

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

The candidates for NICET certification at Level II in Construction Materials Testing – Asphalt 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 asphalt mix tests; monitor asphalt plant operations; identify issues with mix production and placement; 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 1-9% of the exam.)

2.1.1 Apply job hazards analysis (JHA). 57, 58, 59, 60

2.1.2 Review safety data sheets (SDS). 56

2.2 Plans and Specifications

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

2.2.1 Determine what testing is needed on samples. 13, 15, 17, 26, 30, 31, 36, 39, 44, 48, 55

2.2.2 Determine sampling frequencies. 9, 13, 24, 30, 39, 48

2.3 Sampling of Asphalt Mixes and Components

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

2.3.1 Determine sampling locations 24

2.3.2 Establish sampling procedures 8, 9, 10, 13, 24, 33, 39

2.4 Aggregate Testing for Asphalt Mixes

(Questions related to these tasks make up 20-30% of the exam.)

2.4.1 Perform unit weight tests. 1, 41

2.4.2 Perform coarse aggregate specific gravity tests. 4, 5

2.4.3 Perform fine aggregate specific gravity tests. 5, 42

2.4.4 Perform sand equivalent tests. 18

2.4.5 Perform sieve analyses of mineral fillers. 3, 11, 50

2.4.6 Perform (run, calculate, report) flat and elongated particles tests. 29

2.4.7 Perform LA abrasion tests. 6

2.4.8 Perform clay lumps and friable particles tests. 7

2.4.9 Perform fine aggregate angularity (uncompacted void content) tests. 45

2.4.10 Perform sulphate soundness tests. 2, 43

2.4.11 Perform durability index tests. 26

2.4.12 Perform Micro-Deval tests. 35, 37

2.5 Asphalt Mix Testing

(Questions related to these tasks make up 23-33% of the exam.)

2.5.1 Determine void contents. 1, 14, 20, 22, 23, 49, 55

2.5.2 Determine height of compacted asphalt samples. 23, 47

2.5.3 Perform gyratory compactions. 32, 47, 52

2.5.4 Perform Marshall compactions. 33, 40

2.5.5 Calculate asphalt mix volumetrics. 14, 17, 20, 44

2.5.6 Perform Marshall stability and flow tests. 33, 34

2.5.7 Perform Hveem stability tests. 15

2.5.8 Perform Hveem compactions. 16

2.5.9 Perform drain down tests. 31, 46



2.6 Asphalt Mix Production and Placement

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

- 2.6.1 Identify issues in mix placements. 20, 21, 30, 48, 53, 54
- 2.6.2 Identify issues of mix productions. 19, 48, 54
- 2.6.3 Establish roller patterns. 20, 21, 22, 39, 48, 54
- 2.6.4 Monitor asphalt plant productions. 12, 19, 28
- 2.6.5 Identify asphalt paving equipment. 54

2.7 Communication of Results

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

- 2.7.1 Prepare lab or field test data for reports. 4, 6, 21, 23, 26, 29, 32, 34, 51, 54
- 2.7.2 Verbally report preliminary test results to clients or contractors. 11, 15, 22, 23, 31, 48

2.8 Equipment Calibration and Maintenance

(Questions related to these tasks make up 2-12% of the exam.)

- 2.8.1 Maintain test equipment. 6, 7, 25, 27, 38, 44
- 2.8.2 Perform equipment verifications. 6, 21
- 2.8.3 Verify equipment maintenance. 25, 38
- 2.8.4 Perform equipment calibrations. 25, 38

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