

**Level II Content Outline****Associate Engineering Technician**

The candidates for NICET certification at Level II in Construction Materials Testing – Soils 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); collect samples; conduct a variety of soils tests; observe soils construction operations; follow safe work practices; apply job hazards analyses; perform equipment calibration; verify equipment operation; perform basic math calculations; understand statistical concepts; and report test results and observations to engineers.

2.1 Personal and Worksite Safety

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

- 2.1.1 Determine and wear personal protective equipment (PPE). 58
- 2.1.2 Identify unsafe conditions. 57, 58
- 2.1.3 Inspect equipment. 24, 31
- 2.1.4 Apply job safety analyses. 56, 57, 58, 59

2.2 Plans and Specifications

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

- 2.2.1 Relate plans to the field (e.g., find location on plan, establish relative elevation). 54, 60

2.3 Sampling of Soils

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

- 2.3.1 Determine sampling locations. 3, 14, 23, 37
- 2.3.2 Document sampling locations. 3, 14, 24, 27, 37
- 2.3.3 Obtain samples. 25, 37, 49, 50

2.4 Soils Sample Preparation

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

- 2.4.1 Reduce sample to test size. 4, 5, 40, 42, 44, 48, 50
- 2.4.2 Dry the sample. 5, 23, 39, 40, 44, 47, 48
- 2.4.3 Weigh the sample. 5, 39, 40, 44, 48
- 2.4.4 Process through sieve. 4, 26, 30, 35, 41, 42, 48
- 2.4.5 Moisture-condition the sample. 8, 26, 41, 42, 44, 48

2.5 Field Testing of Soils

(Questions related to these tasks make up 10-20% of the exam.)

- 2.5.1 Determine density test method. 8, 17, 21
- 2.5.2 Determine number of tests. 43
- 2.5.3 Document test locations. 12, 13, 17, 21, 33, 53
- 2.5.4 Document results. 12, 21
- 2.5.5 Document limitations. 4, 12, 31, 33, 37
- 2.5.6 Perform assigned field density tests. 17, 31
- 2.5.7 Perform dynamic cone penetrometer (DCP) tests. 33

2.6 Laboratory Testing of Soils

(Questions related to these tasks make up 10-20% of the exam.)

- 2.6.1 Perform particle size analyses. 1, 4, 18, 36, 45
- 2.6.2 Perform specific gravity tests. 10
- 2.6.3 Perform unconfined compressions. 16
- 2.6.4 Perform organic content tests. 22
- 2.6.5 Perform laboratory California Bearing Ratio (CBR) tests. 8, 15
- 2.6.6 Perform pH tests. 29, 45
- 2.6.7 Perform testing for soil stabilization mix trials. 5, 6, 9, 45
- 2.6.8 Perform shrinkage tests. 28
- 2.6.9 Perform R-Value tests. 5, 20, 42, 48



2.7 Field Observation of Soils Construction Operations

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

- 2.7.1 Observe basic fill placement operations. 19, 24
- 2.7.2 Observe basic shallow foundations installations. 2, 7, 19
- 2.7.3 Observe basic installations of deep foundation. 37
- 2.7.4 Observe soil stabilization (e.g., cement, fly ash, lime). 5, 51, 52
- 2.7.5 Observe proof-rolling. 33, 36, 37

2.8 Evaluation of Soils Test Results

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

- 2.8.1 Determine whether results meet specifications. 4, 13, 18, 26, 36, 46
- 2.8.2 Recognize suspect test results. 8, 11, 18, 24, 26, 35, 45

2.9 Communication of Results

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

- 2.9.1 Prepare written reports for supervisors. 4, 12, 16, 21, 22, 24, 28, 29, 35
- 2.9.2 Give verbal reports to field representatives, consultants, and contractors. 24, 55

2.10 Equipment Calibration and Maintenance

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

- 2.10.1 Perform verification/calibration of test equipment. 5, 8, 21, 24, 28, 29, 31, 32, 34, 38

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