

**Level IV Content Outline****Senior Engineering Technician**

The candidates for NICET certification at Level IV in Construction Materials Testing – Concrete should have the knowledge, experience and skills needed to serve as project managers under the guidance of a registered professional engineer. They oversee specialized and complex testing procedures of concrete mixtures; develop project budget estimates; select the appropriate tests; supervise laboratory and field testing operations; perform advanced testing; resolve inconsistent specifications; trouble shoot problem areas; evaluate technical data, materials, conditions and give recommendations; estimate materials quantities; supervise and train Levels I, II and III technicians, reviewing their testing procedures and practices; manage equipment maintenance and calibration; manage safety and accreditation programs; and prepare reports.

4.1 Safe Practices

(Questions related to these tasks make up 1-9% of the exam.)

- 4.1.1 Develop and maintain company safety program. 32
- 4.1.2 Develop site specific job safety plans. 33
- 4.1.3 Train staff to perform job hazard analysis.
- 4.1.4 Perform radiation safety officer (RSO) duties and investigate safety issues. 30, 31

4.2 Plans and Specifications

(Questions related to these tasks make up 1-9% of the exam.)

- 4.2.1 Develop project budget estimates.
- 4.2.2 Estimate materials quantities
- 4.2.3 Resolve inconsistent specifications. 2,3

4.3 Testing of Concrete Mixes

(Questions related to these tasks make up 15-25% of the exam.)

- 4.3.1 Review petrographic analysis reports. 14,15,20
- 4.3.2 Evaluate technical data related to concrete testing. 2,7,9,13,17,24
- 4.3.3 Evaluate floor finishing techniques. 29

4.4 Concrete Mix Design

(Questions related to these tasks make up 15-25% of the exam.)

- 4.4.1 Develop specialized concrete mixes. 16,18,27,28
- 4.4.2 Select materials used in concrete mixes. 2,4,7,27
- 4.4.3 Verify test results of concrete mix designs. 2,24,28

4.5 Nondestructive Testing of Concrete

(Questions related to these tasks make up 5-15% of the exam.)

- 4.5.1 Oversee concrete nondestructive tests. 1,3,23,25,26
- 4.5.2 Interpret results from nondestructive testing of concrete. 1

4.6 Quality System

(Questions related to these tasks make up 15-25% of the exam.)

- 4.6.1 Implement changes in industry standards. 3,23,25,26
- 4.6.2 Create concrete testing laboratory quality systems. 23
- 4.6.3 Manage concrete laboratory accreditation. 23
- 4.6.4 Manage technician training program. 3,26

4.7 Reporting and Supervision

(Questions related to these tasks make up 15-25% of the exam.)

- 4.7.1 Finalize concrete test reports. 8,10,11,12
- 4.7.2 Develop preliminary recommendations to Engineer in Charge. 1,2,3,4,6,10,12,23
- 4.7.3 Manage company resources (e.g., employees, schedules, budget, equipment). 1,5,8,23,24

December 1, 2019

footnote number is linked to a reference on the Selected General References listing