



Qualification Pack



Construction Laboratory & Field Technician

QP Code: CON/Q0402

Version: 2.0

NSQF Level: 4

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CON/Q0402: Construction Laboratory & Field Technician

Brief Job Description

Construction Laboratory & Field Technician is responsible for sampling, preparation of test specimen and testing of construction materials including cement, sand, aggregate, bitumen, concrete, brick, and concrete blocks as per standard test procedures.

Personal Attributes

The construction laboratory and field technician is expected to be physically fit to work across various locations with varied environmental conditions. The person should be organized, diligent, methodical, safety-conscious, and a prompt decision-maker. In addition to being a team player, the individual should have good communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

- [1. CON/N0404: Operate and maintain test instruments and equipment for construction material testing](#)
- [2. CON/N0405: Carry out testing of cement, concrete, bricks and aggregates](#)
- [3. CON/N0406: Carry out testing of soil and bitumen in field and site laboratory](#)
- [4. CON/N8001: Work effectively in a team to deliver desired results at the workplace](#)
- [5. CON/N8002: Plan and organize work to meet expected outcomes](#)
- [6. CON/N9001: Work according to personal health, safety and environment protocols at construction site](#)

Qualification Pack (QP) Parameters

Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Quality Assurance & Quality Control
Country	India
NSQF Level	4



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Credits	NA
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3112.9900
Minimum Educational Qualification & Experience	8th Class (ITI (2 years)) with 2 Years of experience in same occupation OR 10th Class with 2 Years of experience in same occupation OR Certificate-NSQF (level 3) with 2 Years of experience in same occupation
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NIL
Minimum Job Entry Age	18 Years
Last Reviewed On	31/03/2022
Next Review Date	31/03/2025
NSQC Approval Date	31/03/2022
Version	2.0
Reference code on NQR	2022/CON/CSDCI/05615
NQR Version	1.0



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CON/N0404: Operate and maintain test instruments and equipment for construction material testing

Description

This unit describes the skills and knowledge required to select, operate and maintain test instruments & equipment for construction material testing.

Scope

The scope covers the following :

- Check the functioning of instruments prior to testing and maintain them
- Use test instruments, apparatus, and equipment for cement, concrete, and brick samples testing.
- Use test instruments, apparatus, and equipment for aggregate testing
- Use test instruments, apparatus, and equipment for soil and bitumen testing

Elements and Performance Criteria

Check the functioning of instruments prior to testing and maintain them

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

- PC1.** check the working condition of instruments and accessories prior to testing
- PC2.** clean and lubricate the instruments as per applicability
- PC3.** check the calibration of instruments prior to testing as per applicability
- PC4.** upkeep all relevant tools, instruments, apparatus and equipment

Use test instruments, apparatus, and equipment for cement, concrete, and brick samples testing

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

- PC5.** use IS sieves, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask and cube moulds for cement testing as per standard operating procedure
- PC6.** use concrete cube moulds/ cylindrical moulds, slump cone apparatus, compacting factor test apparatus, flow table test apparatus, Vee bee test apparatus for concrete test as per standard operating procedure
- PC7.** operate compressing testing machine as per standard operating procedure for cement, concrete cubes and brick samples
- PC8.** monitor and record temperature of curing tank in standard performance
- PC9.** use weighing balance and heating oven for cement, concrete, brick testing as per applicability

Use test instruments, apparatus, and equipment for aggregate testing

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

- PC10.** use pycnometer, cylindrical metal container, oven, weighing balance for testing of fine aggregate as per standard operating procedure
- PC11.** use IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact value apparatus, abrasion value apparatus for testing of coarse aggregate as per standard operating procedure



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PC12. operate compression testing machine to determine crushing value of coarse aggregate as per standard operating procedure

Use test instruments, apparatus, and equipment for soil and bitumen testing

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

PC13. use IS sieves, compaction test apparatus, rapid moisture content meter apparatus, Casagrande's device, mechanical sieve shaker, heating oven, core cutting test apparatus for field testing of soil as per standard operating procedure

PC14. use centrifuge extractor, thermometer, specific gravity bottle, penetrometer, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus for testing of bitumen as per standard operating procedure

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedure for testing of the material sample in laboratory and field relevant to quality assurance and quality control works in construction
- KU2.** safety rules and regulation for handling and storing of construction laboratory and field testing tools, equipment and materials
- KU3.** importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms
- KU4.** service request procedures for tools, materials and equipment as per organizational norms
- KU5.** how to identify different types of tools, instruments and equipment used for testing of cement, concrete, bricks, aggregate, soil and bitumen
- KU6.** importance of periodical calibration of testing tools, apparatus, instruments and equipment
- KU7.** how to check working condition of testing instruments and equipment used for testing of cement, concrete, bricks, aggregate, soil and bitumen
- KU8.** how to operate instruments and equipment as per manufacturer's specification
- KU9.** upkeep, repair and maintenance of tools and equipment
- KU10.** how to operate compression testing machine for testing of cement, concrete, bricks and aggregate

Generic Skills (GS)

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

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches related to setting of instruments, operational manual of instruments, standard test procedure related to testing of material and field testing, various signboards, safety rules, safety tags, and instructions related to exit routes during an emergency at the workplace
- GS3.** speak in one or more language, preferably one of the local language at site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively



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- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Check the functioning of instruments prior to testing and maintain them</i>	6	14	-	-
PC1. check the working condition of instruments and accessories prior to testing	-	-	-	-
PC2. clean and lubricate the instruments as per applicability	-	-	-	-
PC3. check the calibration of instruments prior to testing as per applicability	-	-	-	-
PC4. upkeep all relevant tools, instruments, apparatus and equipment	-	-	-	-
<i>Use test instruments, apparatus, and equipment for cement, concrete, and brick samples testing</i>	9	21	-	-
PC5. use IS sieves, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask and cube moulds for cement testing as per standard operating procedure	-	-	-	-
PC6. use concrete cube moulds/ cylindrical moulds, slump cone apparatus, compacting factor test apparatus, flow table test apparatus, Vee bee test apparatus for concrete test as per standard operating procedure	-	-	-	-
PC7. operate compressing testing machine as per standard operating procedure for cement, concrete cubes and brick samples	-	-	-	-
PC8. monitor and record temperature of curing tank in standard performa	-	-	-	-
PC9. use weighing balance and heating oven for cement, concrete, brick testing as per applicability	-	-	-	-
<i>Use test instruments, apparatus, and equipment for aggregate testing</i>	9	21	-	-
PC10. use pycnometer, cylindrical metal container, oven, weighing balance for testing of fine aggregate as per standard operating procedure	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. use IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact value apparatus, abrasion value apparatus for testing of coarse aggregate as per standard operating procedure	-	-	-	-
PC12. operate compression testing machine to determine crushing value of coarse aggregate as per standard operating procedure	-	-	-	-
<i>Use test instruments, apparatus, and equipment for soil and bitumen testing</i>	6	14	-	-
PC13. use IS sieves, compaction test apparatus, rapid moisture content meter apparatus, Casagrande's device, mechanical sieve shaker, heating oven, core cutting test apparatus for field testing of soil as per standard operating procedure	-	-	-	-
PC14. use centrifuge extractor, thermometer, specific gravity bottle, penetrometer, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus for testing of bitumen as per standard operating procedure	-	-	-	-
NOS Total	30	70	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	CON/N0404
NOS Name	Operate and maintain test instruments and equipment for construction material testing
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Quality Assurance & Quality Control
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



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CON/N0405: Carry out testing of cement, concrete, bricks and aggregates

Description

This unit describes the skills and knowledge required to carry out testing of cement, concrete, bricks and aggregates

Scope

The scope covers the following :

- Carry out testing of cement, concrete, brick and block sample
- Carry out testing of aggregate sample

Elements and Performance Criteria

Carry out testing of cement, concrete, brick and block sample

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

- PC1.** interpret the testing procedures for the construction materials such as cement, concrete, bricks, blocks etc. from standard lab manuals and IS codes, prior to commencement of testing
- PC2.** collect cement/ concrete/ bricks /blocks sample from the concerned lot of the construction materials
- PC3.** perform standard test on the cement sample to determine consistency, initial and final setting, fineness, soundness, specific gravity etc.
- PC4.** perform slump cone, compaction factor and Vee-bee test on fresh concrete as per standard test procedure
- PC5.** cast the cement cube and concrete cube in fields and laboratory as per standard procedure for compressive strength testing of cement and concrete
- PC6.** carry out test to determine compressive strength of cement cube and concrete cube as per standard test procedure
- PC7.** perform test on the brick sample to determine water absorption, compressive strength, efflorescence as per standard test procedure
- PC8.** perform test on the block sample to determine water absorption, density and compressive strength as per standard test procedure
- PC9.** record readings relevant to cement/concrete/bricks/blocks tests in standard performa as per applicability
- PC10.** store tested cement/concrete/bricks/blocks samples safely in laboratory for specified duration
- PC11.** ensure tested cement/concrete/bricks/blocks sample are reused or safely disposed

Carry out testing of aggregate sample

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

- PC12.** interpret the testing procedures for the aggregates from standard lab manuals and IS codes, prior to commencement of testing



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- PC13.** collect samples of fine and coarse aggregates from the concerned lot of materials and carry out operations such as washing, weighing, measuring, sieving, tamping, oven drying etc.as per standard test procedure and applicability
- PC14.** perform tests on fine aggregates to determine specific gravity, particle size distribution, silt content and bulking as per standard test procedure
- PC15.** perform tests on coarse aggregate to determine specific gravity, bulk density, gradation, flakiness index, elongation index, crushing value, impact value, and abrasion value as per standard test procedure
- PC16.** record readings relevant to aggregate test in standard performa as per applicability
- PC17.** ensure tested aggregate sample are reused or safely disposed
- PC18.** store tested aggregate samples safely in laboratory for specified duration

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedure for testing of the material sample in laboratory and field relevant to quality assurance and quality control works in construction
- KU2.** safety rules and regulation for handling and storing of construction laboratory and field testing tools, equipment and materials
- KU3.** importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms
- KU4.** service request procedures for tools, materials and equipment as per organizational norms
- KU5.** how to provide tag/number/label to collected test sample from field or test sample in laboratory
- KU6.** acceptance and rejection criteria of cement, concrete, brick, block and aggregate test sample
- KU7.** visual/physical checking of cement, concrete, brick, aggregate in field
- KU8.** use of tools and equipment for testing of cement, concrete, brick, aggregate in field and in site laboratory
- KU9.** standard procedure for preparing test specimen for various types of cement, concrete, brick, aggregate test in laboratory and in field
- KU10.** standard test procedure for various types of cement, concrete, brick, aggregate test
- KU11.** safe operation of compression testing machine for testing of cement, concrete, brick and aggregate
- KU12.** upkeep, repair and maintenance of tools and equipment relevant to cement, concrete, brick, aggregate testing
- KU13.** importance of periodical calibration of testing tools, apparatus, instruments and equipment
- KU14.** how to read and record reading of gauges and meters along with the least count
- KU15.** disposal/reuse of tested sample in appropriate manner
- KU16.** how to protect instrument and equipment from dust and heat
- KU17.** IS codes relevant to cement, concrete, brick and aggregate testing

Generic Skills (GS)



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

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches related to setting of instruments, operational manual of instruments, standard test procedure related to testing of material and field testing, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively
- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out testing of cement, concrete, brick and block sample</i>	21	49	-	-
PC1. interpret the testing procedures for the construction materials such as cement, concrete, bricks, blocks etc. from standard lab manuals and IS codes, prior to commencement of testing	-	-	-	-
PC2. collect cement/ concrete/ bricks /blocks sample from the concerned lot of the construction materials	-	-	-	-
PC3. perform standard test on the cement sample to determine consistency, initial and final setting, fineness, soundness, specific gravity etc.	-	-	-	-
PC4. perform slump cone, compaction factor and Vee-bee test on fresh concrete as per standard test procedure	-	-	-	-
PC5. cast the cement cube and concrete cube in fields and laboratory as per standard procedure for compressive strength testing of cement and concrete	-	-	-	-
PC6. carry out test to determine compressive strength of cement cube and concrete cube as per standard test procedure	-	-	-	-
PC7. perform test on the brick sample to determine water absorption, compressive strength, efflorescence as per standard test procedure	-	-	-	-
PC8. perform test on the block sample to determine water absorption, density and compressive strength as per standard test procedure	-	-	-	-
PC9. record readings relevant to cement/concrete/bricks/blocks tests in standard performa as per applicability	-	-	-	-
PC10. store tested cement/concrete/bricks/blocks samples safely in laboratory for specified duration	-	-	-	-
PC11. ensure tested cement/concrete/bricks/blocks sample are reused or safely disposed	-	-	-	-
<i>Carry out testing of aggregate sample</i>	9	21	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. interpret the testing procedures for the aggregates from standard lab manuals and IS codes, prior to commencement of testing	-	-	-	-
PC13. collect samples of fine and coarse aggregates from the concerned lot of materials and carry out operations such as washing, weighing, measuring, sieving, tamping, oven drying etc.as per standard test procedure and applicability	-	-	-	-
PC14. perform tests on fine aggregates to determine specific gravity, particle size distribution, silt content and bulking as per standard test procedure	-	-	-	-
PC15. perform tests on coarse aggregate to determine specific gravity, bulk density, gradation, flakiness index, elongation index, crushing value, impact value, and abrasion value as per standard test procedure	-	-	-	-
PC16. record readings relevant to aggregate test in standard performa as per applicability	-	-	-	-
PC17. ensure tested aggregate sample are reused or safely disposed	-	-	-	-
PC18. store tested aggregate samples safely in laboratory for specified duration	-	-	-	-
NOS Total	30	70	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	CON/N0405
NOS Name	Carry out testing of cement, concrete, bricks and aggregates
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Quality Assurance & Quality Control
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



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CON/N0406: Carry out testing of soil and bitumen in field and site laboratory

Description

This unit describes the skills and knowledge required to carry out testing of soil and bitumen in field and site laboratory

Scope

The scope covers the following :

- Carry out testing of soil and bitumen sample in laboratory
- Carry out field testing of soil and bitumen

Elements and Performance Criteria

Carry out testing of soil and bitumen sample in laboratory

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

- PC1.** interpret standard test procedure for soil and bitumen prior to commencement of test
- PC2.** collect samples of soil and bitumen from the concerned lot of materials and carry out operations such as washing, weighing, measuring, sieving, tamping, oven drying etc.as per standard test procedure and applicability
- PC3.** perform tests for water content, Atterberg's limit, particle size distribution, specific gravity, compaction test and CBR test of soil as per standard test procedure
- PC4.** perform test on bitumen for content, specific gravity, ductility, penetration, softening point, flash point, fire point and Marshall stability as per standard test procedure
- PC5.** record readings relevant to soil and bitumen test in standard performa as per applicability
- PC6.** ensure tested soil and bitumen sample are reused or safely disposed as per requirement
- PC7.** store tested soil and bitumen samples safely in laboratory for specified duration as per requirement

Carry out field testing of soil and bitumen

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

- PC8.** prepare field testing tools and fix all associated accessories for performing tests
- PC9.** perform test to determine rapid moisture content in field as per standard test procedure
- PC10.** perform test to determine dry density of soil by sand replacement method and core cutting method as per standard test procedure
- PC11.** carry out core cutting of bitumen from field to determine bitumen content as per standard test procedure
- PC12.** ensure proper packing and shifting of soil and bitumen samples to laboratory for further testing
- PC13.** observe and record readings relevant to soil and bitumen test in standard performa as per applicability
- PC14.** ensure tested field sample are reused or safely disposed as per requirement



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PC15. store tested field samples safely in laboratory for specified duration as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** standard procedure for testing of the material sample in laboratory and field relevant to quality assurance and quality control works in construction
- KU2.** safety rules and regulation related to instruments handling and equipment operation for testing of test material sample
- KU3.** importance of personal protection including the use of related safety gears & equipment in accordance with organizational norms
- KU4.** service request procedures for tools, materials and equipment as per organizational norms
- KU5.** how to provide tag/number/label to collected test sample from field or laboratory
- KU6.** how to collect, sample and shift soil and bitumen sample from field
- KU7.** acceptance and rejection criteria of soil and bitumen test sample
- KU8.** storing and handling technique of soil and bitumen testing tools and equipment
- KU9.** visual/physical checking of soil and bitumen in field
- KU10.** use of tools and equipment for testing of soil and bitumen in field and in site laboratory
- KU11.** standard procedure for preparing test specimen for various types of soil and bitumen test in laboratory and in field
- KU12.** the standard test procedure for various types of soil and bitumen test
- KU13.** how to handle hot bitumen during testing of bitumen
- KU14.** upkeep, repair and maintenance of tools and equipment relevant to soil and bitumen testing
- KU15.** importance of periodical calibration of testing tools, apparatus, instruments and equipment
- KU16.** how to read and record reading of gauges and meters along with the least count
- KU17.** disposal/reuse of tested sample in appropriate manner
- KU18.** how to protect instruments and equipment from dust and heat
- KU19.** IS codes relevant to to soil and bitumen testing

Generic Skills (GS)

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

- GS1.** write in one or more language, preferably in the local language of the site
- GS2.** read sketches related to setting of instruments, operational manual of instruments, standard test procedure related to testing of material and field testing, instructions provided for the work, and various signboards, safety rules, safety tags, exit route information in one or more languages, preferably in the local language of the site
- GS3.** speak in one or more language, preferably one of the local language at site
- GS4.** communicate orally and effectively with team members
- GS5.** analyze the safety aspect of the workplace
- GS6.** plan work and organize required resource effectively



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- GS7.** complete work as per agreed time schedule and quality parameters
- GS8.** resolve any conflict within the teammates
- GS9.** evaluate the complexity of the tasks
- GS10.** identify any violation of safety norms during the work



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Carry out testing of soil and bitumen sample in laboratory</i>	18	42	-	-
PC1. interpret standard test procedure for soil and bitumen prior to commencement of test	-	-	-	-
PC2. collect samples of soil and bitumen from the concerned lot of materials and carry out operations such as washing, weighing, measuring, sieving, tamping, oven drying etc.as per standard test procedure and applicability	-	-	-	-
PC3. perform tests for water content, Atterberg's limit, particle size distribution, specific gravity, compaction test and CBR test of soil as per standard test procedure	-	-	-	-
PC4. perform test on bitumen for content, specific gravity, ductility, penetration, softening point, flash point, fire point and Marshall stability as per standard test procedure	-	-	-	-
PC5. record readings relevant to soil and bitumen test in standard performa as per applicability	-	-	-	-
PC6. ensure tested soil and bitumen sample are reused or safely disposed as per requirement	-	-	-	-
PC7. store tested soil and bitumen samples safely in laboratory for specified duration as per requirement	-	-	-	-
<i>Carry out field testing of soil and bitumen</i>	12	28	-	-
PC8. prepare field testing tools and fix all associated accessories for performing tests	-	-	-	-
PC9. perform test to determine rapid moisture content in field as per standard test procedure	-	-	-	-
PC10. perform test to determine dry density of soil by sand replacement method and core cutting method as per standard test procedure	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. carry out core cutting of bitumen from field to determine bitumen content as per standard test procedure	-	-	-	-
PC12. ensure proper packing and shifting of soil and bitumen samples to laboratory for further testing	-	-	-	-
PC13. observe and record readings relevant to soil and bitumen test in standard performa as per applicability	-	-	-	-
PC14. ensure tested field sample are reused or safely disposed as per requirement	-	-	-	-
PC15. store tested field samples safely in laboratory for specified duration as per requirement	-	-	-	-
NOS Total	30	70	-	-



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National Occupational Standards (NOS) Parameters

NOS Code	CON/N0406
NOS Name	Carry out testing of soil and bitumen in field and site laboratory
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Quality Assurance & Quality Control
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



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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 in an effective manner
- Support co-workers to execute the project requirements
- Practice inclusion

Elements and Performance Criteria

Interact and communicate in an effective 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.** report any unresolved problem to the supervisor immediately
- PC4.** obtain instructions from superiors and respond on the same
- PC5.** communicate to team members/subordinates for appropriate work technique and method
- PC6.** seek clarification and advice as per the requirement

Support co-workers to execute the 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

Practice inclusion

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

- PC9.** maintain cultural inclusivity at work place
- PC10.** maintain disability friendly work practices
- PC11.** follow gender neutral practices at workplace
- PC12.** address discriminatory and offensive behaviour in a professional manner as per organizational policy

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** own roles and responsibilities



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- KU2.** importance of effective communication
- KU3.** the consequence of poor teamwork on project outcomes, timelines, safety at the construction site, etc.
- KU4.** different modes of communication used at workplace
- KU5.** importance of creating healthy and cooperative work environment among the gangs of workers
- KU6.** different activities within the work area where 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 effects in case of failure relating to quality, timeliness, safety, risks at the construction project site
- KU9.** importance and need of supporting co-workers facing problems for the smooth functioning of work
- KU10.** the fundamental concept of gender equality
- KU11.** how to recognise and be sensitive to issues of disability, culture and gender
- KU12.** legislation, policies, and procedures relating to gender sensitivity and cultural diversity including their impact on the area of operation

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



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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Interact and communicate in an effective manner</i>	18	42	-	-
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. report any unresolved problem to the supervisor immediately	-	-	-	-
PC4. obtain instructions from superiors and respond on the same	-	-	-	-
PC5. communicate to team members/subordinates for appropriate work technique and method	-	-	-	-
PC6. seek clarification and advice as per the requirement	-	-	-	-
<i>Support co-workers to execute the project requirements</i>	6	14	-	-
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	-	-	-	-
<i>Practice inclusion</i>	6	14	-	-
PC9. maintain cultural inclusivity at work place	-	-	-	-
PC10. maintain disability friendly work practices	-	-	-	-
PC11. follow gender neutral practices at workplace	-	-	-	-
PC12. address discriminatory and offensive behaviour in a professional manner as per organizational policy	-	-	-	-
NOS Total	30	70	-	-



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	Real Estate and Infrastructure construction
Occupation	Generic 2
NSQF Level	4
Credits	TBD
Version	6.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022



Qualification Pack

CON/N8002: Plan and organize work to meet expected outcomes

Description

This unit describes the knowledge and the skills required for an individual to plan and organize own work in order to meet expected outcome

Scope

The scope covers the following :

- Plan and prepare for work
- Organise required resources as per work plan
- Complete work as per the plan

Elements and Performance Criteria

Plan and prepare for work

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

- PC1.** identify the targets and timelines set by superiors
- PC2.** determine the work requirements corresponding to task(drawings/schedules/instructions/methodology), safety, tools and equipment prior to commencement of task
- PC3.** plan the work by analyzing the required outcomes, work procedures, allotted time, resource availability and known priorities
- PC4.** prepare the work areas in coordination with team members
- PC5.** plan for waste collection and disposal prior to and after completion of work

Organise required resources as per work plan

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

- PC6.** arrange the required manpower prior to commencement of work
- PC7.** organize the required materials, tools and tackles required for the task

Complete work as per the plan

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

- PC8.** engage allocated manpower in an appropriate manner
- PC9.** employ correct tools, tackles and equipment for the desired work
- PC10.** provide guidance to the subordinates to obtain desired outcome
- PC11.** use resources in an optimum manner to avoid any unnecessary wastage
- PC12.** use tools, tackles and equipment carefully to avoid damage
- PC13.** ensure the work processes adopted are in line with the specified standards and instructions
- PC14.** complete the work with the allocated resources within specified time
- PC15.** clean and organise the workplace after completion of task

Knowledge and Understanding (KU)



Qualification Pack

The individual on the job needs to know and understand:

- KU1.** importance of proper housekeeping including safe waste disposal
- KU2.** policies, procedures and work targets set by superiors
- KU3.** how to identify work activities that need to be planned and organized
- KU4.** how to determine the task requirements
- KU5.** how to determine the quality requirements related to the task
- KU6.** how to undertake all aspect of planning and organizing the task, including interpretation of task, reading drawing/schedules, arranging resources, reporting problems etc.
- KU7.** how to implement the planned activities
- KU8.** how to use available resources in a judicious and appropriate manner to minimize wastages or damage

Generic Skills (GS)

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

- GS1.** write in one or more language, preferably the local language at the site
- GS2.** read communication from co-workers, superiors and notices from other departments as per requirement of the level
- GS3.** speak in one or more language, preferably one of the local language at the site
- GS4.** follow communication shared by co-workers regarding standard work processes, resources available, timelines, etc.
- GS5.** communicate effectively with co-workers and subordinates
- GS6.** decide on what sequence is to be adopted for execution of work
- GS7.** plan and organize the materials, tools, tackles and equipment required to execute the work
- GS8.** complete all assigned task with proper planning and organizing
- GS9.** analyze areas of work which could result in a delay of work, wastage of material or damage to tools and tackles
- GS10.** evaluate potential solutions to minimize avoidable delays and wastages at the construction site



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and prepare for work</i>	9	21	-	-
PC1. identify the targets and timelines set by superiors	-	-	-	-
PC2. determine the work requirements corresponding to task(drawings/schedules/instructions/methodology), safety, tools and equipment prior to commencement of task	-	-	-	-
PC3. plan the work by analyzing the required outcomes, work procedures, allotted time, resource availability and known priorities	-	-	-	-
PC4. prepare the work areas in coordination with team members	-	-	-	-
PC5. plan for waste collection and disposal prior to and after completion of work	-	-	-	-
<i>Organise required resources as per work plan</i>	6	14	-	-
PC6. arrange the required manpower prior to commencement of work	-	-	-	-
PC7. organize the required materials, tools and tackles required for the task	-	-	-	-
<i>Complete work as per the plan</i>	15	35	-	-
PC8. engage allocated manpower in an appropriate manner	-	-	-	-
PC9. employ correct tools, tackles and equipment for the desired work	-	-	-	-
PC10. provide guidance to the subordinates to obtain desired outcome	-	-	-	-
PC11. use resources in an optimum manner to avoid any unnecessary wastage	-	-	-	-
PC12. use tools, tackles and equipment carefully to avoid damage	-	-	-	-
PC13. ensure the work processes adopted are in line with the specified standards and instructions	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. complete the work with the allocated resources within specified time	-	-	-	-
PC15. clean and organise the workplace after completion of task	-	-	-	-
NOS Total	30	70	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CON/N8002
NOS Name	Plan and organize work to meet expected outcomes
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Generic 2
NSQF Level	4
Credits	TBD
Version	5.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQF Clearance Date	31/03/2022



Qualification Pack

CON/N9001: Work according to personal health, safety and environment protocols at construction site

Description

This NOS covers the skill and knowledge required for an individual to work according to personal health, safety and environmental protocols at construction site

Scope

The scope covers the following :

- Follow safety norms as defined by organization
- Adopt healthy & safe work practices
- Implement good housekeeping and environment protection process and activities
- Follow infection control guidelines as per applicability

Elements and Performance Criteria

Follow safety norms as defined by the organization

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

- PC1.** identify and report any hazards, risks or breaches in site safety to the appropriate authority
- PC2.** follow emergency and evacuation procedures in case of accidents, fires, natural calamities
- PC3.** follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable
- PC4.** follow all the protocols and safety techniques conveyed during safety awareness programs like Tool Box Talks, safety demonstrations and mock drills conducted at the site
- PC5.** select and operate different types of fire extinguishers corresponding to various types of fires as per EHS guideline
- PC6.** identify near miss, unsafe condition and unsafe act

Adopt healthy & safe work practices

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

- PC7.** use appropriate Personal Protective Equipment (PPE) as per work requirements for : Head Protection, Ear protection, Fall Protection ,Foot Protection, Face and Eye Protection, Hand and Body Protection , and Respiratory Protection (if required)
- PC8.** handle all required tools, tackles, materials and equipment safely
- PC9.** follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines
- PC10.** check and install all safety equipment as per standard guidelines
- PC11.** follow safety protocols and practices as laid down by site EHS department
- PC12.** obtain "height pass" clearance for working at heights

Implement good housekeeping practices

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

- PC13.** collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature



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PC14. apply ergonomic principles wherever required

Follow infection control guidelines as per applicability

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

PC15. follow recommended personal hygiene, workplace hygiene and sanitization practices

PC16. clean and disinfect all materials, tools and supplies before and after use

PC17. report immediately to concerned authorities regarding signs and symptoms of illness of self and others

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** reporting procedures in cases of breaches or hazards for site safety, accidents, and emergency situations as per guidelines
- KU2.** types of safety hazards at construction sites
- KU3.** basic ergonomic principles as per applicability
- KU4.** the procedure for responding to accidents and other emergencies at site
- KU5.** use of appropriate personal protective equipment based on various working conditions
- KU6.** importance of handling tools, equipment, and materials as per applicable norms
- KU7.** effect of construction material on health and environments as per applicability
- KU8.** various environmental protection methods as per applicability
- KU9.** storage of waste including non-combustible scrap material and debris, combustible scrap material and debris, general construction waste and trash (non-toxic, non-hazardous), any other hazardous wastes and any other flammable wastes at the appropriate location
- KU10.** how to keep the workplace neat and tidy so as to be safe
- KU11.** how to use hazardous material in a safe and appropriate manner as per applicability
- KU12.** types of fire
- KU13.** procedure of operating different types of fire extinguishers
- KU14.** safety relevant to tools, tackles, and equipment as per applicability
- KU15.** housekeeping activities relevant to task
- KU16.** ways of transmission of infection
- KU17.** ways to manage infectious risks at the workplace
- KU18.** different methods of cleaning, disinfection, sterilization, and sanitization
- KU19.** symptoms of infection like fever, cough, redness, swelling, and inflammation

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.** fill safety formats for near miss, unsafe conditions and safety suggestions
- GS3.** read in one or more language, preferably in the local language of the site



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- GS4.** speak in one or more language, preferably in one of the local language of the site
- GS5.** listen to instructions/communication shared by site EHS and superiors regarding site safety, and conducting the toolbox talk
- GS6.** identify potential safety risks and report to the appropriate authority
- GS7.** assess and analyze areas which may affect health, safety and environment protocol on the site



Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow safety norms as defined by the organization</i>	6	14	-	-
PC1. identify and report any hazards, risks or breaches in site safety to the appropriate authority	-	-	-	-
PC2. follow emergency and evacuation procedures in case of accidents, fires, natural calamities	-	-	-	-
PC3. follow recommended safe practices in handling construction materials, including chemical and hazardous material whenever applicable	-	-	-	-
PC4. follow all the protocols and safety techniques conveyed during safety awareness programs like Tool Box Talks, safety demonstrations and mock drills conducted at the site	-	-	-	-
PC5. select and operate different types of fire extinguishers corresponding to various types of fires as per EHS guideline	-	-	-	-
PC6. identify near miss, unsafe condition and unsafe act	-	-	-	-
<i>Adopt healthy & safe work practices</i>	15	35	-	-
PC7. use appropriate Personal Protective Equipment (PPE) as per work requirements for : Head Protection, Ear protection, Fall Protection ,Foot Protection, Face and Eye Protection, Hand and Body Protection , and Respiratory Protection (if required)	-	-	-	-
PC8. handle all required tools, tackles, materials and equipment safely	-	-	-	-
PC9. follow safe disposal of waste, harmful and hazardous materials as per EHS guidelines	-	-	-	-
PC10. check and install all safety equipment as per standard guidelines	-	-	-	-



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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. follow safety protocols and practices as laid down by site EHS department	-	-	-	-
PC12. obtain "height pass" clearance for working at heights	-	-	-	-
<i>Implement good housekeeping practices</i>	6	14	-	-
PC13. collect, segregate and deposit construction waste into appropriate containers based on their toxicity or hazardous nature	-	-	-	-
PC14. apply ergonomic principles wherever required	-	-	-	-
<i>Follow infection control guidelines as per applicability</i>	3	7	-	-
PC15. follow recommended personal hygiene, workplace hygiene and sanitization practices	-	-	-	-
PC16. clean and disinfect all materials, tools and supplies before and after use	-	-	-	-
PC17. report immediately to concerned authorities regarding signs and symptoms of illness of self and others	-	-	-	-
NOS Total	30	70	-	-



Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	CON/N9001
NOS Name	Work according to personal health, safety and environment protocols at construction site
Sector	Construction
Sub-Sector	Real Estate and Infrastructure construction
Occupation	Generic Safety
NSQF Level	4
Credits	TBD
Version	6.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

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)/ Element 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/ Element.
2. The assessment for the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by SSC
3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.
5. The passing percentage for each QP will be 70%. To pass the Qualification Pack, every trainee should score a minimum of 70% individually in each NOS.
6. The Assessor shall check the final outcome of the practices while evaluating the steps performed to achieve the final outcome.



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- The trainee shall be provided with a chance to repeat the test to correct his procedures in case of improper performance, with a deduction of marks for each iteration.
- After the certain number of iteration as decided by SSC the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.
- 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 within the specified time frame set by SSC.
- Minimum duration of Assessment of each QP shall be of 4hrs/trainee.

Minimum Aggregate Passing % at QP Level : 70

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

Minimum Passing % at NOS Level: 70

(Please note: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N0404. Operate and maintain test instruments and equipment for construction material testing	30	70	-	-	100	25
CON/N0405. Carry out testing of cement, concrete, bricks and aggregates	30	70	-	-	100	25
CON/N0406. Carry out testing of soil and bitumen in field and site laboratory	30	70	-	-	100	22
CON/N8001. Work effectively in a team to deliver desired results at the workplace	30	70	-	-	100	8
CON/N8002. Plan and organize work to meet expected outcomes	30	70	-	-	100	8



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National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CON/N9001.Work according to personal health, safety and environment protocols at construction site	30	70	-	-	100	12
Total	180	420	-	-	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



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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.



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Knowledge and Understanding (KU)	<p>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.</p>
Organisational Context	<p>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.</p>
Technical Knowledge	<p>Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.</p>
Core Skills/ Generic Skills (GS)	<p>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.</p>
Electives	<p>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.</p>
Options	<p>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.</p>