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