



Foreman - Roads & Runways

QP Code: CON/Q1003

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NSQF Level: 5

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Contents

CON/Q1003: Foreman - Roads & Runways	3
<i>Brief Job Description</i>	3
Applicable National Occupational Standards (NOS)	3
<i>Compulsory NOS</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
CON/N1007: Organise and allocate resources for pavement construction work	5
CON/N1008: Conduct laying of base and sub- base course of pavements	11
CON/N1009: Conduct laying of binding and wearing course of pavements	18
CON/N1010: Conduct laying of pipes for drainage works/ service lines	24
CON/N8001: Work effectively in a team to deliver desired results at the workplace	29
CON/N9002: Manage workplace for safe and healthy work environment	33
Assessment Guidelines and Weightage	37
<i>Assessment Guidelines</i>	37
<i>Assessment Weightage</i>	38
Acronyms	39
Glossary	40



CON/Q1003: Foreman - Roads & Runways

Brief Job Description

This job role is responsible for conducting laying of flexible and rigid pavements by organizing/ allocating resources, monitoring construction of pavement layers/ laying of drainage pipelines and carrying out checks to completed/ ongoing works as per applicable drawing/ specification. The individual should possess sound technical knowledge, should be able to monitor and maintain safe and quality working practices

Personal Attributes

The job role requires the job holder to be well aware of the concepts of different layers of pavements, sequence and methodologies of laying the same, use of vehicles and machineries in construction of pavements. Additionally the workman should know the health, safety and environmental norms, specifications, relevant code of practices and organizational policies applicable for construction of pavements. The individual should be mentally and physically fit to work in harsh environment of construction sites and able to communicate/ instruct clearly to superiors/ subordinates respectively in order to complete task within specified timeline.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [CON/N1007: Organise and allocate resources for pavement construction work](#)
2. [CON/N1008: Conduct laying of base and sub- base course of pavements](#)
3. [CON/N1009: Conduct laying of binding and wearing course of pavements](#)
4. [CON/N1010: Conduct laying of pipes for drainage works/ service lines](#)
5. [CON/N8001: Work effectively in a team to deliver desired results at the workplace](#)
6. [CON/N9002: Manage workplace for safe and healthy work environment](#)

Qualification Pack (QP) Parameters

Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Roads & Runway Construction



Qualification Pack



Country	India
NSQF Level	5
Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2004/7122.50
Minimum Educational Qualification & Experience	12th Class with 5-10 Years of experience as a certified Pavement Layer OR 12th Class with 10-15 Years of experience in case of a Non trained worker, in same occupation
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Recommended training period of 16-20 weeks as per QP of Foreman Roads & Runways
Minimum Job Entry Age	18 Years
Last Reviewed On	23/08/2015
Next Review Date	31/03/2022
Deactivation Date	17/08/2023
NSQC Approval Date	09/10/2017
Version	1.0
Reference code on NQR	2017/CON/CSDCI/02009
NQR Version	1.0



CON/N1007: Organise and allocate resources for pavement construction work

Description

This unit describes the skills and knowledge required to organise and allocate resources for pavement construction work.

Scope

The scope covers the following:

- Organize resources at site as per work requirement
- Engage manpower and resources for pavement construction work

Elements and Performance Criteria

Organize resources at site as per work requirement

To be competent, the user/individual on the job must be able to:

- PC1.** confirm work targets from superior or concerned authority to be achieved in a day/ week as per applicability
- PC2.** read and interpret drawings and relevant specifications to determine type and quantity of required material
- PC3.** communicate to superior regarding requirement of material for daily construction work such as aggregates, fines, bitumen etc
- PC4.** communicate to superior regarding requirement of vehicle/ equipment relevant to construction work and for resource mobilization
- PC5.** communicate to superior regarding requirement of manpower as per work target
- PC6.** conduct storing and stacking of materials and tools at work locations following standard practice of storing
- PC7.** conduct erection of protective and safety cover/ barrication for material and equipment to prevent wastage or unauthorized access
- PC8.** conduct erection of barrication, dividers, safety signage as per applicable safe work methodology

Engage manpower and resources for pavement construction work

To be competent, the user/individual on the job must be able to:

- PC9.** assign specific tasks to respective workmen groups
- PC10.** brief safe work methods and parameters to be followed by subordinates while handling/ storing materials, carrying out earthwork or laying layers of pavements
- PC11.** ensure required tools are available at worksite prior to commencement of relevant activity
- PC12.** monitor consumption and wastage of construction material
- PC13.** dispose waste to specified location and recycle usable wastes
- PC14.** confirm that the equipments to be used for compaction, material shifting, grading, surfacing are properly functioning
- PC15.** confirm that the material shifting vehicle operators have valid driving license



Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard practices for organising and allocating resources for pavement laying works
- KU2.** safety rules and regulations for handling and storing required tools, equipment and materials
- KU3.** personal protection including the use of the related safety gears & safety equipment
- KU4.** service request procedures for tools, materials and equipments
- KU5.** statutory compliance requirement related to working at height
- KU6.** statutory compliance requirement related to workmen engagement
- KU7.** daily/ weekly work target to be achieved
- KU8.** concept of reading construction drawings
- KU9.** applicable tolerance limits for each activity involved in pavement laying operation
- KU10.** sequence of different activities in pavement laying works
- KU11.** type of construction equipments/ vehicles required for pavement construction
- KU12.** functions of construction equipments/ vehicles and their sequence of use
- KU13.** concept of reading construction drawings
- KU14.** basic concept of calculating material requirement for pavement laying works on day to day basis
- KU15.** concept on manpower calculation as per nature of work and required time for completion
- KU16.** requirement of tools as per scheduled activities
- KU17.** work methods to minimize material wastage and recycling of the usable wastes
- KU18.** checks to be performed to the vehicle and operators

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in at least two language, preferably in the local language of the site and basic English
- GS2.** provide clear and simple instructions, details & sketches to sub-ordinate
- GS3.** record and document daily productivity report, daily labour attendance & details regarding work
- GS4.** prepare basic status updates for the superiors in the prescribed format
- GS5.** read one or more language, preferably in the local language of the site
- GS6.** read drawing, specification and standards related to relevant work
- GS7.** read key documents including quality standards and standard working methods
- GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- GS9.** speak in one or more language, preferably in one of the local languages of the site
- GS10.** listen and follow instructions clearly given by the superior
- GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- GS12.** communicate to superiors immediately for requirement of materials and equipments



Qualification Pack



- GS13.** estimate required material, tools, vehicles and equipment required for work
- GS14.** determine manpower requirement for roads and runway works
- GS15.** decide alternate course of action in case of hindrance to work
- GS16.** determine appropriate locations for storing and stacking of items
- GS17.** determine suitability of equipment by assessing whether they are functioning properly
- GS18.** plan work & organize required resource in coordination with team members and superior
- GS19.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- GS20.** ensure completion of work as per agreed time schedule and quality
- GS21.** resolve and solve any conflict within the team
- GS22.** ensure availability of required tools, equipments and materials for relevant work
- GS23.** assess quantity of materials for day work
- GS24.** optimize resources
- GS25.** track the consumption rate of materials and minimize wastages
- GS26.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirement
- GS27.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirement



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Organize resources at site as per work requirement</i>	20.4	32.6	-	-
PC1. confirm work targets from superior or concerned authority to be achieved in a day/ week as per applicability	2.4	2.6	-	-
PC2. read and interpret drawings and relevant specifications to determine type and quantity of required material	2.4	3.6	-	-
PC3. communicate to superior regarding requirement of material for daily construction work such as aggregates, fines, bitumen etc	2.4	3.6	-	-
PC4. communicate to superior regarding requirement of vehicle/ equipment relevant to construction work and for resource mobilization	2.4	3.6	-	-
PC5. communicate to superior regarding requirement of manpower as per work target	2.8	5.2	-	-
PC6. conduct storing and stacking of materials and tools at work locations following standard practice of storing	2.8	5.2	-	-
PC7. conduct erection of protective and safety cover/ barrication for material and equipment to prevent wastage or unauthorized access	2.8	5.2	-	-
PC8. conduct erection of barrication, dividers, safety signage as per applicable safe work methodology	2.4	3.6	-	-
<i>Engage manpower and resources for pavement construction work</i>	19.6	27.4	-	-
PC9. assign specific tasks to respective workmen groups	2.8	5.2	-	-
PC10. brief safe work methods and parameters to be followed by subordinates while handling/ storing materials, carrying out earthwork or laying layers of pavements	2.8	5.2	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure required tools are available at worksite prior to commencement of relevant activity	2.8	5.2	-	-
PC12. monitor consumption and wastage of construction material	2.8	5.2	-	-
PC13. dispose waste to specified location and recycle usable wastes	2.8	2.2	-	-
PC14. confirm that the equipments to be used for compaction, material shifting, grading, surfacing are properly functioning	2.8	2.2	-	-
PC15. confirm that the material shifting vehicle operators have valid driving license	2.8	2.2	-	-
NOS Total	40	60	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N1007
NOS Name	Organise and allocate resources for pavement construction work
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Roads & Runway Construction
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017



CON/N1008: Conduct laying of base and sub- base course of pavements

Description

This unit describes the skills and knowledge required to conduct laying of base and sub- base course of pavements.

Scope

The scope covers the following:

- Ensure completion of survey and preparatory works
- Check activities carried out for construction of base course

Elements and Performance Criteria

Ensure completion of survey and preparatory works

To be competent, the user/individual on the job must be able to:

- PC1.** coordinate with surveyor for lay-outs, marking of level and edges prior to preparation of sub-grade for pavement
- PC2.** check level/ slope of earthwork in sub-grade by conducting checks and ensure it is as per drawing/ specification
- PC3.** conduct repair to the potholes, unstable/ loose soil by suitable methods as instructed by superior or quality department
- PC4.** conduct cleaning of surface of every pavement layers as per specification, prior to lay next layer
- PC5.** ensure derbies or wastes are disposed/ dumped to specified location as per work plan
- PC6.** carry out analysis of hazards conditions at work sites due to movement of vehicles or equipments, handling of hot asphalt for pavements, vehicular traffic and report to concerned authority
- PC7.** coordinate with superior or concerned departments to arrange safety measures, electrical connections and quality checks for progression of works
- PC8.** fill up permits, checklists, labour report formats as per organizational procedure and take approval from superior

Check activities carried out for construction of base course

To be competent, the user/individual on the job must be able to:

- PC9.** read and interpret drawing, material specification prior to start pavement laying operation and as per requirement thereafter
- PC10.** check construction materials, pipe segments visually for their usability as per material specification
- PC11.** monitor and check filling work to construct sub grade by using suitable material and ensure impurities are cleared and disposed to the specified location
- PC12.** check that aggregates are raked properly, spread along the width and stretch maintaining uniform thickness and edge within the acceptable tolerance limit



Qualification Pack



- PC13.** monitor and conduct compaction of sub-base/ base course layer using roller of specified weight as per applicable/ standard work methodology
- PC14.** monitor void filling by finer materials (sand/ morrum/ stone dust), application of water and further rolling
- PC15.** report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the completion of compaction process
- PC16.** conduct application of prime coating using specified compounds by specified application methods
- PC17.** carry out necessary measurements using appropriate measuring instruments
- PC18.** report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the penetration of prime coat compound in to the laid base course layers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard practices for pavement laying works
- KU2.** safety rules and regulations for handling and storing required tools, equipment and materials
- KU3.** personal protection including the use of the related safety gears & safety equipment
- KU4.** service request procedures for tools, materials and equipments
- KU5.** statutory compliance requirement related to working at height
- KU6.** statutory compliance requirement related to workmen engagement
- KU7.** relevance of survey points, co-ordinates in construction activities
- KU8.** applicable tolerance limits for each activity involved in pavement laying operation
- KU9.** methods of repairing to the potholes, damaged/ weak base of pavements
- KU10.** preparatory works those are to be completed and their required parameters to be checked
- KU11.** hazards involved in material handling and construction of pavements
- KU12.** safety control measures to be adopted while working near vehicle/construction equipments, near to the vehicular traffic movement, handling hot asphalt mix
- KU13.** documentation to be completed as per quality norms
- KU14.** concept of reading construction drawings and specifications
- KU15.** acceptance criteria of construction materials to be used for pavement laying
- KU16.** standard practices for soil compaction by using roller/ equipments
- KU17.** characteristics of construction materials such as soil, aggregates, asphalt, filler material etc
- KU18.** method and sequence of watering of different layers of pavements for compaction
- KU19.** sequence of different qualitative checks involved in pavement construction and their desired outcomes
- KU20.** standard methods and sequence of application of tack coat and prime coat
- KU21.** visual checks to be carried out to applied prime/ tack coat
- KU22.** method of liner, areal and volumetric measurements and conversion of units

Generic Skills (GS)



Qualification Pack



User/individual on the job needs to know how to:

- GS1.** write in at least two language, preferably in the local language of the site and basic English
- GS2.** provide clear and simple instructions, details & sketches to sub-ordinate
- GS3.** record and document daily productivity report, daily labour attendance & details regarding work
- GS4.** prepare basic status updates for the superiors in the prescribed format
- GS5.** read one or more language, preferably in the local language of the site
- GS6.** read drawing, specification and standards related to relevant work
- GS7.** read key documents including quality standards and standard working methods
- GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- GS9.** speak in one or more language, preferably in one of the local languages of the site
- GS10.** listen and follow instructions clearly given by the superior
- GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- GS12.** communicate to superiors immediately for requirement of materials and equipments
- GS13.** estimate required material, tools, vehicles and equipment required for work
- GS14.** decide alternate course of action in case of hindrance to work
- GS15.** determine whether all compliance requirements in terms of permits, checklists and labour report formats are complete
- GS16.** determine suitability of construction material and pipe segments
- GS17.** determine appropriate compounds for prime coating
- GS18.** plan work & organize required resource in coordination with team members and superior
- GS19.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- GS20.** plan and arrange for safety measures and quality checks to ensure smooth functioning of relevant work
- GS21.** ensure completion of work as per agreed time schedule and quality
- GS22.** resolve and solve any conflict within the team
- GS23.** ensure availability of required tools, equipments and materials for relevant work
- GS24.** report to concerned authority for hazardous conditions at workplace
- GS25.** ensure that adequate repairs of potholes, loose soil, etc. are carried out
- GS26.** ensure that surface has been cleaned and debris has been disposed off
- GS27.** carry out necessary checks on completion of the compaction process and report to superiors
- GS28.** assess quantity of materials for day work
- GS29.** optimize resources
- GS30.** minimize wastages
- GS31.** analyze and assess slope of earthwork in the sub grade to check whether it meets the specifications
- GS32.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirement



Qualification Pack



- GS33.** identify and assess how violation of any safety norms may lead to accidents
- GS34.** analyze whether compaction and filling of sub grades is as per requirements



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure completion of survey and preparatory works</i>	17.2	25.8	-	-
PC1. coordinate with surveyor for lay-outs, marking of level and edges prior to preparation of sub-grade for pavement	2	3	-	-
PC2. check level/ slope of earthwork in sub-grade by conducting checks and ensure it is as per drawing/ specification	2	3	-	-
PC3. conduct repair to the potholes, unstable/ loose soil by suitable methods as instructed by superior or quality department	2	3	-	-
PC4. conduct cleaning of surface of every pavement layers as per specification, prior to lay next layer	2	3	-	-
PC5. ensure derbies or wastes are disposed/ dumped to specified location as per work plan	2	3	-	-
PC6. carry out analysis of hazards conditions at work sites due to movement of vehicles or equipments, handling of hot asphalt for pavements, vehicular traffic and report to concerned authority	2.4	3.6	-	-
PC7. coordinate with superior or concerned departments to arrange safety measures, electrical connections and quality checks for progression of works	2.4	3.6	-	-
PC8. fill up permits, checklists, labour report formats as per organizational procedure and take approval from superior	2.4	3.6	-	-
<i>Check activities carried out for construction of base course</i>	22.8	34.2	-	-
PC9. read and interpret drawing, material specification prior to start pavement laying operation and as per requirement thereafter	2.4	3.6	-	-
PC10. check construction materials, pipe segments visually for their usability as per material specification	2	3	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. monitor and check filling work to construct sub grade by using suitable material and ensure impurities are cleared and disposed to the specified location	2.4	3.6	-	-
PC12. check that aggregates are raked properly, spread along the width and stretch maintaining uniform thickness and edge within the acceptable tolerance limit	2.4	3.6	-	-
PC13. monitor and conduct compaction of sub-base/ base course layer using roller of specified weight as per applicable/ standard work methodology	2.4	3.6	-	-
PC14. monitor void filling by finer materials (sand/ morrum/ stone dust), application of water and further rolling	2.4	3.6	-	-
PC15. report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the completion of compaction process	2	3	-	-
PC16. conduct application of prime coating using specified compounds by specified application methods	2.4	3.6	-	-
PC17. carry out necessary measurements using appropriate measuring instruments	2.4	3.6	-	-
PC18. report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the penetration of prime coat compound in to the laid base course layers	2	3	-	-
NOS Total	40	60	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N1008
NOS Name	Conduct laying of base and sub- base course of pavements
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Roads & Runway Construction
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017



CON/N1009: Conduct laying of binding and wearing course of pavements

Description

This unit describes the skills and knowledge required to conduct laying of binding and wearing course of pavements.

Scope

The scope covers the following:

- Check construction of binding and wearing course of flexible pavement as per specification
- Check construction of binding and wearing course of rigid pavement as per specification

Elements and Performance Criteria

Check construction of binding and wearing course of flexible pavement as per specification

To be competent, the user/individual on the job must be able to:

- PC1.** monitor preparation of asphalt mix by checking proportion of construction materials and heating arrangement if done manually
- PC2.** supervise and monitor asphalt spreading both by mechanically or manually
- PC3.** ensure that the hot asphalt is handled, placed and spread safely (if spread manually)
- PC4.** ensure uniformity in thickness and area of coverage by binding layer (asphalt mix)
- PC5.** monitor motion of paver and asphalt feeding to the paver at required interval
- PC6.** monitor and conduct compaction of binding course layer using roller of specified weight as per applicable/ standard work methodology
- PC7.** report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the completion of compaction process
- PC8.** monitor application of tack coats to completed binding course surface or existing pavement surface by manual means or by equipments
- PC9.** conduct application and spreading of wearing course asphalt by mechanical means or manually
- PC10.** conduct final rolling till required profile and compactness is achieved by suitable roller
- PC11.** conduct surfacing of pavements as per specification using suitable surface materials
- PC12.** ensure level, slopes, curves are constructed as per drawing by conducting repetitive survey at required interval throughout the pavement laying process
- PC13.** ensure erection of barrication, safety signage and installation of proper illumination systems at workplace

Check construction of binding and wearing course of rigid pavement as per specification

To be competent, the user/individual on the job must be able to:

- PC14.** check cleanliness of bed of pavement prior to lay reinforcement bars
- PC15.** check diameter, number, cleanliness and completion of tying of reinforcement bars as per instruction
- PC16.** check location of expansion joints by carrying out suitable measurements and ensure their location is as per relevant drawing



Qualification Pack



- PC17.** carry out marking and measurements to ensure location of shuttering arrangements, supporting arrangements, expansion joints and utility drainage structures are as per drawing/ schematics
- PC18.** monitor paving activity when paver is used for laying wearing course
- PC19.** monitor concreting work when wearing course is laid manually
- PC20.** ensure poured concrete is finished within the specified time limit as per specification
- PC21.** allocate labour for curing of concrete, organize curing arrangements and ensure curing is as per specification

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard practices for pavement laying works
- KU2.** safety rules and regulations for handling and storing required tools, equipment and materials
- KU3.** personal protection including the use of the related safety gears & safety equipment
- KU4.** service request procedures for tools, materials and equipments
- KU5.** statutory compliance requirement related to working at height
- KU6.** statutory compliance requirement related to workmen engagement
- KU7.** detailed procedure of preparation of asphalt manually
- KU8.** safe procedure of spreading asphalt using appropriate hand tools
- KU9.** visual inspection and measurements to be carried out to asphalt layers
- KU10.** standard method of rolling and compacting wearing course layers
- KU11.** location of slopes/ curves in a pavement and necessary measurements to be carried out from given reference points
- KU12.** basic checks to be carried out on reinforcement steel bars
- KU13.** linear measurements using measuring instruments
- KU14.** preparatory works to be checked prior to laying reinforcement bars
- KU15.** method of checking dimension, alignment and level of shuttering works using appropriate tools
- KU16.** standard procedure of concreting and finishing
- KU17.** quality parameters to be checked in concrete works
- KU18.** concept of grade, setting time, workability of concrete
- KU19.** functions of retarders or plasticizers and their effects on concrete mix
- KU20.** standard practice of curing of concrete and its importance

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in at least two language, preferably in the local language of the site and basic English
- GS2.** provide clear and simple instructions, details & sketches to sub-ordinate



Qualification Pack



- GS3.** record and document daily productivity report, daily labour attendance & details regarding work
- GS4.** prepare basic status updates for the superiors in the prescribed format
- GS5.** read one or more language, preferably in the local language of the site
- GS6.** read drawing, specification and standards related to relevant work
- GS7.** read key documents including quality standards and standard working methods
- GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- GS9.** speak in one or more language, preferably in one of the local languages of the site
- GS10.** listen and follow instructions clearly given by the superior
- GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- GS12.** communicate to superiors immediately for requirement of materials and equipments
- GS13.** estimate required material, tools, vehicles and equipment required for work
- GS14.** decide alternate course of action in case of hindrance to work
- GS15.** decide whether the correct tools are used for pavement laying works
- GS16.** determine and select appropriate material for surfacing
- GS17.** determine whether level, slopes and curves are as per specifications
- GS18.** determine appropriate location of expansion joints as per specifications
- GS19.** plan work & organize required resource in coordination with team members and superior
- GS20.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- GS21.** plan and arrange for safety measures and quality checks to ensure smooth functioning of relevant work
- GS22.** ensure completion of work as per agreed time schedule and quality
- GS23.** resolve and solve any conflict within the team
- GS24.** ensure availability of required tools, equipments and materials for relevant work
- GS25.** report to concerned authority for hazardous conditions at workplace
- GS26.** ensure that adequate repairs of potholes, loose soil, etc. are carried out
- GS27.** assess quantity of materials for day work
- GS28.** optimize resources
- GS29.** minimize wastages
- GS30.** analyze and assess slope of earthwork in the sub grade to check whether it meets the specifications
- GS31.** evaluate uniformity of thickness and area of coverage of asphalt mix
- GS32.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirement
- GS33.** identify and assess how violation of any safety norms may lead to accidents



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Check construction of binding and wearing course of flexible pavement as per specification</i>	25.2	37.8	-	-
PC1. monitor preparation of asphalt mix by checking proportion of construction materials and heating arrangement if done manually	2	3	-	-
PC2. supervise and monitor asphalt spreading both by mechanically or manually	2	3	-	-
PC3. ensure that the hot asphalt is handled, placed and spread safely (if spread manually)	1.6	2.4	-	-
PC4. ensure uniformity in thickness and area of coverage by binding layer (asphalt mix)	2	3	-	-
PC5. monitor motion of paver and asphalt feeding to the paver at required interval	2	3	-	-
PC6. monitor and conduct compaction of binding course layer using roller of specified weight as per applicable/ standard work methodology	2	3	-	-
PC7. report to superior/ concerned authority regarding inspection/ checks to be carried out to determine the completion of compaction process	2	3	-	-
PC8. monitor application of tack coats to completed binding course surface or existing pavement surface by manual means or by equipments	2	3	-	-
PC9. conduct application and spreading of wearing course asphalt by mechanical means or manually	1.6	2.4	-	-
PC10. conduct final rolling till required profile and compactness is achieved by suitable roller	2	3	-	-
PC11. conduct surfacing of pavements as per specification using suitable surface materials	2	3	-	-
PC12. ensure level, slopes, curves are constructed as per drawing by conducting repetitive survey at required interval throughout the pavement laying process	2	3	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. ensure erection of barrication, safety signage and installation of proper illumination systems at workplace	2	3	-	-
<i>Check construction of binding and wearing course of rigid pavement as per specification</i>	14.8	22.2	-	-
PC14. check cleanliness of bed of pavement prior to lay reinforcement bars	1.6	2.4	-	-
PC15. check diameter, number, cleanliness and completion of tying of reinforcement bars as per instruction	1.6	2.4	-	-
PC16. check location of expansion joints by carrying out suitable measurements and ensure their location is as per relevant drawing	2	3	-	-
PC17. carry out marking and measurements to ensure location of shuttering arrangements, supporting arrangements, expansion joints and utility drainage structures are as per drawing/ schematics	2	3	-	-
PC18. monitor paving activity when paver is used for laying wearing course	2	3	-	-
PC19. monitor concreting work when wearing course is laid manually	2	3	-	-
PC20. ensure poured concrete is finished within the specified time limit as per specification	1.6	2.4	-	-
PC21. allocate labour for curing of concrete, organize curing arrangements and ensure curing is as per specification	2	3	-	-
NOS Total	40	60	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N1009
NOS Name	Conduct laying of binding and wearing course of pavements
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Roads & Runway Construction
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017



CON/N1010: Conduct laying of pipes for drainage works/ service lines

Description

This unit describes the skills and knowledge required to conduct laying of pipes for drainage works/ service lines.

Scope

The scope covers the following:

- Ensure that the drainage pipes and service lines are laid as per specification

Elements and Performance Criteria

Ensure that the drainage pipes and service lines are laid as per specification

To be competent, the user/individual on the job must be able to:

- PC1.** ensure that the pipe segments are handled properly by labours or equipments and stored/stacked as per standard practise
- PC2.** measure pipe dimension and perform visual checks and confirm with relevant drawing
- PC3.** confirm that the level of the base of the pipe trench is in appropriate profile and centre line matches with specification
- PC4.** monitor lowering and placement of pipes in to their specified location by instructing equipment operators
- PC5.** carry out necessary measurements to check orientation and levels of laid pipes
- PC6.** conduct necessary adjustments to pipelines and provide supports to the assembly by using appropriate supporting system
- PC7.** ensure pipe segments are locked properly and joints are provided with specified sealants
- PC8.** ensure proper joining of pipelines with drainage structure like manholes, storm water cat pits etc
- PC9.** offer pipelines for quality tests as per proposed quality plan
- PC10.** carry out remedial/ repairing works as per agreed work method

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard practices for handling drainage pipeline segments
- KU2.** safety rules and regulations for handling and storing required tools, equipment and materials
- KU3.** personal protection including the use of the related safety gears & safety equipment
- KU4.** service request procedures for tools, materials and equipments
- KU5.** statutory compliance requirement related to working at height
- KU6.** statutory compliance requirement related to workmen engagement
- KU7.** concept of reading construction drawings



Qualification Pack



- KU8.** applicable tolerance limits for each activity involved in pavement laying operation method of liner, areal and volumetric measurements and conversion of units
- KU9.** method of laying, aligning and joining pipe segments
- KU10.** checks to be carried out to ensure alignment, level and orientation of the pipelines
- KU11.** standard method of joining pipe segments by using appropriate hand tools

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in at least two language, preferably in the local language of the site and basic English
- GS2.** provide clear and simple instructions, details & sketches to sub-ordinate
- GS3.** record and document daily productivity report, daily labour attendance & details regarding work
- GS4.** prepare basic status updates for the superiors in the prescribed format
- GS5.** read one or more language, preferably in the local language of the site
- GS6.** read drawing, specification and standards related to relevant work
- GS7.** read key documents including quality standards and standard working methods
- GS8.** read various, sign boards, safety rules and safety tags , instructions related to exit routes during emergency at the workplace
- GS9.** speak in one or more language, preferably in one of the local languages of the site
- GS10.** listen and follow instructions clearly given by the superior
- GS11.** provide clear instructions to subordinates for completion of task as per work plan, time schedule and quality
- GS12.** communicate to superiors immediately for requirement of materials and equipments
- GS13.** estimate required material and resources for work
- GS14.** decide alternate course of action in case of hindrance to work
- GS15.** decide whether the correct tools are used for pavement laying works
- GS16.** determine appropriate location for lowering of pipes as per specifications
- GS17.** determine whether pipes have been joined appropriately with other drainage structures
- GS18.** plan work & organize required resource in coordination with team members and superior
- GS19.** plan work targets, allocate time schedule to sub-ordinates and organize completion of task within allocated time
- GS20.** plan and arrange for safety measures and quality checks to ensure smooth functioning of relevant work
- GS21.** ensure completion of work as per agreed time schedule and quality
- GS22.** resolve and solve any conflict within the team
- GS23.** ensure availability of required tools, equipments and materials for relevant work
- GS24.** report to concerned authority for hazardous conditions at workplace
- GS25.** check for any gaps between pipes segment and cases of joints without sealant, and report the same to superiors
- GS26.** ensure that necessary repairs are carried out on pipes



Qualification Pack



- GS27.** assess quantity of materials for day work
- GS28.** optimize resources
- GS29.** minimize wastages
- GS30.** visually check and evaluate whether pipe dimensions are as per specifications
- GS31.** evaluate suitability of the level of the base of the pipe trench
- GS32.** evaluate dimensions, level and orientation of the pipes laid
- GS33.** assess complexity of the tasks and provide guidance for carrying out corrective action as per requirement
- GS34.** identify and assess how violation of any safety norms may lead to accidents



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure that the drainage pipes and service lines are laid as per specification</i>	40	60	-	-
PC1. ensure that the pipe segments are handled properly by labours or equipments and stored/stacked as per standard practise	4	6	-	-
PC2. measure pipe dimension and perform visual checks and confirm with relevant drawing	4	6	-	-
PC3. confirm that the level of the base of the pipe trench is in appropriate profile and centre line matches with specification	4	6	-	-
PC4. monitor lowering and placement of pipes in to their specified location by instructing equipment operators	4	6	-	-
PC5. carry out necessary measurements to check orientation and levels of laid pipes	4	6	-	-
PC6. conduct necessary adjustments to pipelines and provide supports to the assembly by using appropriate supporting system	4	6	-	-
PC7. ensure pipe segments are locked properly and joints are provided with specified sealants	4	6	-	-
PC8. ensure proper joining of pipelines with drainage structure like manholes, storm water cat pits etc	4	6	-	-
PC9. offer pipelines for quality tests as per proposed quality plan	4	6	-	-
PC10. carry out remedial/ repairing works as per agreed work method	4	6	-	-
NOS Total	40	60	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N1010
NOS Name	Conduct laying of pipes for drainage works/ service lines
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Roads & Runway Construction
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/08/2015
Next Review Date	31/03/2022
NSQC Clearance Date	09/10/2017



CON/N8001: Work effectively in a team to deliver desired results at the workplace

Description

This unit describes the skills and knowledge required to work effectively within a team to achieve the desired results

Scope

The scope covers the following:

- Interact and communicate effectively with co-workers, superiors and sub-ordinates across different teams
- Support co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task

Elements and Performance Criteria

Interact and communicate in effective and conclusive manner

To be competent, the user/individual on the job must be able to:

- PC1.** pass on work related information/ requirement clearly to the team members
- PC2.** inform co-workers and superiors about any kind of deviations from work
- PC3.** address the problems effectively and report if required to immediate supervisor appropriately
- PC4.** receive instructions clearly from superiors and respond effectively on the same
- PC5.** communicate to team members/subordinates for appropriate work technique and method
- PC6.** seek clarification and advice as per the requirement and applicability

Support co-workers to execute project requirements

To be competent, the user/individual on the job must be able to:

- PC7.** hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams
- PC8.** work together with co-workers in a synchronized manner

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** own roles and responsibilities
- KU2.** importance of effective communication and establishing strong working
- KU3.** risks of a failure in teamwork in terms of effects on project outcomes, timelines, safety at the construction site, etc.
- KU4.** different modes of communication, and its appropriate usage
- KU5.** importance of creating healthy and cooperative work environment among the gangs of workers



Qualification Pack



- KU6.** different activities within his work area where an interaction with other workers is required
- KU7.** applicable techniques of work, properties of materials used, tools and tackles used, safety standards that co- workers might need as per the requirement
- KU8.** importance of proper and effective communication and the expected adverse
- KU9.** importance and need of supporting co-workers facing problems for smooth

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in at least one language, preferably in the local language of the site
- GS2.** read in one or more languages, preferably the local language of the site
- GS3.** read communication from team members regarding work completed, materials used, tools and tackles used, support required
- GS4.** speak in one or more languages, preferably in one of the local language of the site
- GS5.** listen and follow instructions / communication shared by superiors/ co-workers regarding team requirements or interfaces during work processes
- GS6.** orally communicate with co-workers regarding support required to complete the respective work
- GS7.** decide on what information is to be shared with co-workers within the team or from interfacing gang of workers
- GS8.** plan work and organize required resources in coordination with team members
- GS9.** complete all assigned task in coordination with team members
- GS10.** take initiative in resolving issues among co-workers or report the same to superiors
- GS11.** ensure best ways of coordination among team members
- GS12.** communicate with co-workers considering their educational / social background
- GS13.** evaluate the complexity of task and determine if any guidance is required from superiors



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact and communicate in effective and conclusive manner</i>	28	42	-	-
PC1. pass on work related information/ requirement clearly to the team members	4	6	-	-
PC2. inform co-workers and superiors about any kind of deviations from work	4	6	-	-
PC3. address the problems effectively and report if required to immediate supervisor appropriately	8	12	-	-
PC4. receive instructions clearly from superiors and respond effectively on the same	4	6	-	-
PC5. communicate to team members/subordinates for appropriate work technique and method	4	6	-	-
PC6. seek clarification and advice as per the requirement and applicability	4	6	-	-
<i>Support co-workers to execute project requirements</i>	12	18	-	-
PC7. hand over the required material, tools tackles, equipment and work fronts timely to interfacing teams	6	9	-	-
PC8. work together with co-workers in a synchronized manner	6	9	-	-
NOS Total	40	60	-	-



Qualification Pack



National Occupational Standards (NOS) Parameters

NOS Code	CON/N8001
NOS Name	Work effectively in a team to deliver desired results at the workplace
Sector	Construction
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.2
Last Reviewed Date	23/05/2015
Next Review Date	31/03/2022
NSQC Clearance Date	21/07/2016



CON/N9002: Manage workplace for safe and healthy work environment

Description

This unit describes the skill and knowledge required to maintain a healthy & safe working environment for the group of people working under an individual

Scope

This unit/task covers the following:

- Ensure healthy and safe working environment for subordinates.
- Ensure effective implementation of health, safety and environment policies and procedures
- Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statutory requirement as followed

Elements and Performance Criteria

Ensure healthy and safe working environment for subordinates

To be competent, the user/individual on the job must be able to:

- PC1.** ensure proper housekeeping at workplace
- PC2.** implement safe handling , stacking methods at workplace / store
- PC3.** ensure that health and safety plan is followed by all subordinates
- PC4.** Identify any hazard in workplace and notify them to appropriate authority
- PC5.** ensure that all safety and protection installation are correctly placed & adequate
- PC6.** ensure safe access is available at work place for movement of workers & materials
- PC7.** ensure safe use of tools and tackles by the workmen as per applicability
- PC8.** ensure appropriate use of following Personal Protective Equipment (PPE) as per applicability: Head Protection (Helmets Ear Protection Fall Protection Foot Protection Face and Eye Protection, Hand &Body Protection Respiratory Protection
- PC9.** maintain entrances & exit from confined spaces , excavated pits and other location in concurrence with safety parameters or instruction from safety personals

Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statutory requirement as followed

To be competent, the user/individual on the job must be able to:

- PC10.** ensure organizational policies and procedures are followed for health , safety and welfare, in relation to: methods of receiving or sourcing information dealing with accidents and emergencies associated with the work and environment reporting stooping work evacuation fire risks and safe exit procedures
- PC11.** follow procedures for accident recording and reporting as per organizational and statutory requirements
- PC12.** ensure effective adherence to response to emergency procedures /protocols
- PC13.** report any case of emergency / risks to the concern people at the construction site
- PC14.** report any perceived risk hazards to the superiors / concerned EHS
- PC15.** demonstrate the use of fire protection equipments for different type of fire hazard



PC16. implement control measures to reduce risk & meet legal requirement as per organizational policies

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the policies, procedures and protocol set up by the EHS Department With respect to Health , Safety and Environment at the respective construction site
- KU2.** reporting procedures in cases of breaches or hazards in site safety, accidents or emergency situations
- KU3.** safe working practices for tools, tackles and equipment
- KU4.** workplace policies and health and safety requirements for dealing with potential risks as defined by the EHS department
- KU5.** how to respond to accidents & emergencies
- KU6.** the appropriate personal protective equipment to be used based on various working conditions
- KU7.** how to use necessary material ,tools, tackles and equipment in a safe and appropriate manner as specified by site EHS for each level and respective workman gang
- KU8.** monitoring working in workplace keeping safety & health in mind

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write in one or more language
- GS2.** read in one or more language
- GS3.** read instructions, rules, guidelines, sign boards related to safety as per the requirements
- GS4.** speak in one or more language, preferably one of the local language at the site
- GS5.** listen and follow instructions shared by site EHS and superiors regarding site safety
- GS6.** communicate reporting of site conditions, hazards, accidents, etc.
- GS7.** decide upon the appropriate application & installation of safety equipments like barricades and nets
- GS8.** decide upon the tools box talks contents
- GS9.** identify any hazards in workplace organize safety equipments prior to commencing work
- GS10.** work to ensure safe and healthy environmental conditions at workplace
- GS11.** identify analysis & report hazards, accidents, health and safety risks, etc. or seek help from the appropriate authorities to address the same as per the guidelines laid down by site EHS
- GS12.** analyze areas of work which are potential safety hazards and could result in damage to life or property for the respective gang at the construction site
- GS13.** respond to critical health risks or accidents on an urgent basis through appropriate actions



Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure healthy and safe working environment for subordinates</i>	20	30	-	-
PC1. ensure proper housekeeping at workplace	2	3	-	-
PC2. implement safe handling , stacking methods at workplace / store	2	3	-	-
PC3. ensure that health and safety plan is followed by all subordinates	2	3	-	-
PC4. Identify any hazard in workplace and notify them to appropriate authority	2	3	-	-
PC5. ensure that all safety and protection installation are correctly placed & adequate	2	3	-	-
PC6. ensure safe access is available at work place for movement of workers & materials	2	3	-	-
PC7. ensure safe use of tools and tackles by the workmen as per applicability	4	6	-	-
PC8. ensure appropriate use of following Personal Protective Equipment (PPE) as per applicability: Head Protection (Helmets Ear Protection Fall Protection Foot Protection Face and Eye Protection, Hand &Body Protection Respiratory Protection	2	3	-	-
PC9. maintain entrances & exit from confined spaces , excavated pits and other location in concurrence with safety parameters or instruction form safety personals	2	3	-	-
<i>Identify and respond to risks / fire and emergencies associated with the work practices, workplace and ensure related organizational & statutory requirement as followed</i>	20	30	-	-



Qualification Pack



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. ensure organizational policies and procedures are followed for health , safety and welfare, in relation to: methods of receiving or sourcing information dealing with accidents and emergencies associated with the work and environment reporting stooping work evacuation fire risks and safe exit procedures	4	6	-	-
PC11. follow procedures for accident recording and reporting as per organizational and statutory requirements	2	3	-	-
PC12. ensure effective adherence to response to emergency procedures /protocols	3	4.5	-	-
PC13. report any case of emergency / risks to the concern people at the construction site	3	4.5	-	-
PC14. report any perceived risk hazards to the superiors / concerned EHS	3	4.5	-	-
PC15. demonstrate the use of fire protection equipments for different type of fire hazard	3	4.5	-	-
PC16. implement control measures to reduce risk & meet legal requirement as per organizational policies	2	3	-	-
NOS Total	40	60	-	-



National Occupational Standards (NOS) Parameters

NOS Code	CON/N9002
NOS Name	Manage workplace for safe and healthy work environment
Sector	Construction
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	23/03/2015
Next Review Date	31/03/2022
NSQC Clearance Date	19/05/2015

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

- 1.Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (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. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Minimum Aggregate Passing % at QP Level : 70



Qualification Pack



(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N1007.Organise and allocate resources for pavement construction work	40	60	-	-	100	10
CON/N1008.Conduct laying of base and sub- base course of pavements	40	60	-	-	100	15
CON/N1009.Conduct laying of binding and wearing course of pavements	40	60	-	-	100	25
CON/N1010.Conduct laying of pipes for drainage works/ service lines	40	60	-	-	100	25
CON/N8001.Work effectively in a team to deliver desired results at the workplace	40	60	-	-	100	10
CON/N9002.Manage workplace for safe and healthy work environment	40	60	-	-	100	15
Total	240	360	-	-	600	100



Qualification Pack



Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training



Qualification Pack



Glossary

Sector	Sector is a conglomeration of different business operations having similar business 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.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) 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 (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications 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 verify that this is the appropriate OS they are looking for.
Scope	Scope is a 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 quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.



Qualification Pack



Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.