



Model Curriculum

QP Name: Construction Laboratory and Field Technician

QP Code: CON/Q0402

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 1.0

Construction Skill Development Council of India | Construction Skill Development Council of India (CSDCCI), CPB – 103 and 104, Block-4B, DLF corporate Park, Phase – III, MG Road Gurugram – 122002
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Training Parameters

Sector	Construction Skill Development Council of India
Sub-Sector	Real Estate and Infrastructure Construction
Occupation	Quality Assurance and Quality Control
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3112.9900
Minimum Educational Qualification and Experience	10th Class with 2-3 Years of experience (should have minimum 2 years' site experience as a certified Helper – Construction Laboratory and Field Technician, NSQF Level 2) OR 10th Class with 5-10 Years of experience (a non trained worker should have minimum 5 years site experience in the Quality Assurance and Quality control occupation)
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	19/03/2021
Next Review Date	19/03/2025
NSQC Approval Date	
QP Version	2.0
Model Curriculum Creation Date	21/01/2020
Model Curriculum Valid Up to Date	19/03/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	400 hrs
Maximum Duration of the Course	400 hrs



Program Overview

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Explain the use of tools, apparatus and equipment required for testing of cement, concrete, brick, aggregate, soil and bitumen.
- Demonstrate the use of tools, apparatus and equipment required for testing of cement, concrete, brick, aggregate, soil and bitumen.
- Demonstrate operation of compression testing machine.
- Perform testing of cement, concrete, brick, block and aggregate samples.
- Perform disposal of tested material samples.
- Use appropriate test apparatus/equipment/tools for testing of soil and bitumen samples at laboratory and construction site.
- Demonstrate testing of soil and bitumen samples in laboratory and construction site.
- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.
- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.
- Identify various hazards at construction site.
- Use PPE’s relevant to construction laboratory and field technician’s task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration (Hrs)	Practical Duration (Hrs)	On-the-Job Training Duration (Mandatory) (Hrs)	On-the-Job Training Duration (Recommended) (Hrs)	Total Duration (Hrs)
Bridge Module	8:00	00:00	00:00	00:00	8:00
CON/N0404 Operate and maintain test instruments and equipment for construction material testing NOS Version No. 2.0 NSQF Level 4	29:30	82:30	00:00	00:00	112:00



Operate and maintain test instruments and equipment for construction material testing	29:30	82:30	00:00	00:00	112:00
CON/N0405 Carry out testing of cement, concrete, bricks and aggregate NOS Version No. 2.0 NSQF Level 4	37:30	82:30	00:00	00:00	120:00
Carry out testing of cement, concrete, bricks and aggregate	37:30	82:30	00:00	00:00	120:00
CON/N0406 Carry out testing of soil and bitumen in field and site laboratory NOS Version No. 2,0 NSQF Level 4	37:30	112:30	00:00	00:00	150:00
Carry out testing of soil and bitumen in field and site laboratory	37:30	112:30	00:00	00:00	150:00
CON/N8001 Work effectively in a team to deliver desired results at the workplace NOS Version No.6 NSQF Level 4	07:30	07:30	--	--	15:00
Communicate effectively at workplace	07:30	07:30	--	--	15:00
CON/N8002 Plan and organize work to meet expected outcomes NOS Version No. 5 NSQF Level 4	07:30	07:30	--	--	15:00
Prioritise activities and organise resources	07:30	07:30	--	--	15:00
CON/N9001 Work according to personal health, safety and environment protocol at construction site NOS Version No.6 NSQF Level 4	07:30	22:30	--	--	30:00
Follow safety norms as defined by organization, adopt healthy and safe work practices	07:30	22:30	--	--	30:00
Total Duration	135:00	315:00	00:00	00:00	450:00



Module Details

Module 1: Introduction to Construction laboratory and field technician job role

Bridge Module

Terminal Outcomes:

- Explain the role and responsibilities of construction laboratory and field technician.
- Discuss the career progression for the construction laboratory and field technician.

Duration: 08:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none">• Describe the role and responsibilities of a construction laboratory and field technician.• Define the personal attributes required in quality assurance and quality control occupation.• Explain the future possible progression and career development options of a construction laboratory and field technician.	
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer, Registers Trade specific charts and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 2: Operate and maintain test instruments and equipment for construction material testing

Mapped to NOS/N0404 v.2.0

Terminal Outcomes:

- Explain the use of tools, apparatus and equipment required for testing of cement, concrete, brick, aggregate, soil and bitumen.
- Demonstrate the use of tools, apparatus and equipment required for testing of cement, concrete, brick, aggregate, soil and bitumen.
- Demonstrate operation of compression testing machine.

Duration: 29:30	Duration: 82:30
Theory – Key Learning Outcomes <ul style="list-style-type: none"> • Explain the basic principles of measurement, geometry and arithmetic calculation. • Describe the various tools, instruments and equipment used for cement testing such as IS sieves, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask and cube moulds etc. • Describe the various tools, instruments and equipment used for concrete testing such as cube moulds/ cylindrical moulds, slump cone apparatus, compacting factor test apparatus, Flow table test apparatus, Vee Bee test apparatus etc. • Describe the various tools, instruments and equipment used for fine aggregate testing such as IS sieve, pycnometer, cylindrical metal container, oven, weighing balance etc. • Describe the various tools, instruments and equipment used for coarse aggregate testing such as IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact value apparatus, abrasion value apparatus etc. • Describe the various tools, instruments and equipment used for soil testing such as IS sieves, compaction test apparatus, rapid moisture content meter apparatus, Casagrande’s device, mechanical sieve shaker, heating oven, core cutting test apparatus etc. • Describe the various tools, instruments and equipment used for bitumen testing such as centrifuge extractor, thermometer, specific gravity bottle, penetrometer, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus etc. 	Practical – Key Learning Outcomes <ul style="list-style-type: none"> • Demonstrate cleaning and lubrication of instrument, apparatus and equipment as per manufacturer's specification. • Demonstrate the checking and calibration of instrument prior to testing as per standard procedure. • Use tools, instrument/ apparatus like IS sieves, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask and cube moulds for cement testing as per standard operating procedure. • Use tools, instruments and equipment/ apparatus like concrete cube moulds/ cylindrical moulds, slump cone apparatus, compacting factor test apparatus, Flow table test apparatus, Vee Bee test apparatus for concrete testing as per standard operating procedure. • Use tools, instruments and equipment/ apparatus like IS sieve, pycnometer, cylindrical metal container, oven, weighing balance for testing of fine aggregate as per standard operating procedure. • Demonstrate operation of compressing testing machine as per standard operating procedure for cement/concrete cubes/ brick sample and determine the crushing value of coarse aggregate. • Use tools, instruments and equipment/ apparatus like IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact value apparatus, abrasion value apparatus for testing of testing of coarse aggregate as per standard operating procedure. • Use tools, instruments and equipment/ apparatus like IS sieves, compaction test



- Explain importance of periodical calibration of testing tools, apparatus, instruments and equipment.
- Explain various checks to determine the working condition of testing tools, apparatus, instruments and equipment.
- Explain working of compression testing machine for testing of cement, concrete, bricks and aggregate.

- 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.
- Use tools, instruments and equipment/ apparatus like IS sieves, 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.
 - Demonstrate maintenance and upkeep of all relevant tools, instruments, apparatus and equipment.

Classroom Aids:

Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids

Tools, Equipment and Other Requirements

Trowel, Sampling accessories for field density test of soil, Dishes , Weighing balance Weighing dishes , Enameled trays, Desiccators, Thermometers, Vernier calipers, Stopwatch, Straight edge , measuring tape, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask, cube moulds, Vibration machine, Standard cement cube moulds, Gauging trowel, Standard sieves for Fine aggregate tests, Standard sieves for coarse , aggregate test, Pycnometer, calibrated volume measure for density test, , tamping rod , Brushes, Funnels, Graduated glass measuring cylinders , Concrete table vibrator, Slump cone Apparatus, compacting factor test apparatus, Flow table test apparatus, Vee Bee test apparatus, Compression testing machine , Casagrande apparatus, Plastic limit test apparatus , Shrinkage limit test apparatus, Compaction test apparatus, Permeability test apparatus, cylindrical metal container, heating oven, IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact tester, abrasion value apparatus, rapid moisture content meter apparatus, mechanical sieve shaker, specific gravity bottle, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus, Measuring Tape , Metal- Tri-Square , Spirit level , Steel scale , Safety Helmets , Safety goggles, Hand gloves , Safety Shoes (Assorted size), Safety Apron, Ear Plug, Lab coat, Nose mask, Face mask, Board of Safety instructions



Module 3: Carry out testing of cement, concrete, bricks and aggregates

Mapped to NOS/N0405 v 2.0

Terminal Outcomes:

- Perform testing of cement, concrete, brick, block and aggregate samples.
- Perform disposal of tested material samples.

Duration: 37:30	Duration: 82:30
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Explain method of tagging/ numbering/ labelling to collected test sample from field or test sample in laboratory • Describe acceptance/ rejection criteria of cement, concrete, brick, block and aggregate test samples. • Explain how to physically / visually check samples of cement, concrete, brick, aggregate in field and laboratory. • Explain standard procedure for preparing test samples for various types of cement, concrete, brick, block, aggregate test in laboratory and in field. • Discuss the various tests required to determine the consistency, fineness, initial and final setting time, compressive strength test, soundness test, specific gravity test of cement. • Discuss the various test required to determine workability of concrete such as slump cone test, compacting factor, compressing strength test and vee- bee test. • Discuss the various test required to determine the water absorption, compressive strength and efflorescence of brick. • Discuss the various test required to determine water absorption, density and compressive strength of block • Discuss the various test required to determine the specific gravity, particle size distribution, silt content and bulking of fine aggregate. • Discuss the various test required to determine the specific gravity test, bulk density, gradation, flakiness and elongation index, crushing value, impact value of coarse aggregate. • Explain safe operation of compression testing machine for testing of cement, concrete, brick, block and aggregate. • Describe importance of disposal/reuse of tested sample in appropriate manner. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> • Demonstrate preparation of test samples of cement, concrete, brick, block and aggregate by weighing, measuring, sieving, compacting, oven drying the required quantity of material as per standard procedure. • Demonstrate casting of cement cubes and concrete cubes in fields and laboratory as per standard procedure for compressive strength testing of cement and concrete • Demonstrate testing of cement samples to determine consistency, initial and final setting, fineness, soundness, specific gravity, compressive strength test of cement as per standard test procedure. • Demonstrate workability test such as slump cone test, compacting factor, Vee-bee test of fresh concrete and compressive strength of hardened concrete as per standard test procedure. • Demonstrate testing of fine aggregate samples to determine specific gravity, particle size distribution, silt content, bulking of fine aggregate as per standard test procedure. • Demonstrate testing of coarse aggregate samples to determine specific gravity, bulk density, gradation, flakiness and elongation index, crushing value, impact value, abrasion value of coarse aggregate as per standard test procedure. • Demonstrate testing of brick samples to determine water absorption, compressive strength, efflorescence of bricks as per standard test procedure. • Demonstrate testing of block samples to determine water absorption, density and compressive strength of bricks as per standard test procedure. • Demonstrate recording of readings relevant to test in standard format.



- Discuss the importance of protection of instrument and equipment from dust and heat.
- Discuss need of IS codes knowledge relevant to cement, concrete, brick and aggregate testing.

Classroom Aids:

Black/White board, Projector/LED Monitor, Computer, Registers Trade specific charts and other teaching aids

Tools, Equipment and Other Requirements

Trowel, Sampling accessories for field density test of soil, Dishes, Weighing balance Weighing dishes , Enameled trays, Desiccators, Thermometers, Vernier calipers, Stopwatch, Straight edge , measuring tape, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask, cube moulds, Vibration machine, Standard cement cube moulds, Gauging trowel, Standard sieves for Fine aggregate tests, Standard sieves for coarse , aggregate test, Pycnometer, calibrated volume measure for density test, , tamping rod , Brushes, Funnels, Graduated glass measuring cylinders , Concrete table vibrator, Slump cone Apparatus, compacting factor test apparatus, Flow table test apparatus, Vee Bee test apparatus, Compression testing machine , Casagrande apparatus, Plastic limit test apparatus , Shrinkage limit test apparatus, Compaction test apparatus, Permeability test apparatus, cylindrical metal container, heating oven, IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact tester, abrasion value apparatus, rapid moisture content meter apparatus, mechanical sieve shaker, specific gravity bottle, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus, Measuring Tape , Metal- Tri-Square , Spirit level , Steel scale, ,Safety Helmets , Safety goggles, Hand gloves , Safety Shoes (Assorted size), Safety Apron, Ear Plug, Lab coat, Nose mask, Face mask, Sign board of Safety instructions



Module 4: Carry out testing of soil and bitumen in field and site laboratory

Mapped to NOS/N0406, v.2.0

Terminal Outcome:

- Use appropriate test apparatus/equipment/tools for testing of soil and bitumen samples at laboratory and construction site.
- Demonstrate testing of soil and bitumen samples in laboratory and construction site.

Duration: 32:00	Duration: 104:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain how to collect soil and bitumen sample from field. • Discuss acceptance/rejection criteria of soil and bitumen test samples. • Explain the use of various tools and equipment required for soil and bitumen testing in field and in site laboratory. • Explain the various test required to determine the water content, Atterberg’s limit, particle size distribution, specific gravity and compaction test of soil in laboratory. • Explain the various test required to determine the bitumen content, specific gravity, ductility, penetration, softening point, flash and fire point, Marshall stability of bitumen in laboratory. • Explain the various test required to determine the moisture content, dry density of soil at site. • Discuss various method to determine dry density of soil such as sand replacement method and core cutting method. • Explain core cutting method to determine the bitumen content at site. • Describe the visual and physical checking of soil and bitumen in field and site laboratory. • Explain importance of repair and maintenance of tools and equipment relevant to soil and bitumen testing. 	<ul style="list-style-type: none"> • Demonstrate testing of soil sample to determine water content, Atterberg’s limit, particle size distribution, specific gravity and compaction of soil at laboratory as per standard test procedure. • Demonstrate testing of soil sample to determine rapid moisture content, dry density of soil by sand replacement method and core cutting method at site as per standard procedure. • Demonstrate testing of bitumen sample to determine bitumen content, specific gravity, ductility, penetration, softening point, flash and fire point, Marshall stability of bitumen as per standard test procedure. • Demonstrate core cutting of bitumen to determine bitumen content in field as per standard test procedure.
Classroom Aids:	
Black/White board, Projector/LED Monitor, Computer, Registers, Trade specific charts and other teaching aids	
Tools, Equipment and Other Requirements	
Trowel, Sampling accessories for field density test of soil, Dishes, Weighing balance Weighing dishes , Enamelled trays, Desiccators, Thermometers, Vernier callipers, Stopwatch, Straight edge , measuring tape, Vicat apparatus, Le-Chatelier apparatus, Le-Chatelier flask, cube moulds, Vibration machine, Standard cement cube moulds, Gauging trowel, Standard sieves for Fine aggregate tests, Standard sieves for coarse , aggregate test, Pycnometer, calibrated volume measure for density test, , tamping rod , Brushes, Funnels, Graduated glass measuring cylinders , Concrete table vibrator, Slump cone Apparatus, compacting factor test apparatus, Flow table test apparatus, Vee Bee test apparatus, Compression testing machine , Casagrande apparatus, Plastic	



limit test apparatus , Shrinkage limit test apparatus, Compaction test apparatus, Permeability test apparatus, cylindrical metal container, heating oven, IS sieve, flakiness gauge, elongation gauge, crushing value apparatus, impact tester, abrasion value apparatus, rapid moisture content meter apparatus, mechanical sieve shaker, specific gravity bottle, bitumen compactor, flash and fire point test apparatus, Marshall stability test apparatus, Measuring Tape , Metal- Tri-Square , Spirit level , Steel scale, ,Safety Helmets , Safety goggles, Hand gloves , 'Safety Shoes (Assorted size), Safety Apron, Ear Plug, Lab coat, Nose mask, Face mask, Board of Safety instructions



Module 5: Communicate effectively at workplace

Mapped to CON/N8001, v.6.0

Terminal Outcomes:

- Demonstrate effective communication with co-workers, superiors and sub-ordinates across different teams
- Provide support to co-workers, superiors and sub-ordinates within the team and across interfacing teams to ensure effective execution of assigned task.
- Demonstrate practices sensitive to disabilities (physical, mental, intellectual or sensory impairment), cultural diversity and gender neutrality.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the effects and benefits of timely actions relevant to the task at hand with examples. • Explain the importance of teamwork and its effects relevant to the task at hand with examples. • Explain the importance of proper and effective communication and its adverse effects in case of failure of proper communication. • Discuss about gender and its related concept: gender equality, gender equity (group work) • Discuss different types of disabilities (physical, mental, intellectual or sensory impairment). • Discuss the activities sensitive to the cultural diversity, disabilities and gender neutrality at the workplace. • Discuss the basic rules and regulations related to gender sensitivity, disabilities, and cultural diversity, with their impact on operations of a workplace. • Discuss how to take initiative in resolving issues among co-workers in a given situation. • Discuss reporting procedure followed at the workplace. 	<ul style="list-style-type: none"> • Apply effective communication skills while interacting with co-workers, trade seniors and others during the assigned task. • Use appropriate writing skills and verbal communication reporting as per commonly applicable organisational norms. • Demonstrate teamwork skills during assigned task. • Demonstrate acceptable interpersonal transactions with individuals having disabilities (physical, mental, intellectual or sensory impairment) or cultural diversity. • Demonstrate the process modifications required to make the workplace free from gender biases.
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 6: Prioritise activities and organise resources

Mapped to CON/N8002, v.5.0

Terminal Outcomes:

- Demonstrate prioritizing of work activities to achieve the desired productivity.
- Demonstrate organizing of resources as per work plan prior to commencement of work.

Duration: 08:00	Duration: 08:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain methods to upkeep, store and stack tools, materials used for domain specific works. • Explain the process of planning of the given tasks and activities relevant to the trade/job role within defined scope and duration. • Explain the procedure adopted for prioritizing an activity and sequencing of activities. • Explain the work plan and flow of activities in sequence for the assigned work. • Explain basic concept of labour productivity and work productivity. • Explain requisition of resources, reporting for requirement of resources orally and in written to concerned authority. • Explain how to minimise wastage of resources. • Explain the plan for waste collection and disposal after task. 	<ul style="list-style-type: none"> • Identify the work target and plan activities to achieve the desired productivity. • Demonstrate requisition of resource citing an example. • Demonstrate the planning for various activities relevant to task as per the scope and schedule. • Demonstrate how to organise the required tool, manpower and material resources for the assigned task. • Select required quantity of materials, tools or devices for defined work activities. • Demonstrate how to prioritize all works/ activities to maximise output. • Demonstrate optimum use of resources while performing domain specific work activities. • Demonstrate waste collection and disposal as per organisational norms. • Demonstrate completion of work within stipulated time and plan.
Classroom Aids:	
Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids	
Tools, Equipment and Other Requirements	
N/A	



Module 7: Follow safety norms as defined by organization, adopt healthy and safe work practices

Mapped to CON/N9001, v.6.0

Terminal Outcome:

- Identify various hazards at construction site.
- Use PPE's relevant to construction laboratory and field technician's task.
- Perform safe waste disposal at construction site.
- Demonstrate the activities to check the spread of infection as per medical/ organizational guidelines.

Duration: 16:00	Duration: 24::00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the types of hazards at the construction sites and identify the hazards specific to the domain related works. • Recall the safety control measures and actions to be taken under emergency situation. • Explain the classes of fire and types of fire extinguishers. • Explain the importance of participation of workers in safety drills. • Explain the reporting procedure to the concerned authority in case of emergency situations. • Describe the standard procedure for handling, storing and stacking of material, tools, equipment and accessories. • Explain different types of waste at construction sites and their disposal method. • Explain the purpose and importance of vertigo test at construction site. • List out basic medical tests required for working at construction site. • Explain the types and benefits of basic ergonomic principles, which should be adopted while carrying out specific task at the construction sites. • Explain the importance of housekeeping works. • List different types of infectious disease that can spread/ originate at a construction site • Discuss the ways of transmission of the various infectious disease. • Explain the methods to check the spread of the infectious disease. 	<ul style="list-style-type: none"> • Demonstrate the operating procedure of the fire extinguishers. • Demonstrate use of PPEs as per work requirements. • Demonstrate vertigo test. • Demonstrate safety techniques to be adopted in case of accidents. • Demonstrate safe waste disposal practices followed at construction site. • Demonstrate safe housekeeping practices. • Demonstrate the practices to maintain personal hygiene, workplace hygiene and site/ workplace sanitization. • Demonstrate the methods to clean and disinfect all materials, tools and supplies before and after use. • Demonstrate the procedure to report to the concerned authority regarding the outbreak/ hazard of any infectious disease/ pandemic.



- Describe the symptoms and cure of the various infectious disease.

Classroom Aids:

Black/White board, marker, Projector/LED Monitor, Computer, Trade specific charts, Safety tags, Safety Notice board, registers and other teaching aids

Tools, Equipment and Other Requirements

Leather Hand Gloves, Jump suit, Wire brush, Hand and Leg guard leather, Safety goggles, Nose mask, Ear protection, Fire extinguishers, Sand buckets Flashback arrestors, Welding helmet, Welding glass, Fire Extinguisher, Fire prevention kit, First Aid box, Safety tags, Safety Notice board

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Post-Graduation/ Graduation in Engineering	M. Tech in Civil/B. Tech in civil	Two	Civil Engineering	0	Civil Engineering	As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory. However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience.
Diploma	Diploma in Civil	Three	Civil Engineering	0	Civil Engineering	
Graduation/ Ex. Army /ITI /12 th pass	General B.A./B.Sc./ Graduation certificate from Army/ITI certificate in relevant trade/12 th pass	Six	Working as construction laboratory technician, QA/QC domain, supervisor of QA/QC	0	Working as construction laboratory technician, QA/QC domain, supervisor of QA/QC	

Trainer Certification	
Domain Certification	Platform Certification
Trainer- 70 % in each NOS of Qualification Pack “Construction Laboratory and Field Technician CON/Q0402 v2.0” and 80% overall.	Trainers - 80% in each NOS of Qualification Pack “Trainer MEP/Q2601, v1.0” and 80% overall.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
Post-Graduation/ Graduation in Engineering	M. Tech in Civil/B. Tech in civil	Two	Civil Engineering	0	Civil Engineering	As a pre-requisite for new entrant, no prior experience in training /assessment is mandatory. However, if someone with prior experience in requisite domain joins, experience will be measured in terms of relevant industry experience
Diploma	Diploma in Civil	Five	Civil Engineering	0	Civil Engineering	
Graduation/ Ex. Army /ITI /12 th pass	General B.A./B.Sc./ Graduation certificate from Army/ITI certificate in relevant trade/12 th pass	Seven	Working as construction laboratory technician, QA/QC domain, supervisor of QA/QC	0	Working as construction laboratory technician, QA/QC domain, supervisor of QA/QC	

Assessor Certification	
Domain Certification	Platform Certification
Assessor- 70% in each NOS of Qualification Pack “Construction Laboratory and Field Technician CON/Q0402 v2.0” and 80% overall	Assessors- 80% in each NOS of Qualification Pack “Assessor MEP/Q2701, v1.0” and overall 80%.



Assessment strategy

Assessment system Overview

Assessment is done through CSDCI affiliated Assessment Body. Assessors are trained and certified by CSDCI after a 10-day training of assessor's program. Assessments is conducted to gauge and assess the trainee's skill and knowledge competency in the specified areas. The assessment will have both theory and practical components in 30:70 ratio for construction laboratory and field technician job role

During the practical task, trainees are assessed on their workmanship, quality of finished product and time management .They will be graded for all their assessments based on the approved assessment strategy which is signed off by CSDCI. The Assessor submits an assessment plan to CSDCI prior to assessments

The assessment plan contains the following information:

- What will be assessed, i.e. the competency based on each NOS based on theory and practical questions
- How assessment will occur i.e. methods of assessment
- When the assessment will occur
- duration of assessment
- Where the assessment will take place i.e. context of the assessment (workplace/simulation)
- The criteria for decision making i.e. those aspects that will guide judgments and
- Where appropriate, any supplementary criteria used to make a judgment on the level of performance.

Testing Environment

Training partner shares the batch start date and end date, number of trainees and the job role.

Assessment will be fixed for a day after the end date of training. It could be next day or later.

Assessment will be conducted at the training venue/test center.

The knowledge/theory assessments are conducted with proper seating arrangements with enough space between the candidates to prevent copying.

Question set for theory and practical will be distributed to each candidate by the Assessor. Theory testing will include multiple choice questions, pictorial question, etc. which will test the trainee on his theoretical knowledge of the subject. The skill /practical assessments will be conducted in the approved test centers. The Assessment agency/ Assessor will ensure adequate tools and materials are available to conduct the practical test.

The theory and practical assessments will be carried out on same day. If number of candidates are more than 20, more assessors will be organized on same day to complete the assessment

The assessment has to comprise of two components, namely:

1. Knowledge assessment (theory/viva assessment)
2. Skill assessment (practical/hands-on skill assessment)



Mode of assessment

1. Demonstration/Practical for Performance /Skill Assessment
 2. Synoptic multiple choice question test
 3. Viva
- } For Knowledge Assessment

Performance/skill assessment: The performance/skill assessment will be conducted through demonstration/practical

For the practical test trainees are assessed through a given task, which they have to complete correctly for them to be marked as passed.

The assessment is conducted in a simulated working environment. Due to this fact, the assessors must note that the naturally occurring evidence of competence is unavailable or infrequent. Simulation must be undertaken in a Realistic Working Environment which provides an environment that replicates the key characteristics of the workplace in which the skill to be assessed is normally employed.

Knowledge Assessment: The knowledge assessments are conducted through written test/ viva.

Synoptic test is used for this. It is an MCQ (Multiple Choice Question) test which are prepared externally and externally marked, meaning by agency having no link with training partners. The test may be conducted by the assessor in the oral mode, if required, considering the lack of reading and comprehending acumen (skills) of trainees. In such cases, the assessor will mention it on top of the MCQ submitted to CSDCI.

The assessment strategy, weightage and duration of assessment for construction laboratory and field technician is summarized below:

Assessment Type	Formative or Summative	Strategies	Weightage	Duration (hours)
Knowledge	Summative	MCQ/Viva	30	1.5
skill	Summative	Structured practical task	70	5.5

Assessment Quality Assurance framework

CSDCI has developed assessment criteria framework for each Qualification pack as per National Occupational Standards. The criteria framework includes weightages/marks for each criteria under knowledge and skill. This criteria ensures quality assurance as it ensures valid, consistent and fair assessments at all locations. Issued to the affiliated Assessment body. The Assessment body develop questions based on CSDCI issued assessment criteria.



Evidences in the form of answer sheets in case of knowledge assessments are collected. For skill assessments videos and photographs are prepared as evidence. These are submitted by the assessor to the assessment agency. CSDCI does random checks of the same with the participant/ trainee's ID and ascertains authenticity and validity of assessments.

The training partner will intimate the time of arrival of the assessor and time of leaving the venue. Random spot checks/audit is conducted by CSDCI to monitor assessment.

Methods of Validation

Unless the trainee is registered, the person cannot undergo assessment. To further ensure that the person registered is the person appearing for assessment, id verification is carried out. Aadhar card number is part of registering the candidate for training. This forms the basis of further verification during the assessment.

Assessor conducts the assessment through theory and practical questions developed in accordance with the assessment criteria and guidelines issued by CSDCI. This too is verified by random audits carried out by CSDCI.

Video of the practical session is prepared and submitted to CSDCI for verification as per demand.

Assessment agency is responsible to put details in SIP. CSDCI will also validate the data and result received from the assessment agency.

Method of assessment documentation and access

The assessment agency will upload the result of assessment in the portal. The data will not be accessible for change by the assessment agency after the upload. The assessment data will be validated by CSDCI assessment team. After upload, only CSDCI can access this data.

CSDCI approves the results within a week and uploads it on SIP.



References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training .
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module . A set of terminal outcomes help to achieve the training outcome.



Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
CSDCI	Construction Skill development Council of India
MCQ	Multiple Choice Question
EHS	Environment Health and Safety