

| Table IX, Materials, Sampling & Testing Frequency, Airports in US Customary Units | | | | | Page 1 of 7 |
|---|-----------------------|-------------|--|---|--|
| Material | Type of Sample | Sample Size | Type of Tests | Frequency | Remarks |
| Excavation | Acceptance | (5) | Gradation, P.I., Moisture (or visual description if organic) | 1 per 5,000 C.Y. waste or undesignated waste cut | Number consecutively EX-W-1. No need to test, if waste is designated on plans. |
| Embankment (4) | Acceptance | (5) | Standard Density | As required by change in material | Number consecutively BM-SD-1 or EX-SD-1 |
| | | | Field Density (1) | 1 per 1,500 C.Y. or 1 per 3,000 Tons | Number consecutively BM-D-1 or EX-D-1. |
| | | | Gradation, P.I., and Deleterious (visual) | 1 per 5,000 C.Y. or 1 per 10,000 Tons (4) | Number consecutively BM-G-1 or EX-G-1. |
| | Independent Assurance | (5) | Standard Density (2) | 1 per source | Use numbers that correspond to acceptance samples. Include field test results with sample. |
| | | | Field Density (1) | 1 per 15,000 C.Y. or 1 per 30,000 Tons | |
| Bedding and Backfill for Structures (Drainage Items, Ducts, Conduits, etc.) | Acceptance | (5) | Standard Density | As required by change in material | Use numbers that correspond to acceptance samples. Include field test results with sample. |
| | | | Field Density (1) | (3) | |
| | | | Gradation, P.I., and Deleterious (visual) | 1 per source or as required by change in material | |

General: Independent Assurance (IA) Testing may be waived when Acceptance Testing is performed in DOT&PF Regional Laboratories accredited in the specified test method. When DOT&PF Regional Laboratories perform Acceptance Testing, they may also perform the IA Testing if using different personnel and equipment than was used for the Acceptance Testing.

- (1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. IA Testing is not required when material (as shown by gradation testing) is Too Coarse to Test (TCTT).
- (2) Required when Standard Density test is run in the field.
- (3) One density per structure (pipe, conduit, manhole, catch basin, inlet, utility vault, etc.), with a minimum of one density per 100 lineal feet of trench (for pipes, conduits, buried cables, etc.) installed. Perform densities within 18 inches of the structure or outside diameter of the pipe.
- (4) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. The Regional Quality Assurance Engineer (RQE) or Regional Materials Engineer (RME) may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
- (5) See the specified test method for minimum sample size.

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|--|-----------------------|-------------|--|--|---|
| Subbase Course | Quality | 150 lbs. | L.A. Wear, Degradation | 1 per source prior to use | Allow minimum of 14 days for testing and transport. Number consecutively Q-SB-1 |
| | Acceptance | (6) | Standard Density | 1 per source and as required based on changes in material | Number consecutively SB-SD-1 |
| | | | Field Density (1) | 1 per 1,000 C.Y. or 1 per 2,000 Tons | Number consecutively SB-D-1 |
| | | | Gradation, LL & P.I., and Deleterious | 1 per 2,500 C.Y. or 1 per 5,000 Tons (3) | Number consecutively SB-G-1 |
| | Independent Assurance | (6) | Standard Density (2) | 1 per source | Use numbers that correspond to acceptance samples. Include field test results with sample. |
| | | | Field Density (1) | 1 per 10,000 C.Y. or 1 per 20,000 Tons | |
| Gradation, LL & P.I., and Deleterious | | | 1 per 25,000 C.Y. or 1 per 50,000 Tons | | |
| Aggregate Surface Course and Crushed Aggregate Base Course | Quality | 150 lbs. | L.A. Wear, Degradation, Soundness | 1 per source prior to use | Allow minimum of 14 days for testing and transport. Number consecutively Q-SC-1 or Q-BC-1 |
| | Acceptance | (6) | Standard Density | 1 per source and as required based on changes in material | Number consecutively SC-SD-1 or BC-SD-1 |
| | | | Field Density | 1 per 500 C.Y. or 1 per 1,000 Tons | Number consecutively SC-D-1 or BC-D-1 |
| | | | Gradation, LL & P.I., SE, Fracture, Deleterious | 1 per 1,000 C.Y. or 1 per 2,000 Tons (3) (4) (5) | Number consecutively SC-G-1 or BC-G-1 |
| | Independent Assurance | (6) | Standard Density (2) | 1 per source | Use numbers that correspond to acceptance samples. Include field test results with sample. |
| | | | Field Density | 1 per 5,000 C.Y. or 1 per 10,000 Tons | |
| Gradation, LL & P.I., SE, Fracture, Deleterious | | | 1 per 10,000 C.Y. or 1 per 20,000 Tons | | |

- (1) If material is impractical to test for field density, document quantity and/or area by reporting percent oversize and compactive effort used on a proper density acceptance form. **IA testing is not required when material (as shown by gradation testing) is TCTT.**
- (2) Required when Standard Density is run in the field.
- (3) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. **The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.**
- (4) **Fracture:** If the first ten tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the IA samples.
- (5) **SE:** If the first five tests indicate the material meets specification for Sand Equivalent (**SE**), additional tests need only be performed on the IA samples. The SE test is not required for Aggregate Surface Course.
- (6) **See the specified test method for minimum sample size.**

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|---|-----------------------|---|---|---|--|
| Plant Hot Mix Asphalt and Asphalt Treated Base Course | Quality | 150 lbs. Aggregate | L.A. Wear, Degradation, Soundness | 1 per source prior to use | Allow 25 days for testing and transport |
| | Mix Design | 500 lbs. (7) Aggregate | Mix Design (1) (2) Sand Equivalent (SE), Flat & Elongated (F&E), Fracture | 1 per source and as required by changes in material | Allow 15 days or contract specified time for mix design and testing after receiving contractor's proposed gradation. Contact the Regional Materials Laboratory to see if submitting the asphalt cement or anti-strip is necessary. |
| | | 5 one gallon cans of AC | | | |
| | | 1 pint of Anti Strip | | | |
| | Acceptance | (1) (8) | MSG (Maximum Specific Gravity) | 1 per Lot (1) (9) | From Mix Design for the first lot and then from the first subplot of each additional lot. |
| | | | Mat Density ,Gradation, Oil Content, LL & P.I., Fracture, F&E, SE, Deleterious, Thickness | 1 per 500 Ton subplot (3) (4) (5) (9) | Ross Count (AASHTO T 195, Coating Test) as required by RQE or RME. |
| | | | Joint Density | (1) (9) | Top Lift (1) |
| | Independent Assurance | (8) | MSG | 1 per project minimum | Required when MSG is run in the field. |
| | | | Mat Density, Gradation, Oil Content, LL & P.I., Fracture, F&E, SE | 1 per 5,000 Tons | Use numbers that correspond to acceptance samples. Include field test Results with sample. |
| Information | 30 lbs. | 3-Marshall Biscuits or 2-Gyratory samples | 1 per Mix Design Minimum (9) | Compare results to Mix Design | |
| Asphalt Cement | Quality | See Remarks | (1) | 1 per each grade and source prior to use | Manufacturer's certification required |
| | Acceptance | Three 1- Quart Cans | | 1 per 50,000 gals. or 1 per 200 Tons | Sampled on project. Test for anti-strip if required by RQE or RME |

- (1) Refer to project specifications.
- (2) Recommendations regarding anti-strip requirements must be determined for each mix design.
- (3) P.I. tests shall be performed on the first five samples at the start of production from any source. If these tests indicate the material to be non-plastic, additional tests need only be performed on the IA samples. The RQE or RME may reduce the number of tests required if the source is known to have no value for liquid limit and be non-plastic.
- (4) Fracture: If the first ten tests indicate the fracture to be 5% or more above spec, additional tests need only be performed on the IA samples.
- (5) SE: If the first five tests indicate the material meets specification for Sand Equivalent (SE), additional tests need only be performed on the IA samples.
- (6) Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.
- (7) For multiple stockpiles, proportion each stockpile sample to the proposed Job Mix Design blend ratio.
- (8) See the specified test method for minimum sample size.
- (9) May not be applicable to Asphalt Treated Base Course. Refer to project specifications.

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| Material | Type of Sample | Sample Size | Type of Tests | Frequency | Remarks |
|---|-------------------------|--|---|--|---|
| Liquid Asphalt for: a. Prime Coat b. Tack Coat c. Seal Coats d. Asphalt Surface Treatment | Quality | See Remarks | Type and Grading | 1 per each grade and source prior to use | Manufacturer's certification required |
| | Acceptance | 1 Gallon in plastic jug | (1) | 1 per 50,000 gallons or 1 per 200 Tons | Sample must be tested by Lab that did not test material for Quality. Material sampled prior to dilution |
| Aggregate for Seal Coats and Surface Treatments | Quality | 150 lbs. Aggregate | L.A. Wear, Soundness, Degradation | 1 per source prior to use | Allow 25 days for testing and transport Test for anti-strip if required by RQE or RME |
| | Acceptance | (4) | Gradation, Fracture, Flat & Elongated (F&E), Deleterious (visual) | 1 per 500 Tons (2) (3) | May be taken from stockpile or production |
| | Independent Assurance | | Gradation, Fracture, F&E, Deleterious (visual) | 1 per 5,000 Tons | |
| Portland Cement Concrete (a) Cement (b) Water (c) (CA) Coarse Aggregate (d) (FA) Fine Aggregate | Quality | (a) Two 1-gallon cans | See Remarks | 1 per shipment (5) | Allow 40 days for testing and transport. Manufacturer's certification required. |
| | (a) Cement (b) Water | (b) ½ gal. in glass jar | See remarks | 1 per source | Allow 20 days for testing or potable water accepted by Project Engineer |
| | (c) CA | (c) 100 lbs. | Deleterious Substances, L.A. Wear, Soundness | 1 per source | Allow 25 days for testing and transport |
| | (d) FA | (d) 25 lbs. | Deleterious Substances, Soundness | 1 per source | Allow 25 days for testing and transport |
| Portland Cement Concrete (a) Cement (b) Water (c) Coarse Aggregate (d) Fine Aggregate (e) Admixtures | Mix Design Submittal | (a) 1 sack (b) None (c) 330 lbs. (d) 110 lbs. (e) 1 qt. each | Mix Design Verification (6) | 1 per source prior to use | Manufacturer's certifications and aggregate test reports required. For verification of Contractor-furnished mix design, allow 40 days for testing and transport. |

- (1) Refer to project specifications.
- (2) **Fracture:** If the first ten tests indicate the fracture to be 5% or more above specification, additional tests need only be performed on the IA samples.
- (3) Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. **For known sources, the RQE or RME may waive this requirement.**
- (4) See the specified test method for minimum sample size.
- (5) Cement stored in silos or bins over six months, or in bags over two months, may require re-testing, see project specifications.
- (6) When 4x8 cylinders are used for strength data, an average of 4 is required.**

| Material | Type of Sample | Sample Size | Type of Tests | Frequency | Remarks |
|---------------------|-----------------------|----------------------------|--|---|--|
| Concrete Continued: | | | | | |
| Coarse Aggregate | Acceptance | (4) | Gradation, Deleterious (visual), Flat & Elongated (6) | 1 per 200 C.Y. (6) | Number consecutively CA-G-1 |
| Fine Aggregate | | | Gradation, Deleterious (visual), Fineness Modulus | 1 per 200 C.Y. | Number consecutively FA-G-1 |
| Mix | | As required by test method | Slump, % Air, Cement factor, Water/Cement Ratio, Unit Weight/Yield | 1 per ½ days pour (1) or 1 per 200 C.Y. | (2) |
| | | Cylinders or beams | Compressive strength or Flexural strength (3) | 1 per ½ days pour (1) or 1 per 200 C.Y. | Mold two (6x12) or three (4x8) cylinders. Test at 28 days. (2) (5) |
| | Information | Cylinders or beams | Compressive strength or Flexural strength (3) | As required (e.g. for 7 day break) | Mold two (6x12) or three (4x8) cylinders "As Required" for strength data. |
| Coarse Aggregate | Independent Assurance | (4) | Gradation, Deleterious, Flat & Elongated (6) | 1 per 2,000 C.Y. with minimum of 1 per project if over 100 C.Y. is placed | Mold two (6x12) or three (4x8) Cylinders if acceptance cylinders are not tested in Regional Lab. |
| Fine Aggregate | | | Gradation, Deleterious (visual), Fineness Modulus | | |
| Mix | | As required by test method | Slump, % Air, Cement factor, Water/Cement Ratio, Unit Weight | 1 per 2,000 C.Y. | Numbers correspond to acceptance samples. Include field test results with sample. |
| | | Cylinders or beams | Compressive strength or Flexural strength (3) | 1 per 2,000 C.Y. | |

- (1) Half day's pour considered to be 6 hours or less.
- (2) Commercial sources, which are periodically inspected, do not have to be tested if day's total quantity of concrete placement is less than 5 C.Y. as determined by the Project Engineer. Placement reports summarizing all minor pours will be completed.
- (3) Only required when strength criteria is included for the item.
- (4) See the specified test method for minimum sample size.
- (5) Non-structural or minor concrete construction, 1 set minimum per project is recommended.
- (6) Refer to project specifications. Flat and Elongated (F&E) tests shall be performed on the first five samples from any source. For known sources, the RQE or RME may waive this requirement.

| Material | Type of Sample | Sample Size | Type of Tests | Frequency | Remarks |
|---|------------------------|--|------------------------------------|---|--|
| Misc. Hardware | Quality | (1) | | 1 per pay item or assembly, min. | Approved by designated authority; reference MCL. |
| Concrete Reinforcing Steel | Quality | (2) | | 1 for each type, grade and size in a shipment | Approved by designated authority; reference MCL. |
| Joint Sealer, Joint Filler, and Curing Materials for Concrete | Quality | 1 Quart for each liquid (see remarks) | (1) See remarks | 1 per type | Project Engineer documentation if on QPL. If not on QPL, manufacturer's certification or sample for testing. |
| Porous Backfill | Acceptance | (3) | Gradation and Deleterious (visual) | 1 per source or as required by change in material | Number consecutively PB-G-1 |
| Topsoil | Quality | 15 lbs. | Organic content, Gradation, pH | 1 per source prior to use | Allow 15 days for testing and transport |
| | Acceptance | (3) | Gradation | 1 per 15,000 square yards or 1 per 2,500 cubic yards | Number consecutively TS-G-1 |
| Lighting Equipment | Quality and Acceptance | Within 30 days following award of the contract, the contractor shall submit to the Project Engineer for approval a complete list of material and equipment that is proposed to be used for this item. The data shall include catalog cuts, diagrams, test reports, manufacturers' certifications, etc. The above data shall be submitted in eight sets. Any proposed deviation from the plans shall also be submitted. | | | |

- (1) Certificates of Compliance per Specifications GCP 60
- (2) Mill Test Reports to include heat numbers, fabrication date, physical and chemical properties.
- (3) See the specified test method for minimum sample size.

Minor Quantities

A. Portland Cement Concrete. Concrete for the following items may be accepted on the basis of an approved mix design and placement reports documenting batch information and pour location, time, and quantity. Under this system arrangements should be made for the producer to state on the delivery ticket accompanying each load of concrete, the class of concrete being furnished, the weights of cement, aggregates and water used in the batch, and the time of batching. Use only State-tested aggregates and cement, or supplier certified cement, approved by the **RQE, RME, or Statewide Materials Engineer (SME)**. Each pour must be documented on a Concrete Placement Report.

1. Sidewalks - not to exceed 150 square yards per day.
2. Curb and gutter, not to exceed approximately 250 lineal feet per day
3. Slope paving and headers.
4. Paved Ditches and flumes.
5. Manhole bases, Catch Basins, Inlets and Inspection Holes.
6. Small culvert headwalls and Miscellaneous Drainage Structures.
7. Fence Post Footings.
8. Sign Post footings.
9. Cable Markers
10. Electrical Duct encasement and markers
11. Electrical vault, light or signal boxes

B. Small Quantities of Miscellaneous Materials. The primary documentation of delivery and placement may be the Project Materials Report.

1. Aggregates—not to exceed 500 Tons per item per project.
2. Asphalt/Aggregate Mixtures—not to exceed 1,500 Tons per approved mix design.
3. Bituminous Material—not to exceed 85 Tons per project.
4. Paint—not to exceed 20 Gallons per project. Acceptance to be based on weights and analysis on the container label.
5. Masonry Items—Subject to checking of nominal size and visual inspection. Not to exceed 100 pieces.
6. Plain concrete or clay pipe— not to exceed 100 lineal feet.
7. Topsoil—not to exceed 600 square yards.