Associate Engineering Technician

The candidates for NICET certification at Level II in Construction Materials Testing – Concrete should have the knowledge, experience and skills needed to work more independently than Level I technicians. Under supervision, they determine sampling frequencies and procedures (for example, ASTM and AASHTO); conduct a variety of aggregate and concrete mix tests; monitor concrete plant operations; inspect forms, shoring and concrete reinforcement; follow safe work practices; apply job hazards analyses; perform equipment calibration; verify equipment operation and perform equipment maintenance; perform math calculations and report test results and observations.

2.1 **Personal and Worksite Safety**
(Questions related to these tasks make up 1-8% of the exam.)
2.1.1 Apply job hazards analysis (JHA). 70, 71, 72, 73
2.1.2 Review safety data sheets (SDS). 24, 25, 68, 69, 74

2.2 **Plans and Specifications**
(Questions related to these tasks make up 5-15% of the exam.)
2.2.1 Read shop drawings. 45, 64
2.2.2 Review project plans and specifications. 2, 57, 63

2.3 **Sampling of Concrete Mixes and Components**
(Questions related to these tasks make up 5-15% of the exam.)
2.3.1 Determine sampling locations. 20, 44, 50
2.3.2 Observe sampling procedures of Level I technicians. 2, 16, 20, 21, 23, 61
2.3.3 Verify delivered materials. 9, 16, 34, 46

2.4 **Aggregate Testing for Concrete Mixes**
(Questions related to these tasks make up 10-20% of the exam.)
2.4.1 Perform (run, calculate, and report) flat and elongated particle tests. 12, 41
2.4.2 Perform coarse aggregate specific gravity tests. 12, 13
2.4.3 Perform fine aggregate specific gravity tests. 11, 14
2.4.4 Perform organic impurities tests. 5
2.4.5 Perform LA abrasion tests. 15
2.4.6 Perform sand equivalent tests. 40, 62
2.4.7 Perform clay lumps and friable particles tests. 17
2.4.8 Perform Micro-Deval tests. 42
2.4.9 Perform sulphate soundness tests. 8

2.5 **Concrete Mix Testing**
(Questions related to these tasks make up 20-30% of the exam.)
2.5.1 Perform flexural strength tests. 2, 7
2.5.2 Perform splitting tensile tests. 27
2.5.3 Perform compressive strength tests (e.g. brick, pavers, and non-shrink grout). 4, 26, 30, 37, 43, 50
2.5.4 Perform strength testing of masonry products (e.g. CMU, grout, mortar, and prisms). 47, 48, 49, 50, 51, 55, 66
2.5.5 Perform concrete shrinkage tests. 19, 56
2.5.6 Collect floor flatness/levelness (FF, FL) data. 67
2.5.7 Perform spread tests for self-consolidating concrete (SCC). 38

2.6 **Concrete Mix Production and Placement**
(Questions related to these tasks make up 10-20% of the exam.)
2.6.1 Monitor batch plant production. 9, 54, 56
2.6.2 Inspect concrete reinforcements. 63, 65
2.7 Forensic Testing of Concrete
(Questions related to these tasks make up 1-8% of the exam.)
2.7.1 Obtain concrete cores.  6, 31
2.7.2 Measure concrete cores.  6, 22
2.7.3 Determine rebound numbers.  33
2.7.4 Determine penetration resistance (e.g. Windsor probe).  32

2.8 Communication of Results
(Questions related to these tasks make up 1-8% of the exam.)
2.8.1 Prepare test data reports.  4, 7, 26, 33, 52, 63, 66
2.8.2 Verbally report preliminary test results to stakeholders.  4, 10, 27, 38, 47, 52

2.9 Equipment Calibration and Maintenance
(Questions related to these tasks make up 5-15% of the exam.)
2.9.1 Verify equipment maintenance.  15, 28, 36, 47
2.9.2 Maintain test equipment.  18, 28, 29, 36, 39, 53
2.9.3 Perform equipment verification for level I and II tests.  1, 2, 4, 28, 35, 36
2.9.4 Perform equipment calibration for level I and II tests.  14, 36, 58, 59, 60

September 15, 2017  footnote number is linked to a reference on the Selected General References listing