

Job-Task Analysis (JTA) for ACI Aggregate Testing Technician—Level 2 Certification

HOW TO USE THIS JTA:

On the written examination, the Candidate must:

- **Understand** the following general concepts, which may not have specified values, procedures, or measurements; *and*
- **Know** the following specific procedures or values; performance of these items may also be assessed on the performance examination.

On the performance examination:

- **Perform**—or describe verbally, where allowed—the following tasks or steps, which are part of the specified procedure; knowledge of these items may also be assessed on the written examination.

RESOURCES:

AASHTO T 19 Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate

AASHTO T 96 Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

AASHTO T 104 Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

AASHTO T 112 Standard Method of Test for Clay Lumps and Friable Particles in Aggregate

AASHTO T 113 Standard Method of Test for Lightweight Pieces in Aggregate

AASHTO T 176 Standard Method of Test for Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

AASHTO T 304 Standard Method of Test for Uncompacted Void Content of Fine Aggregate

ASTM C535 Standard Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

ASTM D5821 Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

AASHTO T 19 Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate

- Understand the scope of the method 1.1
- Know the terminology of the method 3.1–3.2
- Understand the significance and use of the method 4
- Know the equipment required for the procedure 5.1–5.4, Note 2
- Know the requirements for sampling 6
- Know the requirements for sample size 7
- Understand the requirements and procedures for equipment calibration 8
- Know the requirements for procedure selection 9
- Know and perform the requirements for the rodding procedure 10
- Know the requirements for the jiggling procedure 11
- Know the requirements for the shoveling procedure 12
- Know and perform the calculation requirements for the test method 13
- Know and perform the reporting requirements 14

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AASHTO T 96 Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

- Understand the scope of the method 1.1, Note 1
- Understand the summary of the method 4
- Understand the significance and use of the method 5
- Know the equipment required for the procedure 6
- Know the requirements for sampling 7
- Know the requirements for fabricating the test samples 8, Table 1
- Know the procedure for performing the test method 9
- Know the calculation requirements for the test method 10
- Know the reporting requirements 11

AASHTO T 104 Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate

- Understand the scope of the method 1.1–1.2
- Know the equipment required for the procedure 3.1–3.9
- Know the requirements for the solutions used in the procedure 4.1–4.2
- Know the requirements for fabricating the samples for testing 5.1–5.3
- Know the requirements for preparation of fine aggregate samples 6.1
- Know the requirements for preparation of coarse aggregate samples 6.2
- Know the procedure for storage of samples in solutions 7.1
- Know the procedure for drying samples after immersion 7.2
- Know the requirements for determining the number of cycles 7.3
- Understand the procedure for determining a quantitative analysis 8
- Understand the procedure for determining a qualitative analysis 9
- Understand the reporting requirements 10

AASHTO T 112 Standard Method of Test for Clay Lumps and Friable Particles in Aggregate

- Understand the scope of the method 1.1
- Understand the significance and use of the method 3
- Know the equipment required for the procedure 4
- Know the requirements for fabricating the test samples 5
- Know and perform the procedure for performing the test method 6
- Know and perform the calculation requirements for the test method 7.1
- Know and perform the reporting requirements 7.2

AASHTO T 113 Standard Method of Test for Lightweight Pieces in Aggregate

- Understand the scope of the method 1.1–1.2
- Understand the significance and use of the method 3
- Know the equipment required for the procedure 4
- Know the requirements for the heavy liquids used in the test method 5, Note 1
- Know the requirements for sampling 6
- Know and perform the procedure for performing the test method 7

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- Know and perform the calculation requirements for the test method 8
- Know and perform the reporting requirements 9

AASHTO T 176 Standard Method of Test for Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test

- Understand the scope of the method 1.1, 1.3
- Know the requirements for rounding result 1.2
- Understand the significance and use of the method 3
- Know the equipment required for the procedure 4.1–4.7, 4.10–4.14
- Understand the requirements for the stock solution 4.8
- Know the requirements for the working solution 4.9
- Understand the requirements for temperature control 5
- Know the requirements for sampling 6
- Know and perform the requirements for sample preparation (air dry) 7.1–7.1.1
- Understand the requirements for sample preparation (pre wet) 7.1.2
- Understand the requirements for sample preparation (reference method) 7.1.2
- Know and perform the procedure for performing the test method 8.1–8.4
- Understand the procedure for performing the mechanical shaker method (reference method) 8.4.1
- Understand the procedure for performing the mechanical shaker method 8.4.2
- Know and perform the procedure for performing the hand method 8.4.3
- Know and perform the procedure for performing the test method 8.5–8.10
- Know and perform the calculations required and the reporting requirements 9
- Understand the precautions for the test method 10

AASHTO T 304 Standard Method of Test for Uncompacted Void Content of Fine Aggregate

- Understand the scope of the method 1.1–1.3
- Understand the summary of the method 4
- Understand the significance and use of the method and the purpose of the results obtained for each method 5
- Know the equipment required for the procedure 6
- Know the requirements for sampling 7
- Know the requirements for calibrating the measure 8
- Know the requirements for preparing a standard graded test samples 9.1
- Know the requirements for preparing individual size fraction test samples 9.2
- Know and perform the requirements for preparing an as received test samples 9.3
- Know and perform the procedure for the test method 10
- Know and perform the calculations required and the reporting requirements 11
- Know and perform the reporting requirements 12

ASTM C535 Standard Method for Resistance to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

- Understand the scope of the method 1.1, Note 1
- Understand the summary of the method 4

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- Understand the significance and use of the method 5
- Know the equipment required for the procedure 6
- Know the requirements for sampling 7
- Know the requirements for fabricating the test samples 8, Table 1
- Know the procedure for performing the test method 9
- Know the calculation requirements for the test method 10
- Know the reporting requirements 11

ASTM D4791 Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

- Understand the scope of the method 1.1–1.2
- Know terminology 3
- Understand the summary of the method 4
- Understand the significance and use of the method 5
- Know the equipment required for the procedure 6
- Know the requirements for sampling 7
- Know and perform the procedure for performing the test method 8.1–8.2
- Know and perform the procedure Method A for performing the test method 8.3
- Know and perform the procedure Method B for performing the test method 8.4
- Know and perform the calculation requirements for the test method 9
- Know and perform the reporting requirements 10

ASTM D5821 Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate

- Understand the scope of the method 1.1–1.2
- Know the terminology of the method 3.1.1–3.2.1
- Understand the significance and use of the method 4
- Know the equipment required for the procedure 5
- Know the requirements for sampling 6
- Know the requirements for sample preparation 7
- Know and perform the procedure for performing the test method 8
- Know and perform the calculation and reporting requirements for the test method 9