

**Level III Content Outline****Engineering Technician**

The candidates for NICET certification at Level III in Construction Materials Testing – Asphalt should have the knowledge, experience and skills needed to work without direct supervision, under the guidance of a registered professional engineer. They are familiar with of asphalt mix and binder types; design asphalt mixes using Superpave and other methods; perform asphalt mix testing; determine mix volumetric properties; develop aggregates sampling programs; evaluate asphalt mix production and placement; inspect hot mix asphalt plants; perform proficiency sample tests and prepare for lab assessments; supervise and train Levels I and II technicians, reviewing their testing procedures and practices; maintain equipment maintenance and calibration records; and prepare reports.

**3.1 Sampling of Asphalt Mixes and Components**

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

3.1.1 Design asphalt mix sampling programs.

3.1.2 Design aggregate sampling programs. 1, 2, 4

**3.2 Asphalt Mix Testing**

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

3.2.1 Perform tensile strength ratio (TSR) tests. 16

3.2.2 Perform immersion compression tests. 7, 8

**3.3 Asphalt Mix Design**

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

3.3.1 Identify aggregate types. 13, 14

3.3.2 Proportion aggregates for mix designs. 23

3.3.3 Identify asphalt mix types (e.g., dense graded, permeable, warm). 3, 19, 23, 24, 26

3.3.4 Identify binder types. 18

3.3.5 Prepare asphalt mixture using Superpave design procedures.

3.3.6 Prepare asphalt mixture using Marshall design procedures. 5

3.3.7 Prepare asphalt mixture using Hveem design procedures. 7, 12, 13, 21, 23

3.3.8 Determine mix volumetric properties. 9, 10, 13

**3.4 Asphalt Mix Production and Placement**

(Questions related to these tasks make up 15-25% of the exam.)

3.4.1 Evaluate mix placement. 6, 8, 14, 18

3.4.2 Evaluate mix production. 7, 8, 17, 18, 19, 23

3.4.3 Inspect mix production plants. 18, 19, 22, 23

**3.5 Quality System Implementation**

(Questions related to these tasks make up 15-25% of the exam.)

3.5.1 Train Level I and II technicians. 2, 11, 12, 18, 22

3.5.2 Maintain calibration records. 15, 20, 22

3.5.3 Maintain equipment records. 2, 9, 15

3.5.4 Maintain training records. 20

3.5.5 Perform proficiency sample testing. 20

3.5.6 Prepare for lab assessments. 20

**3.6 Reporting and Supervision**

(Questions related to these tasks make up 15-25% of the exam.)

3.6.1 Evaluate test results. 26

3.6.2 Review sampling methods. 7, 9, 12, 25, 28, 29, 30, 31

3.6.3 Review mix testing procedures. 2, 6, 14

3.6.4 Review aggregate testing procedures. 9, 10, 11, 28, 29

3.6.5 Maintain quality control charts. 27, 32

3.6.6 Produce preliminary reports.