Model Curriculum

Transit Mixer Operator

SECTOR: INFRASTRUCTURE EQUIPMENT
SUB-SECTOR: EQUIPMENT OPERATIONS
OCCUPATION: OPERATOR
REF ID: IES/Q0118, V1.0
NSQF LEVEL: 4

Skill India

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Transforming the skill landscape

Certificate

CURRICULUM COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

INFRASTRUCTURE EQUIPMENT SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Transit Mixer Operator**' QP No. '**IES/ Q 0118 NSQF Level 4**'

Date of Issuance: June 1st, 2017

Valid up to: April 30th , 2018

** Valid up to the next review date of the Qualification Pack*

Authorized Signatory
(Infrastructure Equipment Skill Council)

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Transit Mixer Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Transit Mixer Operator", in the "Infrastructure Equipment" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	**Transit Mixer Operator**		
Qualification Pack Name & Reference ID	IES/Q0118		
Version No.	1.0	**Version Update Date**	01 June 2017
Pre-requisites to Training	Preferably Class 8th Standard Certification Training in Transit Mixer Operations preferred Preferably 2 year's experience as Junior Transit Mixer Operator		
Training Outcomes	**After completing this programme, participants will be able to:** • **Carry out pre-operation checks on a transit mixer.** General introduction to transit mixer, basic working of concrete mixers, engine, hydraulic and electrical systems, operational controls and instrument panel, preparing machine and related systems for operations • **Operate a transit mixer.** Properties of materials cement and aggregates, starting of transit mixer, loading of materials, monitoring and regulating mixing, discharging of concrete, shutting down the mixer; post-operative checks • **Carry out regular maintenance of a transit mixer.** General maintenance procedures and periodic service schedule; common faults and their diagnosis; reports and documents. • **Comply with worksite health and safety guidelines.** Health, safety and environment policies; personal protective equipment, fire-fighting equipment, basic first aid for common injuries at work site		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of "Transit Mixer Operator" Qualification Pack issued by "Infrastructure Equipment Skill Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required

1	**Carry out pre-operation checks on a transit mixer**
	
	Theory Duration
	(hh:mm)
	08:00
	Practical Duration
	(hh:mm)
	20:00
	
	Corresponding NOS Code
	IES/N0152
		Organisational Context: Acquire working knowledge of the following:
		• Organisation structure, reporting and escalation line.
		• Performance standards and procedures in the company.
		• Work target and review mechanism with supervisor
		• Location and process for storage and disposal of waste.
		• Safety policy of the organisation and emergency procedures.
		
		Technical Knowledge: Understand the fundamentals of the following:
		• Different types of concrete mixers, features and performance.
		• Components of concrete mixer and its functioning.
		• Basic working of engine and all sub systems;
		  ○ Transmission, Steering
		  ○ Hydraulic & Electrical.
		• Controls, levers, switches and instrument panel & fuse box
		• Procedure for filling and topping up of fuel, coolant, oils
		• Method of greasing and lubrication.
		• Optimal working condition of components and monitoring systems
		• Documents and log books to be maintained for recording activities.
		• Procedures for reporting defects if beyond his scope.
		
		Skills - Core & Professional. Acquire the ability to:
		
		• Read & understand general instructions/guidelines related to equipment & worksite ops.
		• Write and record any incidents & deviations on the prescribed formats.
		• Orally communicate information & instructions to co-workers in a clear and concise manner.
		• Plan and organise work related tasks with all concerned in most efficient and cost effective way.
			• Transit Mixer/Self Loading Concrete Mixer (SLCM) with standard tools and equipment.
			• Class room with audio-video system
			• Manufacturers O and M Manual & Video
			• Safety video
			• PPE Items & Safety Gear
			• Open ground

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		Performance Criteria: Execute the following tasks and procedures: • Examine the machine to ensure there are no cracks in the body and leakages. • Check all fluid levels in the engine, transmission & hydraulic systems; top up where necessary • Check water system for leaks and clean water pump filter if required. • Clean the mixer drum as per instructions • Inspect all greasing points and pivots and ensure lubrication. • Check all controls, gauges, lights and horns are functional. • Maintain a log book to record all actions done before starting. • Follow laid down procedure for reporting defects beyond his scope.	
2	**Operate a transit mixer.** **Theory Duration** (hh:mm) 30:00 **Practical Duration** (hh:mm) 75:00 **Corresponding NOS Code** IES/N0153	**Organisational Context: Acquire working knowledge of the following:** • Procedures and guidelines related to breakdown & maintenance services. • Location of tools and equipment and procedure for issue and return. • Safety policy of the organisation and emergency drills. **Technical Knowledge. Understand the fundamentals of the following:** • Type and grade of materials; cement aggregates sand and mixture. • Specs and features/performance/ output of the machine/mixer. • Procedure for turning on and off the transit mixer. • Various hand signals and safety & emergency signs on road & work site **Skills - Core & Professional. Acquire the ability to:** • In addition to core and generic skills listed above • Interpret signage on road and at work site operations correctly. • Use correct terminology while interacting with others at site • Plan work schedule in time bound and cost effective way. • Identify operational slow-downs and take timely remedial action.	• Transit Mixer/Self Loading Concrete Mixer (SLCM) with standard tools and equipment. • Adequate stocks of cement, sand and other aggregates. • Class room with audio-video system • Manufacturers O and M Manual & Video • Safety video • PPE Items & Safety Gear • Open ground

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		Performance Criteria. Execute the following tasks and procedures: • Plan and organise the task as per the instructions from the supervisor • Inspect work site for loose soil, marshy patches etc where mixer can get stuck. **Loading of Materials** • Ensure loading in correct proportions of aggregates- cement, water and admixtures; as per production requirements • Check for correct drum rotation and speed during mixing. **Discharging of Concrete.** • Park the mixer on firm level ground and adjust the concrete chute. • Discharge the concrete safely at the desired location. **Shutting down of Mixer** • On completion of discharge, shut down the machine as per procedures. • Clean bucket, drum and concrete-skid as per instructions. • Remove attachments after use as per instructions. • Inspect for damages; leaks etc and take appropriate action. **Reporting and Documentation** • Maintain log book to record all production activities done. • Report any defects which are beyond his scope to the supervisor.	
3	**Carry out routine maintenance and trouble shooting of a transit mixer.** **Theory Duration** (hh:mm) 14:00 **Practical Duration** (hh:mm) 35:00 **Corresponding NOS Code** IES/N0154	**Organisational Context: Acquire working knowledge of the following:** • Emergency organisation structure and maintenance policy. • Location of special tools and equipment/ accessories. **Technical Knowledge. Understand the fundamentals of the following:** • Maintenance and service Schedule including related checklists • Common defects and general causes for breakdown. **Skills - Core & Professional. Acquire the ability to:** • In addition to core and generic skills listed above; • Plan maintenance & servicing keeping operational needs in mind.	• Transit Mixer/Self Loading Concrete Mixer (SLCM) with standard tools and equipment. • Class room with audio-video system • Manufacturers O and M Manual & Video • Safety video • PPE Items & Safety Gear • Lab/workshop/covered shed

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		Performance Criteria. Execute the following tasks and procedures: • **Routine Maintenance:** Clean machine outside and inside • Clean air filter, replenish lubes and coolants as necessary • Lubricate/grease all the moving joints/pins and pivot points. • Check battery electrolyte levels and terminals. • Check wheel rim and nuts for tightness, tyre pressure. • **Basic Trouble Shooting:** Place machine correctly and safely using supports as necessary. • Diagnose the defect/ problem and rectify; if need be seek advice from supervisor. • **Documentation & Reporting**: Maintain all records/documents. • Report defects and problems in time and escalate as necessary	
4	**Comply with Worksite Health and Safety Guidelines** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** IES/N7601	**Organisational Context. Acquire working knowledge of the following:** • Health, safety, environmental (HSE) policies and guidelines of the company & their importance • Contact details of personnel responsible for HSE related matters & in case of emergencies. • Location of first aid room / station and assembly points. • Reporting channel and documentation procedure for all HSE related matters. **Technical Knowledge. Understand the fundamentals of the following:** • OEMs guidelines for health, safety and security requirements. • Types, use and importance of Personal Protective Equipment (PPE) • Types of common hazards and risks at worksite and preventive measures. • In case of emergencies procedure to stop/ shut down machinery. • Common injuries and appropriate basic first aid treatment. • Firefighting equipment: Basic knowledge of handling and using	• Transit Mixer /SLMC with standard tools and equipment • Class room with audio-video system • Organisation's ESH / Safety video • PPE Items & Safety Gear • Firefighting equipment & Charts • First Aid Kit and Charts

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		them. • Guidelines for transport, storage and disposal of hazardous materials and waste • Safety signs/symbols and warnings used in worksites and their meaning **Skills - Core & Professional. Acquire the ability to:** • Use correct PPE and other safety gear while in the work site. **Performance Criteria. Execute the following tasks and procedures:** • Comply with safety, health, environment and security related regulations & guidelines at work**.** • Correct use of Personal Protective Equipment (PPE) and other safety gear at work site. • Follow safety measures during operations to ensure health and safety of self and others; general public not at risk. • Operate fire extinguishers as applicable. • Support in administering basic first aid. • Record and report details as related to operations, incidents or accidents as applicable.	
	Total Duration **Theory Duration 60:00** **Practical Duration 150:00**	**Unique Equipment Required:** • Transit Mixer with standard tolls and equipment. • Adequate stocks of cement, sand and other aggregates. • Class room with audio-video projection system • Manufacturers O and M Manual & Video • Safety video • PPE Equipment: Helmet, gloves, earplugs, goggles, safety shoes • Firefighting equipment and 'How to Use' Charts • First Aid Box and 'How to Do' Charts • Open ground and Lab/Workshop/Covered Shed	

Grand Total Course Duration: **210 Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by **Infrastructure Equipment Skill Council)***

Trainer Pre-requisites for Job role: "Transit Mixer Operator" mapped to Qualification Pack: "IES/Q0118, v1.0"

Sr. No.	Area	Details
1	**Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "IES/Q 0118 Version 1.0".
2	**Personal Attributes**	Aptitude for conducting training, with strong communication and interpersonal skills. Passion for training and developing others; well-organised; and a team player. Eager to learn and keep oneself updated with the latest in the mentioned field.
3	**Minimum Educational Qualifications**	Class 8th; preferably 10th
4a	**Domain Certification**	Certified for Job Role: "Transit Mixer Operator" mapped to QP: "IES/Q 0118 – Version 1.0". Minimum accepted score 70%. Desired: Certification Training in Transit Mixer Operations & Maintenance
4b	**Platform Certification**	Certified for Job Role: "Trainer" mapped to Qualification Pack: SSC/1402. Minimum accepted score 70%.
5	**Experience**	• Around 3 to 4 years' site experience in Transit Mixer Operations. • At least 1 to 2 years' experience in conducting O and M training programs.

Assessment Criteria	
Job Role	Transit Mixer Operator
Qualification Pack	IES/Q 0118 Version 1.0
Sector Skill Council	Infrastructure Equipment

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for Qualification Pack has been laid down based on the NOS's. Each Performance Criteria (PC) has been assigned marks proportional to its importance within NOS.SSC will also lay down proportion of marks for Theory and Skill 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.

			Marks Allocation		
Assessment Outcomes	**Assessment Criteria for the outcome**	**Total Mark**	**Out Of**	**Theory**	**Skills Practical**
1. IES/N0152 Carry out pre-operation checks on a transit mixer	PC1. Visually inspect the body components for cracks and bearing wear	**30**	3	1	2
	PC2. Check if tire inflation pressure corresponds to that prescribed norms of the manufacturer		2	1	1
	PC3. Ensure that wheel nuts are firmly tightened as per prescribed norms of the manufacturer		2	1	1
	PC4. Check oil levels of engine transmission, radiator coolant and brake		2	1	1
	PC5. Check hydraulic oil levels as per the prescribed norms of the manufacturer		1.5	0.5	1

	PC6. Check water system for leaks and clean water pump filter per the prescribed norms of the manufacturer	2	1	1
	PC7. Drain water and sediment from the fuel tank as per operational manual	2.5	0.5	2
	PC8. Ensure that the mixer drums are clean and free from concrete	1	0.5	0.5
	PC9. Ensure not to fill the fuel tank while engine is running	1	0.5	0.5
	PC10. Check battery electrolyte level as per the prescribed norms of the manufacturer	1.5	0.5	1
	PC11. Check electronic weighing system for any malfunctioning	2	1	1
	PC12. Apply grease to all grease nipples as per the prescribed norms of the manufacturer	2.5	0.5	2
	PC13. Ensure that the area is clear of all personnel and equipment before moving the equipment	1.5	0.5	1
	PC14. Ensure driver's seat, steps and handles are always clean and free from any foreign object or grease trials, oil mud and unfastened objects in the cabin	1.5	0.5	1
	PC15. Ensure proper condition of parking brake, main horn, reverse horn and head light	1	0	1
	PC16. Check all protection and safety for appropriate position for operation	1	0	1
	PC17. Maintain a checking/maintenance logbook to record all activities performed before starting the machine	1	0	1

	PC18. Report defects precisely to the supervisor if beyond scope of the role		1	0	1
		Total	**30**	**10**	**20**
2. IES/N0153 Operate a transit mixer	PC1. Plan and organize the job according to instructions from the supervisor	**35**	2	1	1
	PC2. Inspect the worksite to identify and loose soil hidden deep trenches or marshy patches where a mixer could get stuck		1.5	1	0.5
	PC3. Fill water tanks ready for daily use as per organizational standards		1	0.5	0.5
	PC4. Carry out all peruse and running checks as per organizational standards		2	1	1
	PC5. Wear seat belt and adjust seat position to one's comfort		1	0.5	0.5
	PC6. Start the engine using the starting key		0.5	0	0.5
	PC7. Ensure parking brake is engaged and electric gear selector is in neutral position before starting the engine		1	0.5	0.5
	PC8. Select appropriate type of steering mechanism as per the situational requirements		1.5	0.5	1
	PC9. Load correct proportions of aggregates, cement, water and admixtures as per the production requirements		3	1	2
	PC10. Ensure mixer load and operating speed is within specified limits as per the manufacturer's		3	1	2
	PC11. Adjust the direction of drum rotation for mixing as per the requirement		2.5	0.5	2

	PC12. Adjust the concrete chute to the discharge position		2	0	2
	PC13. Discharge concrete to the desired location at the site		2	0	2
	PC14. Use the emergency stop button to disable all power to the transit mixer in case of a crisis as per operational manual		2	1	1
	PC15. Turn off ignition after finishing operations as per the instructions given in the instructional manual		1	0.5	0.5
	PC16. Ensure gear is in neutral position post usage		1	0.5	0.5
	PC17. Ensure bucket drum and concrete-skid are cleaned as per the manufacturer's instructional manual		2.5	0.5	2
	PC18. Remove attachments after use		1	0.5	0.5
	PC19. Ensure that the machine is secured when left unattended		1.5	0.5	1
	PC20. Maintain a production logbook to record all activities performed		1.5	0.5	1
	PC21. Report defects precisely to the supervisor if beyond scope of the role		1.5	0.5	1
		Total	**35**	**12**	**23**
3. IES/N0154 Perform routine maintenance and troubleshooting of a transit mixer	PC1. Assess the right service schedule by tracking machine operating hours	**20**	1	0.5	0.5

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

	PC13. Ensure that bucket arm is lowered before any maintenance operations		1	0.5	0.5
	PC14. Lubricate fifth wheel and pinion with grease or equivalent lubrication using a hard bristle brush		1	0.5	0.5
	PC15. Complete timely and legibly daily/weekly maintenance sheets as provided by the company		0.5	0	0.5
	PC16. Ensure that no maintenance task on the engine is performed when running or still hot		1	0.5	0.5
	PC17. Use appropriate tools are used while troubleshooting		1	0.5	0.5
	PC18. Diagnose the problem		0.5	0	0.5
	PC19. Handle and dispose waste based on environmental guidelines at the work place		1.5	0.5	1
	PC20. Follow reporting procedures as laid down by the employer		0.5	0	0.5
	PC21. Complete all documentation in the prescribed standards in a timely manner		0.5	0	0.5
	PC22. Report defects precisely to the supervisor if beyond scope of his role		0.5	0	0.5
		Total	**20**	**7**	**13**
4. IES/N7601 Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/ guidelines at the work site	**15**	1.5	0.5	1
	PC2. Use Personal Protective Equipment (PPE) and other safety gear as applicable to the equipment and the worksite		1.5	0.5	1

	PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk		1.5	0.5	1
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		1.5	0.5	1
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	1	1
	PC6. Operate various grades of fire extinguishers, as applicable		2.5	0.5	2
	PC7. Support in administering basic first aid and report to concerned team members, as required, in case of an accident		1.5	0.5	1
	PC8. Respond promptly and appropriately to an accident/ incident or emergency situation, within limits of your role and responsibility		1.5	0.5	1
	PC9. Record and report details related to operations, incidents or accidents, as applicable		1.5	0.5	1
		Total	**15**	**5**	**10**