## 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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