English and regional language as applicable to read manuals of operations, guidelines, etc.</p> <p>Oral Communication (Listening and Speaking Skills)</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA3. Give clear instructions to co-workers, subordinates and other persons</p> <p>SA4. Use correct technical terms while interacting with supervisor</p>
<p>B. Professional Skills</p>	<p>Decision Making</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. Decide when to conduct maintenance checks</p> <p>Plan and Organize</p>

IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant

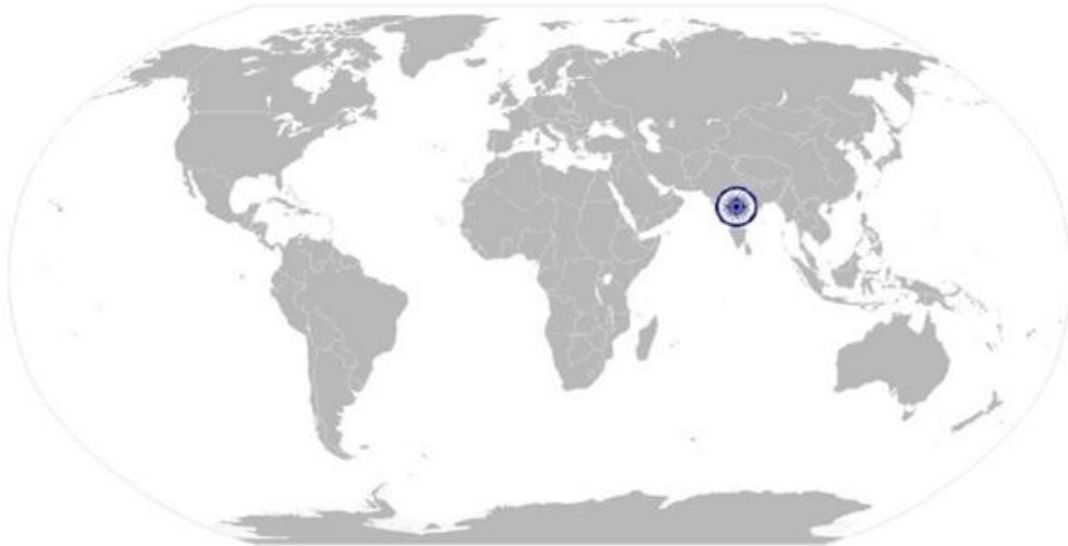
	The user/ individual on the job needs to know and understand how to: SB2. Work with supervisors/ team mates to carry out work related tasks SB3. Plan work according to the required schedule and location SB4. Plan for cleaning and lubricating the appropriate equipment every day
	Customer Centricity
	The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



IES/N0142 Carry out routine maintenance and troubleshooting of the hot mix plant NOS Version Control

NOS Code	IES/N0142		
Credits(NSQF)	TBD	Version number	1.0
Sector	Infrastructure equipment	Drafted on	14/04/16
Industry Sub-sector	Equipment Operations	Last reviewed on	26/04/16
Occupation	Operator	Next review date	30/04/18

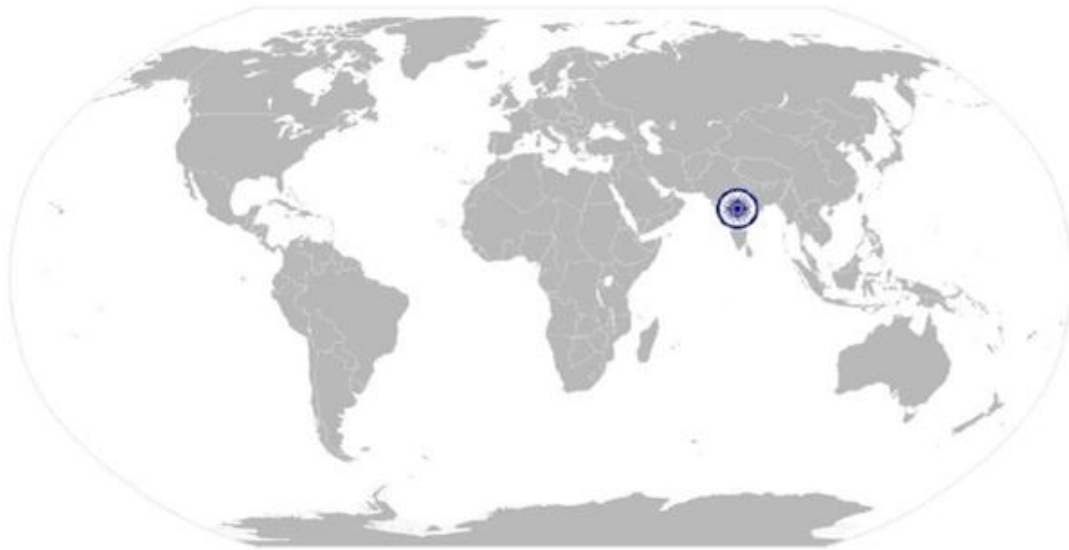
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IES/N7601

Comply with worksite health and safety guidelines

National Occupational Standard



Overview

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

IES/N7601

Comply with worksite health and safety guidelines

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

IES/N7601

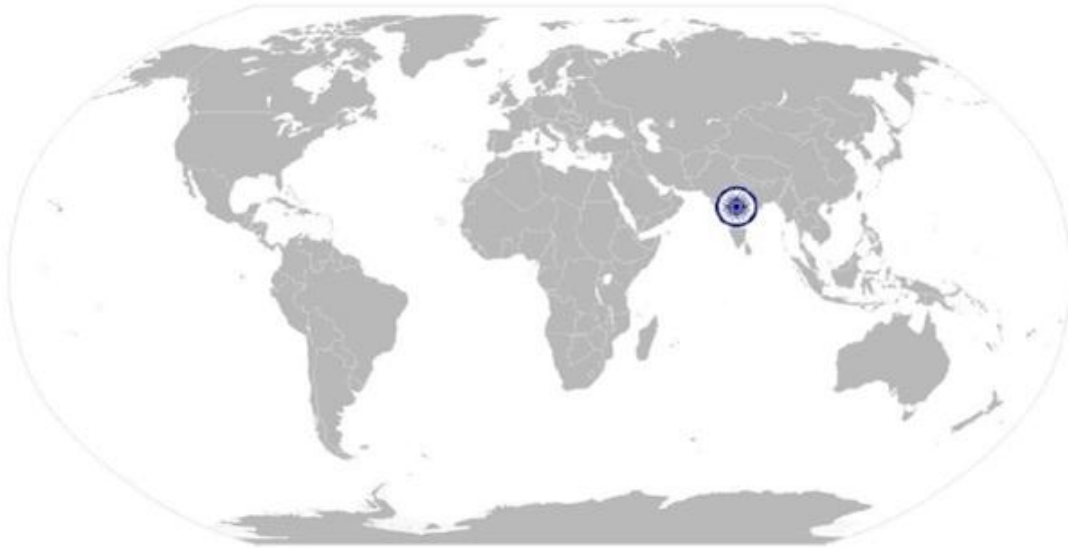
Comply with worksite health and safety guidelines

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

IES/N7601

Comply with worksite health and safety guidelines

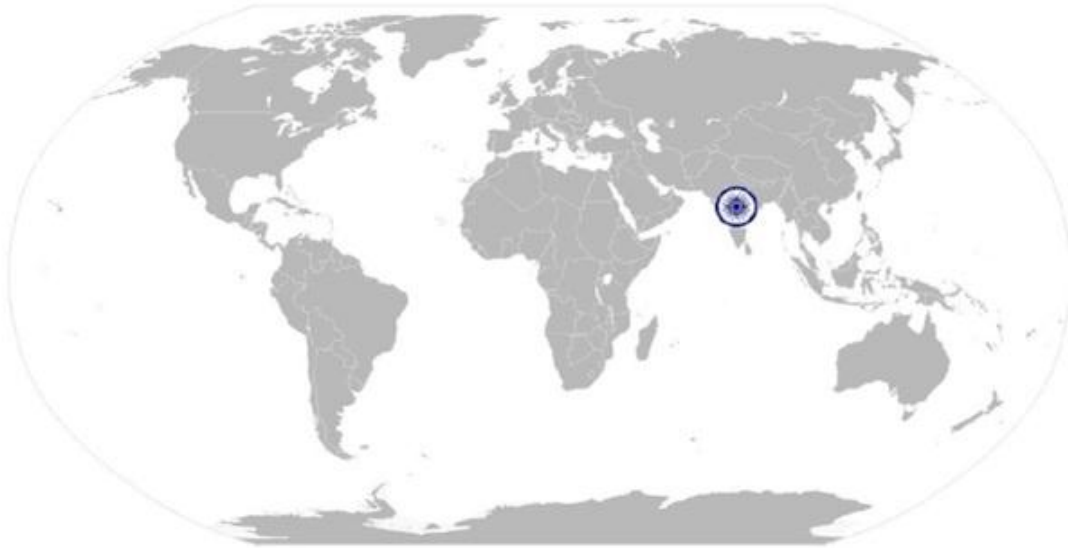
	The user/ individual on the job needs to know and understand how to: SB8. Analyse, evaluate and apply the information gathered from observation, experience, reasoning, or communication to act efficiently
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IES/N7601 **Comply with worksite health and safety guidelines**
NOS Version Control

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

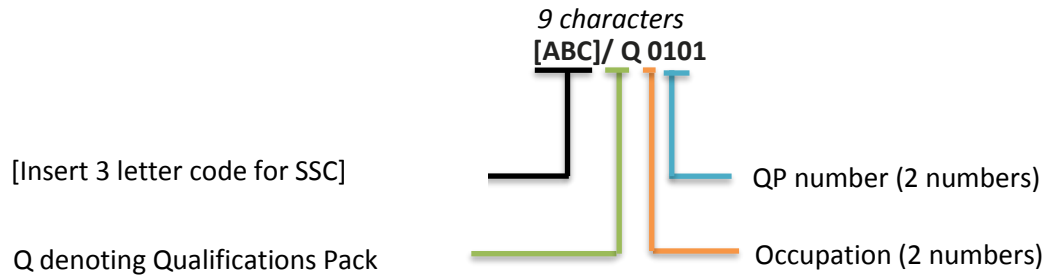
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Annexure

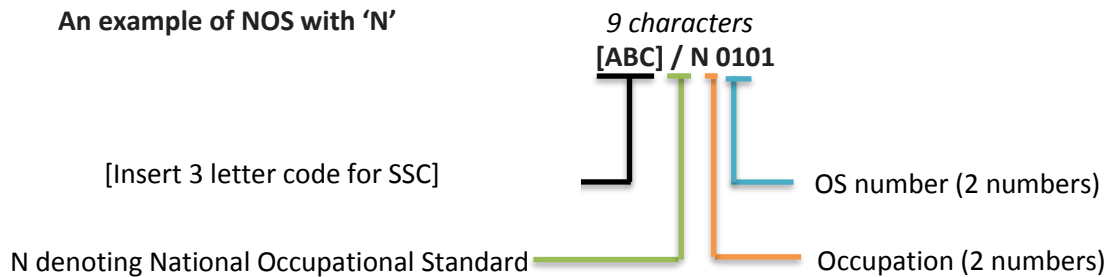
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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

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

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

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Hot Mix Plant Operator

Qualification Pack 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 this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 40% in each NOS and 60% aggregate.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification pack.

Total Marks:100				Marks Allocation	
Assessment Outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
1. IES/N0140 Carry out pre-operation checks on a hot mix plant	PC1. Conduct visual inspection around the hot mix plant for oil leaks in different parts of the plant	30	2	1	1
	PC2. Check for various electrical connection including the motors used in the plant		1	0	1
	PC3. Ensure the conveyor belts is in proper working condition as per the manufacturer's instructions		2	1	1

	PC4. Check if the roller filters are free of impurities		2	0	2
	PC5. Check whether the bolts and other valves are appropriately fixed		2	1	1
	PC6. Ensure that the power generator has enough amount of diesel as per the plant requirement		1	0	1
	PC7. Inspect all incoming electrical connections and the motors in the plant		2	1	1
	PC8. Check panel to ensure that controls are in correct position for starting		2	0	2
	PC9. Check if the fuel and lubricant levels in the burners is as per the requirement		2	1	1
	PC10. Visually check the cabin for any obstructions		1	0	1
	PC11. Check monitoring and warning systems as per the operational manual		2	1	1
	PC12. Ensure that the required amount and size of coarse aggregate and gravels are present in the hoppers		2	1	1
	PC13. Check if the quantity of the bitumen in the plant is as per the requirement of the mix design		1	0	1
	PC14. Ensure all the hoppers are clear and free from the obstructions		2	0	2
	PC15. Maintain a checking/maintenance logbook to record all activities performed before starting the compactor		2	1	1
	PC16. Maintain a checking/maintenance logbook to record all activities performed before starting the operation		2	1	1

	PC17. Report defects precisely to the supervisor if beyond scope of the role		2	0	2
		Total	30	9	21
2. IES/N0141 Carry out hot mix plant operations	PC1. Heat the pipeline of the bitumen before starting the operation to clear the residual from previous operations	35	1	0	1
	PC2. Heat the bitumen 12 hours before mixing at a temperature of 150-160 degrees Celsius or as per the manufacturer's instructions		1	0	1
	PC3. Turn on the exhaust motor to clear the dust from the filler elevators as per the set procedures		2	1	1
	PC4. Turn on the power generator switch to supply power to the hot mix plant		0.5	0	0.5
	PC5. Turn on the hot mix plant by pressing on the appropriate switches		2	1	1
	PC6. Test run the hot mix plant for checking the normal functioning		1	0	1
	PC7. Ensure there is enough heated bitumen in the tank by checking on the control panel		1	0	1
	PC8. Feed the numeric data and operational data into a computer system for asphalt plant production activities as per the mix design		0.5	0	0.5
	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	0	1
	PC11. Ensure proper flow of materials into the mixing drum visually and by monitoring the indicators on the control panel		1	0	1

	PC12. Control the speed and flow of different materials in the drum as per the required output		1.5	1	0.5
	PC13. Observes gauges, dials, and operation of machinery to ensure conformance to processing specifications.		2	1	1
	PC14. Monitor the temperature of the bitumen regularly by checking the indicators on the control panel		0.5	0	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	0	1
	PC17. Ensure water supply in the mixing drum and pollution bank as per the manufacturer's instructions		1	0	1
	PC18. Check the output is as per the mix design/ customer requirements		1.5	1	0.5
	PC19. Monitor the weigh hopper for appropriate flow of output		1	0	1
	PC20. Ensure proper flow of hot mix in hot mix surge silo as per the requirement		2	1	1
	PC21. Coordinate with the vehicle operators for collecting the output		1	0	1
	PC22. Monitor for proper functioning of the hot mix plant as per the requirement		0.5	0	0.5
	PC23. Turn off the plant operation during emergencies by pressing the emergency switch button		1	0	1
	PC24. Inform supervisor of any problems while operating the hot mix plant		2	1	1
	PC25. Wear dust masks when working around the plant		1	0	1

	PC26. Make positive eye contact with other equipment operators at the site before crossing in front of or behind the equipment		1	0	1
	PC27. Wear all PPE while sampling asphalt binder and for all operations		1	0	1
	PC28. Record input and output flow as per the desired formats of the organization		2	1	1
		Total	35	10	25
3. 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
	PC2. Arrange for and perform scheduled maintenance, such as replace worn parts such as belts, roller bearings, etc.		1	0	1
	PC3. Perform basic maintenance, such as change spark plug, grease controls, cleaning of conveyor belts		1	0	1
	PC4. Check bearings at the burner end of the slinger conveyor for excessive heating		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 flame-eye regularly as per the operating hours/ manufacturer's instructions		1	0	1
	PC7. Inspect silos, fuel tanks for leaks or scattering of concrete or limestone regularly		0.5	0	0.5
	PC8. Lubricate all pins and pivot points regularly as per the machine manuals/manufacturer's instructions		2	1	1
	PC9. Check battery levels and condition of the terminals and carry out minor adjustments if required		1	0	1

	PC10. Identify service needs, defects, and hazardous conditions through visual inspection		1	0	1
	PC11. Arrange for and assist repair or replacement of defective components, such as motor, burner, temperature control		2	1	1
	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	0.5
	PC14. Comply with safety requirements, such as confined space, lock-out procedures		1.5	0.5	1
	PC15. Maintain records and documentation relating to service, such as log books, repair lists, etc.		1	0	1
	PC16. Follow reporting procedures as laid down by the employer		1	0.5	0.5
		Total	20	6	14
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	2	1	1
	PC2. Use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite		1	0	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		2	1	1
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		2	1	1

	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	0	2
	PC6. Operate various grades of fire extinguishers, as applicable		1	0	1
	PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		2	1	1
	PC8. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		1	0	1
	PC9. Record and report details related to operations, incidents or accidents, as applicable		2	1	1
		Total	15	5	10
Grand Total			100	30	70