

**Level II Content Outline****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

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