GUIDE SCHEDULE OF SAMPLING & TESTING FOR DESIGN-BUILD PROJECTS BY THE INDEPENDENT QUALITY FIRM (IQF)

May 27, 2020
Using the Guide Schedule

The Independent Quality Firm (IQF) will perform materials sampling at locations and timing defined in this Guide Schedule of Sampling and Testing for Design-Build Projects by the IQF (hereafter referred to as the DB Guide Schedule). This minimum testing frequency must be met with random independent samples as defined in the Quality Assurance Program for CDA / Design-Build Projects with a Capital Maintenance Agreement with Three Optional 5-Year Terms (DB QAP), Section 3.2 – Sampling and Testing. During the start-up of new categories of work and when there are any concerns over the quality of materials, the IQF will conduct sampling and testing at a higher frequency.

The IQF will determine random sample locations using ASTM D3665. While the testing of random independent samples is required to meet the requirements of this DB Guide Schedule, the IQF will perform additional (fixed) tests when the quality of material is questionable at a location other than the randomly selected location. These fixed tests will constitute an acceptance test, and a failing result must be addressed in a similar manner to a failing random independent test. Fixed tests will not count toward meeting minimum IQF testing frequencies.

Research of sampling and testing rates listed for project tests in this DB Guide Schedule show that the risk of either rejecting “good” material or accepting “bad” material ranges from 20% to 40%. To reduce this risk, the sampling rate will be increased during initial production. A four-fold increase in testing frequency will generally reduce risk to approximately 5%. The intent of increasing testing at the start of production is to ensure that the DB Contractor’s processes are in control and to establish acceptability requirements early.

The IQF can use results from TxDOT’s Material Producer List (MPL). For materials listed on the MPL, the IQF will be required to perform job control tests as defined by the TxDOT DB Guide Schedule. Materials that are not monitored or not pre-approved by TxDOT under the MPL are subject to IQF and OV sampling and testing as part of the acceptance program, except as noted in the remarks of this document. Not pre-approved materials must be sampled and tested in accordance with the applicable Departmental Materials Specifications (DMS), applicable material quality program, and Specifications. The IQF will audit and verify that materials delivered to the project site are in conformance with approved materials submittals. The IQF and TxDOT’s designee will use approved laboratories from the MPL when applicable.

When using materials or processes that are listed on the TxDOT MPL, the DB Contractor will furnish samples of materials to be incorporated into the Work at TxDOT’s request. Manufacturer’s warranties, guarantees, instruction sheets, parts lists, and other materials that are furnished with articles or materials incorporated into the work will be made available to TxDOT upon request.

Other testing required by the specifications but not shown in the DB Guide Schedule should be performed at a frequency required by the applicable DMS, applicable material quality program and as necessary to provide adequate confidence that materials meet specifications.
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (D)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMBANKMENT (CUTS &amp; FILLS)</strong></td>
<td>Liquid Limit (A)</td>
<td>Tex-104-E</td>
<td>During stockpiling operations, from completed stockpile, or project site (B)</td>
<td>Materials with PI ≤ 15: 10,000 CY</td>
<td>For Type A embankment or when required by the plans. Determine a new liquid limit and plasticity index for each different material or notable change in material. Sample in accordance with Tex-100-E.</td>
</tr>
<tr>
<td></td>
<td>Plasticity Index (A)</td>
<td>Tex-106-E</td>
<td></td>
<td>Materials with PI &gt; 15: 5,000 CY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gradation</td>
<td>Tex-110-E</td>
<td></td>
<td>Each 10,000 CY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moisture/Density</td>
<td>Tex-114-E</td>
<td>As directed by the IQF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In-Place Density (A)</td>
<td>Tex-115-E, Part I</td>
<td>As designated by the IQF</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RETAINING WALL (NON-SELECT BACKFILL)</strong></td>
<td>As shown above for Embankment (Cuts and Fills)</td>
<td>As shown above for Embankment (Cuts and Fills)</td>
<td></td>
<td></td>
<td>Sample in accordance with Tex-100-E.</td>
</tr>
<tr>
<td><strong>RETAINING WALL (SELECT BACKFILL)</strong></td>
<td>Plasticity Index (A)</td>
<td>Tex-106-E</td>
<td>During stockpiling operations, from completed stockpile, or project site (B)</td>
<td>Each 5,000 CY</td>
<td>Required only for Type CS backfill. Test the fraction of material finer than the No. 200 sieve. Sample in accordance with Tex-400-A.</td>
</tr>
</tbody>
</table>
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**TABLE I - EMBANKMENTS, SUBGRADES, BACKFILL, AND BASE COURSES**

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Gradation</td>
<td></td>
<td>Tex-110-E</td>
<td>During stockpiling operations, from completed stockpile, or project site (B)</td>
<td>Each 5,000 CY</td>
<td>Required only for Drainage Aggregate. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tex-401-A</td>
<td></td>
<td></td>
<td>Required for Select Backfill. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td>Resistivity (A)</td>
<td></td>
<td>Tex-129-E</td>
<td>During stockpiling operations, from completed stockpile, or project site (B)</td>
<td>Each 5,000 CY</td>
<td>For material with resistivity between 1,500 and 3,000 ohm-cm, determine chloride and sulfate content, as specified in Item 423. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td>pH (A)</td>
<td></td>
<td>Tex-128-E</td>
<td>During stockpiling operations, from completed stockpile, or project site (B)</td>
<td>Each 5,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td>Soundness</td>
<td></td>
<td>Tex-411-A</td>
<td>During stockpiling operations, or from completed stockpile</td>
<td>1 per source, per project</td>
<td>Test when backfill sources appear to contain particles such as shale, caliche, or other soft, poor-durability particles. Sample in accordance with Tex-400-A and submit to MTD for testing prior to use. Micro-Deval test may be used in lieu of the soundness test when the Micro-Deval test results are not greater than 20%.</td>
</tr>
<tr>
<td>Micro-Deval Abrasion</td>
<td></td>
<td>Tex-461-A</td>
<td>During stockpiling operations, or from completed stockpile</td>
<td>1 per source, per project</td>
<td>Test when backfill sources appear to contain particles such as shale, caliche, or other soft, poor-durability particles. Micro-Deval test results may be used in lieu of soundness when test results are not greater than 20%. When % loss from micro-deval test is greater than 20%, the magnesium soundness test governs aggregate verification. Sample in accordance with Tex-400-A.</td>
</tr>
</tbody>
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<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RETAINING WALL</td>
<td>In-Place Density (A)</td>
<td>Tex-115-E, Part I</td>
<td>As designated by the IQF</td>
<td>1 per backfill lift, per wall</td>
<td>Not required for rock backfill. For walls greater than 500 ft. in length, perform one test per lift for every 500 ft. in length. Correct the moisture contents measured by nuclear density gauge in Tex-115-E with the moisture contents determined in accordance with Tex-103-E for each different material or notable change in material, and adjust the density accordingly.</td>
</tr>
<tr>
<td>(SELECT BACKFILL)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>(continued)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>UNTREATED SUBGRADE</td>
<td>Uniformity: Dynamic Cone Penetration (DCP)</td>
<td>ASTM D6951</td>
<td>As designated by the IQF</td>
<td>1 per 250-LF section (when using proof rolling)</td>
<td>When using proof rolling: perform one test for every 250-LF section. When using proof-mapping IC data: perform one test for every 250-LF section of roadbed for those locations classified as “red-mapped,” or as directed by the IQF. Perform one test for every 1000-LF section of roadbed for non-“red-mapped” locations. Perform testing on the final untreated subgrade layer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 per 250 Linear Foot or 1000-LF section (when using IC data)</td>
<td></td>
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</tr>
<tr>
<td>UNTREATED BASE COURSES</td>
<td>Liquid Limit (A)</td>
<td>Tex-104-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Plasticity Index (A)</td>
<td>Tex-106-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Crushed Face Count (A)</td>
<td>Tex-460-A, Part I</td>
<td>During stockpiling operations, or from completed stockpile</td>
<td>Each 20,000 CY</td>
<td>Required for Type C crushed gravel only.</td>
</tr>
<tr>
<td></td>
<td>Gradation (A)</td>
<td>Tex-110-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Moisture/Density</td>
<td>Tex-113-E</td>
<td>From completed stockpile at the source (C)</td>
<td>Each 20,000 CY</td>
<td>Ordinary compaction is not allowed. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Wet Ball Mill (A)</td>
<td>Tex-116-E</td>
<td>From completed stockpile at the source (C)</td>
<td>Each 20,000 CY</td>
<td>Required for Grades 1–2 and 5, and as shown on the plans for Grade 4. Sample in accordance with Tex-400-A.</td>
</tr>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>TREATED SUBGRADE AND BASE COURSES</strong></td>
</tr>
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</thead>
<tbody>
<tr>
<td><strong>NEW BASE MATERIAL</strong> (continued)</td>
<td>Plasticity Index (A)</td>
<td>Tex-106-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gradation (A)</td>
<td>Tex-110-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Wet Ball Mill (A)</td>
<td>Tex-116-E</td>
<td>From completed stockpile at the source (C)</td>
<td>Each 20,000 CY</td>
<td>Required for Grades 1–2 and 5, and as shown on the plans for Grade 4. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Strength (A)</td>
<td>Tex-117-E</td>
<td>From completed stockpile at the source (C)</td>
<td>Each 20,000 CY</td>
<td>Required for Grades 1–2 and 5, and as shown on the plans for Grade 4. When base material is from a source where the District has a record of satisfactory triaxial results, the frequency of testing may be reduced to one per 30,000 CY. If any one test falls below the minimum value required, the frequency of testing will return to the original frequency of 20,000 CY.</td>
</tr>
<tr>
<td><strong>RECLAIMED ASPHALT PAVEMENT (RAP), CRUSHED CONCRETE, and RECYCLED MATERIALS</strong></td>
<td>Sulfate Content (A)</td>
<td>Tex-145-E</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td>Required only for DB Contractor-furnished recycled material, including crushed concrete. Not required for RAP. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Deleterious Material (A)</td>
<td>Tex-413-A</td>
<td>During stockpiling operations, from completed stockpile, or windrow (B)</td>
<td>Each 5,000 CY</td>
<td>Required only for DB Contractor-furnished recycled material, including crushed concrete. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Decantation (A)</td>
<td>Tex-406-A, Part I</td>
<td>During delivery to project</td>
<td>Commercial Lime Slurry: each 200 tons of lime, Carbide Lime Slurry: each 100 tons of lime</td>
<td>Sample in accordance with Tex-600-J. Verify the source is listed on the current MPL for Lime. Only materials appearing on the MPL will be accepted. Sample frequency for Carbide Lime Slurry may be increased as directed by the IQF. For Hydrated Lime and Quick Lime, sample the material at a rate of 1 per project and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td><strong>LIME</strong></td>
<td>Compliance with DMS-6350</td>
<td>Tex-600-J</td>
<td>During delivery to project</td>
<td></td>
<td></td>
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<tr>
<td>TREATED SUBGRADE AND BASE COURSES (continued)</td>
<td>CEMENT</td>
<td>Compliance with DMS-4600</td>
<td>Railroad car, truck, or cement bins</td>
<td>Verify the source is listed on the current MPL for Cement. If not, sample in accordance with DMS-4600 and submit to MTD for testing prior to use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FLY ASH MATERIAL</td>
<td>Compliance with DMS-4615</td>
<td>Railroad car, truck, or bins</td>
<td>Verify the source is listed on the current MPL for Fly Ash. If not, sample in accordance with DMS-4615 and submit to MTD for testing prior to use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UNCOMPACTED MIXTURE</td>
<td>Pulverization Gradation</td>
<td>Tex-101-E, Part III</td>
<td>Roadway, after pulverization and mixing</td>
<td>As necessary for control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moisture/Density Curve and Strength</td>
<td>Tex-120-E, Part II or Tex-121-E, Part II</td>
<td>From roadway windrow after treatment</td>
<td>Each 20,000 CY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moisture/Density Curve and Strength</td>
<td>Tex-120-E, Part I, Tex-121-E, Part I or Tex-127-E</td>
<td>From roadway before treatment</td>
<td>As necessary for control</td>
</tr>
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</tr>
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**TREATED SUBGRADE AND BASE COURSES (continued)**

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<tbody>
<tr>
<td>COMPACTED MIXTURE</td>
<td>In-Place Density (A)</td>
<td>Tex-115-E, Part I</td>
<td>As designated by the IQF</td>
<td>Each 3,000 CY, Min 1 per lift</td>
<td>Ordinary compaction is not allowed. Determine the appropriate moisture/density curve for each different material or notable change in material. Correct the moisture contents measured by nuclear density gauge in Tex-115-E with the moisture contents determined in accordance with Tex-103-E, as necessary for control, for each different material or notable change in material, and adjust the density accordingly. Stabilizers and materials such as RAP, gypsum, and iron ore tend to bias the counts for nuclear density gauges.</td>
</tr>
<tr>
<td></td>
<td>Uniformity: Dynamic Cone Penetration (DCP) (Treated subgrade layer only)</td>
<td>ASTM D6951</td>
<td>As designated by the IQF</td>
<td>1 per 250-LF section (when using proof rolling)</td>
<td>When using proof rolling: perform one test for every 250-LF section. When using proof-mapping IC data: perform one test for every 250-LF section of roadbed for those locations classified as “red-mapped,” or as directed by the IQF. Red-mapped areas are locations not achieving at least 25% of the Intelligent Compaction Measured Value (ICMV). Perform one test for every 1000-LF section of roadbed for non-red-mapped locations. Perform testing on the final treated subgrade layer after curing as per specification requirements.</td>
</tr>
</tbody>
</table>

**TABLE I – FOOTNOTES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>The IQF will select any of these locations or any combinations thereof with the provision that the initial sample will be obtained from the completed stockpile at the source, and at least one out of ten consecutive samples will be taken at the project site (from the windrow for treated and untreated bases and embankments, when possible).</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>The IQF will sample from the completed stockpile at the source and test prior to placement.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Each test performed that is based on a quantity of material is considered “or fraction thereof” for calculating number of tests.</td>
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<tbody>
<tr>
<td>AGGREGATE</td>
<td>Liquid Limit (A)</td>
<td>Tex-104-E</td>
<td>During stockpiling operations, from completed stockpile, or prior to mixing</td>
<td>Each 5,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Plasticity Index (A)</td>
<td>Tex-106-E</td>
<td>During stockpiling operations, from completed stockpile, or prior to mixing</td>
<td>Each 5,000 CY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wet Ball Mill (A)</td>
<td>Tex-116-E</td>
<td>During stockpiling operations, from completed stockpile, or prior to mixing</td>
<td>1 per project, per source</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td>RECLAIMED ASPHALT PAVEMENT (RAP)</td>
<td>Decantation</td>
<td>Tex-406-A,Part I</td>
<td>During stockpiling operations, from completed stockpile, or prior to mixing</td>
<td>Each 10,000 CY</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td>and RECYCLED AGGREGATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIME</td>
<td>Compliance with DMS-6350</td>
<td>Tex-600-J</td>
<td>During delivery to the project</td>
<td></td>
<td>Hydrated Lime: 1 per project; Commercial Lime Slurry: each 200 tons of lime (B); Carbide Lime Slurry: each 100 tons of lime (B); Quick Lime: 1 per project Sample in accordance with Tex-600-J and submit to MTD for testing prior to use. On projects requiring less than 50 tons, material from MTD-approved sources may be accepted on the basis of Producer’s Certification without sampling.</td>
</tr>
<tr>
<td>ASPHALT BINDER</td>
<td>Compliance with Item 300</td>
<td></td>
<td>Sampling port nearest the storage tank. Take project samples when designated by the IQF.</td>
<td>1 per project, per grade, per source</td>
<td>Test a minimum of one sample taken from the project. Sample binder in accordance with Tex-500-C, Part II. Verify that the binder is from a preapproved source when it arrives on the project, and that the lab number on the shipping ticket is within the valid dates shown on the MTD QM test report.</td>
</tr>
<tr>
<td>TACK COAT</td>
<td>Compliance with Item 300</td>
<td></td>
<td>Distributor</td>
<td>1 per project, per grade, per source</td>
<td>Test a minimum of one sample taken from the project. Sample tack coat in accordance with Tex-500-C, Part III. Verify that the binder is from a preapproved source when it arrives on the project, and that the lab number on the shipping ticket is within the valid dates shown on the MTD QM test report.</td>
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<tr>
<th>TABLE IA – ASPHALT TREATED BASE (Plant-Mixed)</th>
</tr>
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<tbody>
<tr>
<td><strong>MATERIAL OR PRODUCT</strong></td>
</tr>
<tr>
<td>MIX DESIGN VERIFICATION</td>
</tr>
<tr>
<td>COMPLETE MIXTURE</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td>ROADWAY</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**TABLE IA – FOOTNOTES**

A. When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.

B. Each test performed that is based on a quantity of material is considered “or fraction thereof” for calculating number of tests.
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE II – SEAL COAT

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (B)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGGREGATE</td>
<td>Gradation (A)</td>
<td>Tex-200-F, Part I</td>
<td>Stockpile (At source or at point of delivery)</td>
<td>1 per 1,000 CY</td>
<td>Rate may be reduced to one each 2,000 CY if the IQF approves a DB Contractor quality control plan. Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td></td>
<td>L. A. Abrasion (A)</td>
<td>Tex-410-A</td>
<td>Stockpile</td>
<td>1 per project, per source</td>
<td>Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample 1 per 20,000 CY in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Magnesium Soundness (A)</td>
<td>Tex-411-A</td>
<td>Stockpile</td>
<td>1 per project, per source</td>
<td>Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample 1 per 20,000 CY in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Surface Aggregate Classification (A)</td>
<td>Tex-612-J, Tex-411-A</td>
<td>Stockpile</td>
<td>1 per project, per source</td>
<td>Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample 1 per 20,000 CY in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Pressure Slake (A)</td>
<td>Tex-431-A</td>
<td>Stockpile</td>
<td>1 per 20,000 CY</td>
<td>Required only for lightweight aggregate. Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Freeze Thaw (A)</td>
<td>Tex-432-A</td>
<td>Stockpile</td>
<td>1 per 20,000 CY</td>
<td>Required only for lightweight aggregate. Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Unit Weight</td>
<td>Tex-404-A</td>
<td>Stockpile</td>
<td>1 per 20,000 CY</td>
<td>Required only for lightweight aggregate. Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>24-hr. Water Absorption (A)</td>
<td>Tex-433-A</td>
<td>Stockpile</td>
<td>1 per 20,000 CY</td>
<td>Required only for lightweight aggregate. Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample in accordance with Tex-221-F and submit to MTD for testing prior to use.</td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (B)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGGREGATE (continued)</td>
<td>Crushed Face Count</td>
<td>Tex-460-A, Part I</td>
<td>Stockpile</td>
<td>1 per 20,000 CY</td>
<td>Only required for crushed gravel. Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td></td>
<td>Deleterious Material (A)</td>
<td>Tex-217-F, Part I</td>
<td>Stockpile</td>
<td>1 per 10,000 CY</td>
<td>Not required for lightweight aggregate. Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td></td>
<td>Decantation (A)</td>
<td>Tex-406-A</td>
<td>Stockpile</td>
<td>1 per 10,000 CY</td>
<td>Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td></td>
<td>Flakiness Index</td>
<td>Tex-224-F</td>
<td>Stockpile</td>
<td>Frequency as directed by the IQF</td>
<td>Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td></td>
<td>Micro-Deval Abrasion</td>
<td>Tex-461-A</td>
<td>Stockpile</td>
<td>1 per project or as necessary for control</td>
<td>Sample in accordance withTex-221-F.</td>
</tr>
<tr>
<td>PRECOATED AGGREGATE</td>
<td>Asphalt Content</td>
<td>Tex-236-F</td>
<td>Stockpile</td>
<td>Frequency as directed by the IQF when a target value is specified</td>
<td>Sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td>ASPHALT BINDER</td>
<td>Compliance with Item 300</td>
<td></td>
<td>Distributor Sampled, tested, and preapproved by MTD. Take project samples when designated by the IQF.</td>
<td>1 per project, per grade, per source</td>
<td>Test a minimum of one sample taken from the project. Sample asphalt binder in accordance with Tex-500-C, Part III. Verify that the binder is from the MTD’s preapproved source when it arrives on the project, and that the lab number on the shipping ticket is within the valid dates shown on the MTD QM test report. Binder should arrive on the project pre-approved.</td>
</tr>
</tbody>
</table>

**TABLE II – FOOTNOTES**

A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.

B Each test performed that is based on a quantity of material is considered “or fraction thereof” for calculating number of tests.
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE III – HYDRAULIC CEMENT CONCRETE – STRUCTURAL (Classes: C, F, H, S, CO, K, LMC, or SS)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COARSE AGGREGATE</strong></td>
<td>Decantation</td>
<td>Tex-406-A</td>
<td>From stockpile at concrete plant</td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Sieve Analysis (A)</td>
<td>Tex-401-A</td>
<td></td>
<td>Each 1,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used.</td>
</tr>
<tr>
<td></td>
<td>Deleterious Materials</td>
<td>Tex-413-A</td>
<td>1 per project and as necessary for control</td>
<td>Sample in accordance with Tex-400-A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Los Angeles Abrasion (A)</td>
<td>Tex-410-A</td>
<td>Two, each source</td>
<td></td>
<td>Verify the value of the source, as listed on the current CRSQC, meets the project specifications. If not, sample and submit to MTD for testing prior to use in accordance with Tex-499-A. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>5-Cycle Magnesium Sulfate Soundness (A)</td>
<td>Tex-411-A</td>
<td>Two, each source</td>
<td></td>
<td>Verify the value of the source, as listed on the current CRSQC, meets the project specifications. If not, sample and submit to MTD for testing prior to use in accordance with Tex-499-A. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td><strong>MINERAL AGGREGATE</strong></td>
<td>Sand Equivalent</td>
<td>Tex-203-F</td>
<td>From stockpile at concrete plant</td>
<td>1 per project and as necessary for control</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used.</td>
</tr>
<tr>
<td></td>
<td>Organic Impurities</td>
<td>Tex-408-A</td>
<td>1 per project, per source</td>
<td>Sample in accordance with Tex-400-A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sieve Analysis (A)</td>
<td>Tex-401-A</td>
<td>Each 1,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fineness Modulus</td>
<td>Tex-402-A</td>
<td>1 per project and as necessary for control</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used. Test to confirm material variability when strength values are in question.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deleterious Material</td>
<td>Tex-413-A</td>
<td>1 per project and as necessary for control</td>
<td>Sample in accordance with Tex-400-A. Test to confirm material variability when strength values are in question.</td>
<td></td>
</tr>
</tbody>
</table>
This is a guide for **minimum sampling and testing.** Testing frequency may need to be increased for high material variability or when test results approach specification limits.


<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINERAL AGGREGATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINE AGGREGATE</td>
<td>Acid Insoluble (AI) Residue or Micro-Deval Abrasion (see remarks) (A)</td>
<td>Tex-612-J Tex-461-A</td>
<td>Two, each source</td>
<td>Only for concrete subject to direct traffic. Verify the AI value of the source, as listed on the CRSQC, meets the project specifications. If not, sample and submit to MTD for testing prior to use in accordance with Tex-499-A. Alternatively, when blending fine aggregates, verify the AI and micro-deval values of the sources, as listed on the CRSQC, meet the project specifications. If not listed in the CRSQC, sample and perform micro-deval testing, and sample and submit AI samples to MTD for testing, prior to use. Sample in accordance with Tex-400-A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SILICA FUME</td>
<td>Compliance with DMS-4630 (A)</td>
<td>Railroad car, truck, bags or silos</td>
<td>1 per project, per class of concrete (for each type and brand)</td>
<td>Verify the source is listed on the MPL for Silica Fume. Sample in accordance with DMS-4630 and submit to MTD for testing prior to use. Additionally, provide MTD with one 4 x 8 concrete cylinder from trial batch for silica fume dispersion verification.</td>
</tr>
<tr>
<td></td>
<td>METAKAOLIN</td>
<td>Compliance with DMS-4635 (A)</td>
<td>Railroad car, truck or silos</td>
<td>1 per project, per class of concrete (for each type and brand)</td>
<td>Sample in accordance with Tex-300-D and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>MIX DESIGN</td>
<td>Compliance with Standard Specification Item 421.4</td>
<td>At source (if not approved)</td>
<td>Min 1 design per class, per source</td>
<td>Verify if cement, fly ash, slag cement, and chemical admixture sources are listed on the MPLs. If not, sample and submit to MTD for testing prior to use. Water testing is contracted by the concrete supplier (commercial lab report to be reviewed by TxDOT). Sample in accordance with Tex-300-D for cement and in accordance with Tex-733-I for fly ash.</td>
</tr>
<tr>
<td></td>
<td>JOINT MATERIAL</td>
<td>Compliance with DMS-6310</td>
<td>Sampled at jobsite if not sampled at source by MTD</td>
<td>1 per batch or shipment</td>
<td>Sample in accordance with Tex-500-C. Verify the source is listed on the MPL for Joint Sealers. If not, sample and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>CURING COMPOUND</td>
<td>Compliance with DMS-4650</td>
<td>Sampled at jobsite; tested by MTD.</td>
<td>When requested by MTD</td>
<td>Only products listed on the MPL for Concrete Curing Compounds will be allowed. When sample is requested by MTD, sample in accordance with Tex-718-I and submit to MTD for testing prior to use. Ensure container has been agitated and mixed prior to sampling.</td>
</tr>
<tr>
<td></td>
<td>EVAPORATION RETARDANTS</td>
<td>Compliance with DMS-4650</td>
<td></td>
<td></td>
<td>Only products listed on the MPL for Evaporation Retardants will be allowed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>REINFORCING STEEL</td>
<td>Compliance with the Standard Specifications and Special Provisions</td>
<td>As Specified</td>
<td></td>
<td></td>
<td>Only materials from MTD-approved sources listed on the MPLs for Reinforcing Steel Mills and Seven Wire Steel Strand will be allowed.</td>
</tr>
<tr>
<td>MECHANICAL COUPLERS</td>
<td>Compliance with DMS-4510</td>
<td>Tex-744-I</td>
<td>Sampled at jobsite; tested by MTD</td>
<td>3 couplers per lot (500 couplers) for each type, model, bar size, and grade</td>
<td>Only materials from MTD-approved sources listed on the MPL for Mechanical Couplers will be allowed. Sample in accordance with Tex-743-I.</td>
</tr>
<tr>
<td>LATEX</td>
<td>Compliance with DMS-4640 for concrete chemical admixtures</td>
<td></td>
<td></td>
<td></td>
<td>Verify the Latex is listed on the MPL for Chemical Admixtures.</td>
</tr>
<tr>
<td>EPOXY</td>
<td>Compliance with DMS-6100, unless otherwise specified</td>
<td></td>
<td>Sampled at jobsite if not pre-approved by MTD</td>
<td>1 per batch or shipment</td>
<td>Verify the source is listed on the MPL for Epoxies and Adhesives. If not, sample in accordance with Tex-734-I and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td>CONCRETE</td>
<td>Compressive Strength (A)</td>
<td>Tex-418-A</td>
<td>At point of concrete placement</td>
<td>4 cylinders for each 60 CY per class, per day. (For bridge railing and traffic railing, testing may be reduced to 4 cylinders per 180 CY per class regardless of days)</td>
<td>Sampling must be in accordance with Tex-407-A. Making additional cylinders for 56-day testing should be considered when slow strength gain mixtures are being used, or when the approved mix design has a history of failing to meet design strength at 28 days. Test 2 cylinders at 7 days, and if the average value is below the design strength as defined in Item 421, Table 8, test the remaining 2 cylinders at 28 days, or 56 days if additional cylinders were not made. If the average value of the 2 cylinders tested at 7 days meets the minimum design strength listed in Item 421, Table 8, the 2 remaining cylinders need not be tested. If the average value of the 7 and 28 day cylinders are below the design strengths, and 56 day cylinders were made, test the remaining set at 56 days.</td>
</tr>
<tr>
<td></td>
<td>Slump</td>
<td>Tex-415-A</td>
<td></td>
<td>1 test, per 4 strength specimens</td>
<td>Sample in accordance with Tex-407-A. Perform slump and temperature tests on the same load from which strength test specimens are made. Perform entrained air test only when entrained air concrete is specified in the plans. Check temperature of every load for bridge slabs and mass concrete placements. DB Contractor’s required testing will be in accordance with specification requirements for the appropriate specification Item.</td>
</tr>
<tr>
<td></td>
<td>Entrained Air (A)</td>
<td>Tex-416-A or Tex-414-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Temperature of Concrete (A)</td>
<td>Tex-422-A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.


<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
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<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE (continued)</td>
<td>Bridge Deck or Culvert Top Slab Thickness and Depth of Reinforcement</td>
<td>Tex-423-A, Part II</td>
<td>During dry run and during concrete placement (Bridge decks and direct traffic culverts)</td>
<td>1 per span</td>
<td>Min 6–Max 18 locations per span</td>
</tr>
</tbody>
</table>

**TABLE III – FOOTNOTES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.</td>
</tr>
<tr>
<td>B</td>
<td>Each test performed that is based on a quantity of material is considered “or fraction thereof” for calculating number of tests.</td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE IV – HYDRAULIC CEMENT CONCRETE – NON-STRUCTURAL CONCRETE (Classes: A, B, or E)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCRETE</td>
<td>Compressive Strength (A)</td>
<td>Tex-418-A</td>
<td>At point of concrete placement</td>
<td>2 cylinders per 180 CY, per class</td>
<td>Sampling must be in accordance with Tex-407-A. Strength will be determined by 7-day specimens.</td>
</tr>
<tr>
<td>MIX DESIGN</td>
<td>Compliance with the Standard Specification</td>
<td></td>
<td>At source if not approved.</td>
<td>Min 1 design per class, per source</td>
<td>Verify if cement, fly ash, slag cement, and chemical admixture sources are listed on the MPLs. If not, sample and submit to MTD for testing prior to use. Sample in accordance with Tex-300-D for cement and in accordance with Tex-733-I for fly ash. Water testing is contracted by the concrete supplier (commercial lab report to be reviewed by TxDOT).</td>
</tr>
<tr>
<td>SILICA FUME</td>
<td>Compliance with DMS-4630</td>
<td></td>
<td>Railroad car, truck, bags or silos</td>
<td>1 test per project, per class (for each type and brand)</td>
<td>Verify the source is listed on the MPL for Silica Fume. Sample in accordance with DMS-4630 and submit to MTD for testing prior to use. Additionally, provide MTD with one 4 x 8 concrete cylinder from trial batch for silica fume dispersion verification.</td>
</tr>
<tr>
<td>METAKAOLIN</td>
<td>Compliance with DMS-4635</td>
<td></td>
<td>Railroad car, truck or silos</td>
<td>1 test per project, per class (for each type and brand)</td>
<td>Sample in accordance with Tex-300-D and submit to MTD for testing prior to use.</td>
</tr>
</tbody>
</table>

### TABLE IV – FOOTNOTES

A  When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE V – HYDRAULIC CEMENT CONCRETE PAVEMENT (Classes: P or HES)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (B)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COARSE AGGREGATE</strong></td>
<td>Decantation</td>
<td>Tex-406-A</td>
<td></td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Sieve Analysis <em>(A)</em></td>
<td>Tex-401-A</td>
<td></td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used. When producing Optimized Aggregate Gradation (OAG) concrete, test every 10,000 CY of concrete in accordance with Tex-470-A.</td>
</tr>
<tr>
<td></td>
<td>Deleterious Materials</td>
<td>Tex-413-A</td>
<td>From stockpile at concrete plant</td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>L.A. Abrasion <em>(A)</em></td>
<td>Tex-410-A</td>
<td></td>
<td>Two, each source</td>
<td>Verify the value of the source, as listed on the current CRSQC, meets the project specifications. If not, sample and submit to MTD for testing prior to use in accordance with Tex-499-A. Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>5-Cycle Magnesium Sulfate Soundness <em>(A)</em></td>
<td>Tex-411-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MINERAL AGGREGATE</strong></td>
<td>Sand Equivalent</td>
<td>Tex-203-F</td>
<td></td>
<td>Each 3,000 CY of concrete (each source or combination of sources)</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used. At least one per week’s production.</td>
</tr>
<tr>
<td></td>
<td>Organic Impurities</td>
<td>Tex-408-A</td>
<td></td>
<td>1 per project, per source</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Sieve Analysis <em>(A)</em></td>
<td>Tex-401-A</td>
<td></td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A. Test combined aggregate when used. When producing OAG concrete, test every 10,000 CY of concrete in accordance with Tex-470-A.</td>
</tr>
<tr>
<td></td>
<td>Fineness Modulus</td>
<td>Tex-402-A</td>
<td></td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td></td>
<td>Deleterious Material</td>
<td>Tex-413-A</td>
<td>From stockpile at concrete plant</td>
<td>Each 20,000 CY of concrete (each source)</td>
<td>Sample in accordance with Tex-400-A.</td>
</tr>
<tr>
<td><strong>FINE AGGREGATE</strong></td>
<td>Acid Insoluble (AI) Residue or Micro-Deval Abrasion *(see remarks) <em>(A)</em></td>
<td>Tex-612-J Tex-461-A</td>
<td></td>
<td>1 per project, per source</td>
<td>Verify the AI value of the source, as listed on the CRSQC, meets the project specifications. If not, sample and submit to MTD for testing prior to use in accordance with Tex-499-A. Alternatively, when blending fine aggregates, verify the AI and micro-deval values of the sources, as listed on the CRSQC, meet the project specifications. If not listed in the CRSQC, sample and perform micro-deval testing, and sample and submit AI samples to MTD for testing, prior to use. Sample in accordance with Tex-400-A.</td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE V – HYDRAULIC CEMENT CONCRETE PAVEMENT (Classes: P or HES)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (B)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIX DESIGN</td>
<td>Compliance with Standard Specification Item 421.4</td>
<td></td>
<td>At source, if not approved</td>
<td>Min 1 design, per class, per source</td>
<td>Verify if cement, fly ash, groundgranulated blast furnace slag, and admixture sources are listed on the MPLs. If not, sample and submit to MTD for testing prior to use. Sample in accordance with Tex-300-D for cement and in accordance with Tex-733-I for fly ash. Water testing is contracted by the concrete supplier (commercial lab report to be reviewed by TxDOT).</td>
</tr>
<tr>
<td>SILICA FUME</td>
<td>Compliance with DMS-4630</td>
<td></td>
<td>Railroad car, truck, bags or silos</td>
<td>1 per project per class of concrete (for each type and brand)</td>
<td>Verify the source is listed on the MPL for Silica Fume. Sample in accordance with DMS-4630 and submit to MTD for testing, prior to use. Additionally, provide MTD with one 4 x 8 cylinder from trial batch for silica fume dispersion verification.</td>
</tr>
<tr>
<td>METAKAOLIN</td>
<td>Compliance with DMS-4635</td>
<td></td>
<td>Railroad car, truck or silos</td>
<td>1 per project per class of concrete (for each type and brand)</td>
<td>Sample in accordance with Tex-300-D and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td>JOINT MATERIAL</td>
<td>Compliance with DMS-6310</td>
<td></td>
<td>Sampled at jobsite if not sampled at source by MTD; tested by MTD.</td>
<td>1 per batch or shipment</td>
<td>Sample in accordance with Tex-500-C. Verify the source is listed on the MPL for Joint Sealers. If not, sample and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td>CURING COMPOUND</td>
<td>Compliance with DMS-4650</td>
<td></td>
<td>Sampled at jobsite; tested by MTD. See remarks.</td>
<td>When requested by MTD</td>
<td>Only products listed on the MPL for Concrete Curing Compounds will be allowed. Sample in accordance with Tex-718-I, when requested and submit to MTD for testing. Ensure container has been agitated and mixed prior to sampling.</td>
</tr>
<tr>
<td>EVAPORATION RETARDANTS</td>
<td>Compliance with DMS-4650</td>
<td></td>
<td></td>
<td></td>
<td>Only products listed on the MPL for Evaporation Retardants will be allowed.</td>
</tr>
<tr>
<td>REINFORCING STEEL</td>
<td>Compliance with the Standard Specifications and Special Provisions</td>
<td>As Specified</td>
<td></td>
<td></td>
<td>Only materials from MTD-approved sources listed on the MPL for Reinforcing Steel Mills and Seven Wire Steel Strand will be accepted.</td>
</tr>
<tr>
<td>MULTIPLE PIECE TIE BARS</td>
<td>Compliance with DMS-4515</td>
<td>Tex-712-I</td>
<td>Sampled at jobsite; tested by MTD. See remarks.</td>
<td>1 set (10 tie bars per sample set), per project, for each type, model, bar size, and grade</td>
<td>Only materials from MTD-approved sources listed on the MPL for Multiple Piece Tie-bars for Concrete Pavements will be allowed. Sample in accordance with Tex-711-I.</td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

**TABLE V – HYDRAULIC CEMENT CONCRETE PAVEMENT (Classes: P or HES)**

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION OR TIME OF SAMPLING</th>
<th>FREQUENCY OF SAMPLING (B)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPOXY</td>
<td>Compliance with DMS-6100</td>
<td></td>
<td>Sampled at jobsite, if not pre-approved by MTD.</td>
<td>1 batch per shipment</td>
<td>Verify the source is listed on the MPL for Epoxies and Adhesives. If not, sample in accordance with Tex-734-I and submit to MTD for testing prior to use.</td>
</tr>
<tr>
<td></td>
<td>Strength (A) (B)</td>
<td>Tex-448-A or Tex-418-A</td>
<td>At point of concrete placement</td>
<td>1 test (2 specimens) for each 3,000 SY of concrete or fraction thereof or per day</td>
<td>Sample in accordance with Tex-407-A. Test 7-day job-control samples for compressive or flexural strength. Or test job-control samples at any age if proven to meet the 28-day compressive or flexural strength, as correlated in accordance with Tex-427-A.</td>
</tr>
<tr>
<td></td>
<td>Slump</td>
<td>Tex-415-A</td>
<td></td>
<td>1 test for each 3,000 SY of concrete or fraction thereof or per day</td>
<td>Sample in accordance with Tex-407-A. Slump is not required for slip-formed pavement. Perform slump and temperature tests on the same load from which the strength specimens are made. Perform entrained air test only when entrained air concrete is specified in the plans.</td>
</tr>
<tr>
<td></td>
<td>Entrained Air (A)</td>
<td>Tex-416-A or Tex-414-A</td>
<td>At time and location strength specimens are made</td>
<td></td>
<td>Methods other than Tex-423-A may be shown on the plans. Perform when carpet drag is the only surface texture required as shown on the plans.</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>Tex-422-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thickness</td>
<td>Tex-423-A, Part I</td>
<td>Center of paving machine</td>
<td>Every 500 ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pavement Texture</td>
<td>Tex-436-A</td>
<td>Final riding surface of travel lanes</td>
<td>1 per day, per driving lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ride Quality (A) Surface Test Type B</td>
<td>Tex-1001-S</td>
<td>Final riding surface of travel lanes</td>
<td></td>
<td>OV may verify IQF’s results for surface test Type B. Results from surface test Type A are not required to be reported.</td>
</tr>
</tbody>
</table>

**TABLE V – FOOTNOTES**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.</td>
</tr>
<tr>
<td>B</td>
<td>Each test performed that is based on a quantity of material is considered “or fraction thereof” for calculating number of tests.</td>
</tr>
</tbody>
</table>
This is a guide for **minimum sampling and testing.**  
Testing frequency may need to be increased for high material variability or when test results approach specification limits.

# TABLE VI – HOT-MIX ASPHALT PAVEMENT (Items 341, 342, 344, 346, 347 and 348)  
(All testing as noted in Table VI may be waived for exempt production as defined by specification.)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION</th>
<th>FREQUENCY OF SAMPLING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COARSE AGGREGATE</td>
<td>L.A. Abrasion (A)</td>
<td>Tex-410-A</td>
<td>Stockpile (B)</td>
<td>1 per project, per source</td>
<td>Verify the published value of the source, as listed on the current BRSQC, meets the project specifications. If not, sample in accordance with Tex-221-F and submit to MTD for testing prior to use in accordance with Tex-499-A.</td>
</tr>
<tr>
<td></td>
<td>Magnesium Sulfate Soundness (A)</td>
<td>Tex-411-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surface Aggregate Classification (A)</td>
<td>Tex-499-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Micro-Deval Abrasion</td>
<td>Tex-461-A</td>
<td></td>
<td>1 per project, per aggregate source</td>
<td>Not required when the Rated Source Soundness Magnesium loss is 15 or less as listed on the current published BRSQC. If testing is required, sample in accordance with Tex-221-F.</td>
</tr>
<tr>
<td>COMBINED AGGREGATE</td>
<td>Sand Equivalent</td>
<td>Tex-203-F</td>
<td>Stockpiles, hot bins or feeder belts</td>
<td>1 per project, per source, per design</td>
<td>Does not apply to Item 342. Sample in accordance with Tex-221-F. The timing of when the test is performed is at the discretion of the IQF.</td>
</tr>
<tr>
<td>ASPHALT BINDER</td>
<td>Compliance with Item 300 (A)</td>
<td></td>
<td>Sampling port nearest the storage tank</td>
<td>1 per project, per grade, per source</td>
<td>Test a minimum of one sample taken from the project. Sample binder at hot-mix plant in accordance with Tex-500-C, Part II. Verify that the binder is from a preapproved source when it arrives on the project, and that the lab number on the shipping ticket is within the valid dates shown on the MTD QM test report. Binder should arrive on the project pre-approved.</td>
</tr>
<tr>
<td>TACK COAT</td>
<td>Compliance with Item 300 (A)</td>
<td></td>
<td>Distributor</td>
<td>1 per project, per grade, per source</td>
<td>Test a minimum of one sample taken from the project. Sample tack coat in accordance with Tex-500-C, Part III. Verify that the binder is from a preapproved source when it arrives on the project, and that the lab number on the shipping ticket is within the valid dates shown on the MTD QM test report.</td>
</tr>
<tr>
<td>MIX DESIGN VERIFICATION</td>
<td>Compliance with applicable specification</td>
<td>Tex-204-F</td>
<td>At source (if not approved)</td>
<td>Min 1 design per Mix Type and Asphalt Grade</td>
<td>Verify that aggregates, recycled asphalt pavement, mineral filler, asphalt binder, anti-stripping additives, and warm mix systems are on the MPL where applicable and that they meet project specification requirements. Project sampling and testing may be conducted on individual materials as necessary for control.</td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE VI – HOT-MIX ASPHALT PAVEMENT (Items 341, 342, 344, 346, 347 and 348)
(All testing as noted in Table VI may be waived for exempt production as defined by specification.)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION</th>
<th>FREQUENCY</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Content (%)</td>
<td>Tex-236-F</td>
<td>Truck Sample (C)</td>
<td>1 per Sublot</td>
<td>Sample in accordance with Tex-222-F. Determine correlation factors for ignition oven using Tex-236-F at a minimum of one per project. When Tex-236-F does not yield reliable results, the IQF may use alternative methods for determining asphalt content, such as Tex-210-F (ASTM D2172/AASHTO T 164) and Tex-228-F (ASTM D4125/AASHTO T 287).</td>
<td></td>
</tr>
<tr>
<td>Voids in Mineral Aggregates (VMA)</td>
<td>Tex-204-F</td>
<td>Truck Sample (C)</td>
<td>1 per Sublot</td>
<td>Sample in accordance with Tex-222-F. Does not apply to Items 342 and 348.</td>
<td></td>
</tr>
<tr>
<td>Gradation</td>
<td>Tex-200-F</td>
<td>Truck Sample (C)</td>
<td>1 per Sublot</td>
<td>Sample in accordance with Tex-222-F. Determine correlation factors for ignition oven using Tex-236-F at a minimum of 1 per project.</td>
<td></td>
</tr>
<tr>
<td>Moisture Susceptibility</td>
<td>Tex-530-C</td>
<td>Truck Sample</td>
<td>1 per lot</td>
<td>Sample in accordance with Tex-222-F.</td>
<td></td>
</tr>
<tr>
<td>Complete Mixture</td>
<td>Indirect Tensile Strength – Dry</td>
<td>Tex-226-F</td>
<td>Truck Sample</td>
<td>1 per project (Lot 1)</td>
<td>Sample in accordance with Tex-222-F. Does not apply to Items 342, 346, 347, and 348.</td>
</tr>
<tr>
<td>Moisture Content</td>
<td>Tex-212-F, Part II</td>
<td>Truck Sample</td>
<td>1 per project</td>
<td>Sample in accordance with Tex-222-F.</td>
<td></td>
</tr>
<tr>
<td>Lab-Molded Density</td>
<td>Tex-207-F, Parts I and VI</td>
<td>Truck Sample (C)</td>
<td>1 per Sublot</td>
<td>Sample in accordance with Tex-222-F. DB Contractor’s required testing will be in accordance with specification requirements for the appropriate specification Item.</td>
<td></td>
</tr>
<tr>
<td>Theorical Maximum Specific Gravity</td>
<td>Tex-227-F</td>
<td>Truck Sample (C)</td>
<td>1 per Sublot</td>
<td>Sample in accordance with Tex-222-F. DB Contractor’s required testing will be in accordance with specification requirements for the appropriate specification Item.</td>
<td></td>
</tr>
<tr>
<td>Drain Down Test</td>
<td>Tex-235-F</td>
<td>Truck Sample (C)</td>
<td>1 per sublot</td>
<td>Sample in accordance with Tex-222-F. Not required for Items 341, 344, and 347.</td>
<td></td>
</tr>
<tr>
<td>Hamburg Wheel Test</td>
<td>Tex-242-F</td>
<td>Truck Sample</td>
<td>1 per project</td>
<td>Sample in accordance with Tex-222-F. Sample during production. Does not apply to Items 342 and 348.</td>
<td></td>
</tr>
<tr>
<td>Cantabro Loss</td>
<td>Tex-245-F</td>
<td>Truck Sample</td>
<td>1 per project</td>
<td>Sample in accordance with Tex-222-F. Sample during production. Does not apply to Items 341, 344, 346, and 347.</td>
<td></td>
</tr>
</tbody>
</table>
This is a guide for minimum sampling and testing. Testing frequency may need to be increased for high material variability or when test results approach specification limits.

### TABLE VI – HOT-MIX ASPHALT PAVEMENT (Items 341, 342, 344, 346, 347, and 348)
(All testing as noted in Table VI may be waived for exempt production as defined by specification.)

<table>
<thead>
<tr>
<th>MATERIAL OR PRODUCT</th>
<th>TEST FOR</th>
<th>TEST NUMBER</th>
<th>LOCATION</th>
<th>FREQUENCY</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPLETE MIXTURE</td>
<td>Overlay Test (A)</td>
<td>Tex-248-F</td>
<td>Truck Sample</td>
<td>1 per project</td>
<td>Sample in accordance with Tex-222-F. Sample during production. TxDOT MTD will perform Tex-248-F. Only required for Item 347.</td>
</tr>
<tr>
<td></td>
<td>In-Place Air Voids (A)</td>
<td>Tex-207-F, Parts I and VI; Tex-227-F</td>
<td>Roadway (C)</td>
<td>2 cores per Sublot</td>
<td>Two cores taken per Sublot and averaged. Sample in accordance with Tex-222-F. Does not apply to Items 342, 347, and 348.</td>
</tr>
<tr>
<td></td>
<td>Segregation Profile (A)</td>
<td>Tex-207-F, Part V</td>
<td>Roadway</td>
<td>1 per Sublot</td>
<td>Not required when DB Contractor uses thermal imaging system. Does not apply to Items 342, 347, and 348.</td>
</tr>
<tr>
<td></td>
<td>Joint Density (A)</td>
<td>Tex-207-F, Part VII</td>
<td>Roadway</td>
<td>1 per Sublot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thermal Profile (A)</td>
<td>Tex-244-F</td>
<td>Immediately behind paver</td>
<td>1 per Sublot</td>
<td>Not required when DB Contractor uses thermal imaging system.</td>
</tr>
<tr>
<td></td>
<td>Ride Quality Test Type B (A)</td>
<td>Tex-1001-S</td>
<td>Final riding surface of travel lanes</td>
<td>1 per project</td>
<td>OV may verify IQF’s results for surface test Type B. Reporting results for surface test Type A is not required.</td>
</tr>
<tr>
<td></td>
<td>Permeability (A)</td>
<td>Tex-246-F</td>
<td>Roadway</td>
<td>1 per Lot (Items 342 &amp; 348) / 1 per Sublot (Item 347)</td>
<td>Only applies to Items 342, 347, and 348.</td>
</tr>
<tr>
<td>FABRIC UNDERSEAL</td>
<td>Compliance with DMS-6220</td>
<td></td>
<td>Sampled, tested, and approved by MTD</td>
<td></td>
<td>Sampling must be in accordance with Tex-735-I. Verify the source is listed on the current MPL for Silt Fence, Filter Fabric, and Fabric Underseals. If not, sample and test prior to use in accordance with DMS-6220.</td>
</tr>
</tbody>
</table>

### TABLE VI – FOOTNOTES

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Engineering Judgment Log.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Sampling may be performed at the plant, quarry, or both. Aggregate properties may be re-tested at any time during the project. These project tests may be used for one or more projects furnishing hot mix with the same aggregate source.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Perform random sampling as specified in Tex-225-F, “Random Selection of Bituminous Mixture Samples.”</td>
</tr>
</tbody>
</table>