



GUIDE SCHEDULE OF SAMPLING AND TESTING

NOVEMBER 2007

Using the Guide Schedule to Establish a Project Testing Plan

Research of sampling and testing rates listed for project tests in the following Guide Schedule show that the Department's and the Contractor's risk of either rejecting "good" material or accepting "bad" material range from 20% to 40%.

To reduce this risk, we recommend that the sampling rate 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 insure that the Contractor's processes are in control and to establish acceptability requirements early.

There is a need to increase the frequency of testing for high-variability materials and when testing results do not meet specifications. The Engineer may require the Contractor to reimburse the Department for costs resulting from failing test results, in accordance with the specifications.

Materials incorporated in TxDOT projects are subjected to various quality assurance procedures such as testing (as outlined in this document), certification, quality monitoring, approved lists, etc. To establish a testing plan for the project, the Engineer and testing staff should familiarize themselves with materials to be used before work begins by reviewing the specifications, the "Materials Directory" and SiteManager's "Assistant," and this document. Discuss material testing requirements with the Contractor and relay the project testing plan, as appropriate.

Other testing required by the specifications, but not shown in the Guide Schedule, should be performed at a frequency necessary to provide adequate confidence that materials meet specifications. These other testing requirements should be included in the testing plan.

NOTE: When a project test fails but the product is accepted, the reasons for acceptance must be documented by the Engineer on the "Letter of Certification of Materials Used."

Assuring the quality of the product and proper incorporation of materials into the project begins with proper sampling practices. Sampling, testing, and construction inspection must be performed collaboratively to assure the specific attributes of the finished product reflect quality workmanship. Sampling guidance for hot-mixed asphalt is contained in Tex-225-F, Random Selection of

Bituminous Mixture Samples, and the respective specification for that material. All remaining materials are covered by method and materials specifications, to which the following applies.

Since the Department performs all project acceptance testing, Contractor test results are not used in the acceptance decision. As such, the Department is verifying the quality of the product as opposed to the quality of the Contractor's test result.

For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:

- Soils/flexible base: Vary sampling between stockpiling operations, completed stockpile, windrow, and project site. Vary the time of day sampling is performed.
- Aggregates: Sample aggregates nearest the point of incorporation into the work. Vary sampling between stockpiling operations, completed stockpile, belt sampling, and if deemed necessary, railroad cars/trucks. Vary the time of day sampling is performed.
- Concrete (structural and miscellaneous): Always sample as near as practicable to the point of placement. For strength testing, vary the time of day or the number of truck from which the concrete is sampled. Tests for slump, air, and temperature should be done often to ensure the consistent control of the concrete production.

This Guide Schedule, effective November 2007, is applicable to all contracts associated with the 2004 Standard 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.

GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE I

EMBANKMENTS, SUBGRADES, BACK FILL, AND BASE COURSES

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING (D)	FREQUENCY OF SAMPLING	REMARKS
EMBANKMENT (CUTS & FILLS)	Liquid Limit (A)	Tex-104-E	During stockpiling operations, from completed stockpile, or project site (B)	Materials with $PI \leq 15$: 10,000 cu. yd Materials with $PI > 15$: 5,000 cu. yd.	For type A embankment or when required by the plans. This test may be waived for embankment cuts as directed by the Engineer. Determine a new liquid limit and plasticity index for each different material or notable change in material.
	Plasticity Index (A)	Tex-106-E			
	Linear Shrinkage	Tex-107-E	During stockpiling operations, from completed stockpile, or project site (B)		This test is only required when the liquid limit is not attainable, when performed in accordance with Tex-104-E.
	Gradation	Tex-110-E	During stockpiling operations, from completed stockpile, or project site (B)	Each 10,000 cu. yd.	When shown on plans. This test may be waived for embankment cuts, as directed by the Engineer.
	Moisture/Density	Tex-114-E	During stockpiling operations, from completed stockpile, or project site		Not required for cuts or ordinary compaction. Determine a new optimum moisture and maximum density for each different material or notable change in material.
	In-place Density (A)	Tex-115-E	As designated by the Engineer	Fill: each 5,000 cu. yd. or 5000 lin. ft., min 1 per lift. Cut: each 6000 lin.ft. .	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. Materials such as RAP, gypsum and iron ore tend to bias the counts for nuclear density gauges.

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TABLE I (Continued)

EMBANKMENTS, SUBGRADES, BACK FILL, AND BASE COURSES

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (D)	FREQUENCY OF SAMPLING	
RETAINING WALL (NON-SELECT BACKFILL)	As shown above for Embankment (Cuts and Fills)		As shown above for Embankment (Cuts and Fills)	As shown above for Embankment (Cuts and Fills)	
RETAINING WALL (SELECT BACKFILL)	Gradation	Tex-110-E	During stockpiling operations, from completed stockpile, or project site (B)	Each 5,000 cu. yd.	
	Resistivity (A)	Tex-129-E	During stockpiling operations, from completed stockpile, or project site (B)	Each 5,000 cu. yd.	For material with resistivity between 1500 and 3000 ohm-cm, determine chloride and sulfate content, as specified in Item 423.
	pH (A)	Tex-128-E	During stockpiling operations, from completed stockpile, or project site (B)	Each 5,000 cu. yd.	
	Soundness	Tex-411-A	During stockpiling operations, or from completed stockpile	As directed by the Engineer	Test when backfill sources appear to contain particles such as shale, caliche, or other soft, poor-durability particles.
	In-place Density (A)	Tex-115-E	As designated by the Engineer.	One per backfill lift, per wall	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.

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TABLE I (Continued)

EMBANKMENTS, SUBGRADES, BACK FILL, AND BASE COURSES

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (D)	FREQUENCY OF SAMPLING	
UNTREATED BASE COURSES	Liquid Limit (A)	Tex-104-E	During stockpiling operations, from completed stockpile, or windrow (B)	Each 5,000 cu. yd.	
	Plasticity Index (A)	Tex-106-E	During stockpiling operations, from completed stockpile, or windrow (B)	Each 5,000 cu. yd.	
	Linear Shrinkage	Tex-107-E	During stockpiling operations, from completed stockpile, or windrow (B)		This test is only required when the liquid limit is not attainable, when performed in accordance with Tex-104-E.
	Gradation (A)	Tex-110-E	During stockpiling operations, from completed stockpile, or windrow (B)	Each 5,000 cu. yd.	
	Moisture/Density	Tex-113-E	During stockpiling operations, from completed stockpile, or windrow	Each 20,000 cu. yd.	Not required for ordinary compaction.
	Wet Ball Mill (A)	Tex-116-E	During stockpiling operations, from completed stockpile, or windrow	Each 20,000 cu. yd.	As required by the plans.
	Triaxial (A)	Tex-117-E	During stockpiling operations, from completed stockpile, or windrow	Each 20,000 cu. yd.	As required by the plans. 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 C.Y. If any one test falls below the minimum value required, the frequency of testing will return to the original frequency of 20,000 C.Y.

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TABLE I (Continued)

EMBANKMENTS, SUBGRADES, BACK FILL, AND BASE COURSES

MATERIAL OR PRODUCT		TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING (D)	FREQUENCY OF SAMPLING	
UNTREATED BASE COURSES (Continued)		In-place Density (A)	Tex-115-E	As designated by the Engineer	Each 3,000 cu. yd. or 3000 lin. ft., min 1 per lift	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. Materials such as RAP, gypsum and iron ore tend to bias the counts for nuclear density gauges.
		Moisture Content	Tex-103-E	As designated by the Engineer	Each 3,000 cu. yd.	
		Thickness (A)	Tex-140-E	As designated by the Engineer	Each 3000 cu. yd.	
TREATED SUBGRADE AND BASE COURSES	New Base Material	As shown above for untreated base (A)		As shown above for untreated base, prior to the addition of stabilizer	As shown above for untreated base	When central mix site or plant is used, windrow sampling may be waived.
	Lime	Compliance with DMS-6350		During delivery to project	Hydrated Lime: 1 Per Project Commercial Lime Slurry: each 200 tons of lime or fraction thereof. Carbide Lime Slurry: each 100 tons of lime or fraction thereof Quick Lime: 1 Per Project	All lime sources must be on TxDOT's Lime Quality Monitoring Program as described in DMS-6330. Sample frequency for Carbide Lime Slurry may be increased as directed by the Engineer.
	Cement	Compliance with DMS-4600		Railroad car, truck, or cement bins	Each 2,000 bbls. for each type and brand	Sampling and testing may be waived when the source is listed in the current Material Producer List for Cement. (C)
LANDSCAPE	Compost	Compliance with DMS-6360		During delivery to project	One per project	Use producers from CSTM&P approved sources listed in the Material Producer List for Compost . Producers not on the MPL must be tested and approved prior to use.

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TABLE I (Continued)

EMBANKMENTS, SUBGRADES, BACK FILL, AND BASE COURSES

MATERIAL OR PRODUCT		TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING (D)	FREQUENCY OF SAMPLING	
TREATED SUBGRADE AND BASE COURSES (Continued)	Fly Ash Material	Compliance with DMS-4615		Project samples at location designated by the Engineer.	1 Per Project	Only materials from CSTM&P approved sources listed in the Material Producer List for Fly Ash will be accepted. (C)
	Complete Mixture	Pulverization Gradation	Tex-101-E Part III	Roadway, after pulverization and mixing	As necessary for control	At the beginning of the project, one test must be made for each 4,500 cu. yd. or 6,000 tons until the Engineer is satisfied that acceptable pulverization results are being obtained.
		Moisture Content	Tex-103-E	As designated by the Engineer	Each 3,000 cu. yd.	Determine the appropriate moisture/density curve for each different material or notable change in material.
		In-place Density (A)	Tex-115-E	As designated by the Engineer	Each 3,000 cu. yd. or 3000 lin. ft., min 1 per lift	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 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.
		Thickness (A)	Tex-140-E	As designated by the Engineer	Each 3,000 cu. yd.	Not required where survey grade control documents are used for compliance

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Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B Engineer will select any of these locations or any combinations thereof with the provision that 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).
- C Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- D For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:
- Soils/flexible base: Vary sampling between stockpiling operations, completed stockpile, windrow, and project site. Vary the time of day sampling is performed.
 - Aggregates: Sample aggregates nearest the point of incorporation into the work. Vary sampling between stockpiling operations, completed stockpile, belt sampling, and if deemed necessary, railroad cars/trucks. Vary the time of day sampling is performed.

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GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE IA

ASPHALT STABILIZED BASE (Plant Mix)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	REMARKS
AGGREGATE	Gradation (A)	Tex-110-E	During stockpiling operations, from completed stockpile, or prior to mixing	Each 5,000 cu. yd.	
	Liquid Limit (A)	Tex-104-E	During stockpiling operations, from completed stockpile, or prior to mixing	Each 5,000 cu. yd.	
	Plasticity Index (A)	Tex-106-E	During stockpiling operations, from completed stockpile, or prior to mixing	Each 5,000 cu. yd.	
	Linear Shrinkage	Tex-107-E	During stockpiling operations, from completed stockpile, or prior to mixing	Each 5,000 cu. yd.	This test is only required when the liquid limit is not attainable when performed in accordance with Tex-104-E.
	Wet Ball Mill or L. A. Abrasion (A)	Tex-116-E or Tex-410-A	During stockpiling operations, from completed stockpile, or prior to mixing	Each 20,000 cu. yd.	When L. A. Abrasion is specified, tests are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (B)

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TABLE IA (Continued)
ASPHALT STABILIZED BASE
(Plant Mix)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	REMARKS
AGGREGATE (continued)	Coarse Aggregate Angularity (A)	Tex-460-A Part I	During stockpiling operations, from completed stockpile, or prior to mixing	One per project per source	Not required for crushed stone sources.
	Sand Equivalent	Tex-203-F	Hot aggregate bins, feeder belt, or stockpile	One per project per source	When designated by the Engineer, test may be run on combined aggregates when multiple sources are used.
	Decantation	Tex-217-F Part II	During stockpiling operations, from completed stockpile, or prior to mixing	Each 10,000 cu. yd.	Required only for RAP and recycled aggregate.
LIME	Compliance with DMS-6350		During delivery to project	Hydrated Lime: 1 Per Project. Commercial Lime Slurry: each 200 tons of lime or fraction thereof Carbide Lime Slurry: each 100 tons of lime or fraction thereof Quick Lime: 1 Per Project (C)	On projects requiring less than 50 tons, material from CSTM&P approved sources may be accepted on the basis of Producer's Certification without sampling.
ASPHALT BINDER	Compliance with Item 300 – Binder and Tack Coat		Sampled, tested and preapproved by CSTM&P. Take project samples when designated by the Engineer.	One each for binder and tack coat per project, per grade, per source.	Test at least one sample taken from the project. Sample tack coat at the distributor on the roadway. Sample binder at hot mix plant. Binder should arrive on the project pre-approved. If not pre-approved, sample binder before use.

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TABLE IA (Continued)

**ASPHALT STABILIZED BASE
 (Plant Mix)**

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	
COMPLETE MIXTURE	Laboratory Density and/or Strength (A)	Tex-126-E	Plant or road (D)	20,000 cu. yd. (25,000 tons)	
	Percent Asphalt (A)	Tex-236-F	Plant or road (D)	Each 1500 cu. yd. (2,000 tons) or days production	Determine correlation factors for ignition oven at a minimum of one per project.
	In-Place Density (A)	Tex-207-F	As designated by the Engineer (D)	Each 2500 cu. yd. (3000 tons)	Not required for ordinary compaction or when air void requirements are waived.
	Moisture Susceptibility	Tex-530-C	As designated by the Engineer	One per project per design	This test may be waived, when shown on the plans.
	Thickness (A)	Tex-140-E	As designated by the Engineer	Each 3,000 cu. yd.	May be waived for level-up courses over existing pavement surfaces

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Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- C Hydrated lime and quicklime sources not on the TxDOT Lime Quality Monitoring Program, described in DMS-6330, must be sampled for each 200 and 150 tons respectively.
- D For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:
 - Soils/flexible base: Vary sampling between stockpiling operations, completed stockpile, windrow, and project site. Vary the time of day sampling is performed.
 - Aggregates: Sample aggregates nearest the point of incorporation into the work. Vary sampling between stockpiling operations, completed stockpile, belt sampling, and if deemed necessary, railroad cars/trucks. Vary the time of day sampling is performed.

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GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE II SURFACE TREATMENTS

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (C)	FREQUENCY OF SAMPLING	
AGGREGATE	Gradation (A)	Tex-200-F, Part I	At source or at point of delivery	One each 300 cu. yd.	Rate may be reduced to one each 600 cu. yd. if the Engineer approves a contractor quality control plan.
	L. A. Abrasion (A)	Tex-410-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (B)
	Magnesium Soundness (A)	Tex-411-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (B)
	Surface Aggregate Classification (A)	Tex-612-J Tex-438-A Tex-411-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (B)
	Pressure Slake (A)	Tex-431-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Same as above. Required only for lightweight aggregate.
	Freeze Thaw (A)	Tex-432-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Same as above. Required only for lightweight aggregate.
	Unit Weight	Tex-404-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Required only for lightweight aggregate.
	24 hr Water Absorption (A)	Tex-433-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Required only for lightweight aggregate.
	Coarse Aggregate Angularity	Tex-460-A	Stockpile	1 per 20,000 cu. yd. or fraction thereof	Only required for crushed gravel.

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TABLE II (Continued)
SURFACE TREATMENTS

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (C)	FREQUENCY OF SAMPLING	
AGGREGATE (Continued)	Deleterious Material (A)	Tex-217-F,	Stockpile	1 per 10,000 cu. yd. or fraction thereof	
	Decantation (A)	Tex-406-A	Stockpile	1 per 10,000 cu. yd. or fraction thereof	
	Flakiness Index	Tex-224-F	Stockpile	Frequency as directed by the Engineer.	
	MicroDeval	Tex-461-A	Stockpile	1 per 5000 tons or fraction thereof	Testing frequency may be reduced or eliminated based on a satisfactory test history.
	White Rock Count	Tex-220-F	Stockpile		Required only for Limestone Rock Asphalt. Not required when CSTM&P provides inspection at the plant.
	Naturally Impregnated Bitumen Content	Tex-236-F	Stockpile		Required only for Limestone Rock Asphalt. Not required when CSTM&P provides inspection at the plant.
Precoated Aggregate	Asphalt Content	Tex-236-F	Stockpile	Frequency as directed by the Engineer when a target value is specified.	
ASPHALT	Compliance with Item 300		Sampled, tested and preapproved by CSTM&P. Take project samples when designated by the Engineer from the distributor or transport.	1 per project, per grade, per source	Binder should arrive on the project pre-approved. If not pre-approved, sample binder before use.

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TABLE II (Continued)

SURFACE TREATMENTS

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- C For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:
 - Aggregates: Sample aggregates nearest the point of incorporation into the work. Vary sampling between stockpiling operations, completed stockpile, and if deemed necessary, railroad cars/trucks. Vary the time of day sampling

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GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE III

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

MATERIAL OR PRODUCT		TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING (E)	FREQUENCY OF SAMPLING	
MINERAL AGGREGATE	COARSE AGGREGATE	Decantation (B)	Tex-406-A	From stockpile at concrete plant	Each 20,000 cu. yd. of concrete (each source)	
		Sieve Analysis (A) (B)	Tex-401-A	From stockpile at concrete plant	Each 1000 cu. yd. of concrete (each source)	Test combined aggregate when used. At the beginning of the project, one test will be made for each 500 cu. yd. of concrete until three consecutive passing tests are obtained. The first test must be performed at the beginning of project production. Then frequency of testing can be reduced to one test per 1,000 cu. yd. of concrete.
		Deleterious Materials (B)	Tex-413-A	From stockpile at concrete plant	Each 20,000 cu. yd. of concrete (each source)	
		Los Angeles Abrasion (A) (B)	Tex-410-A	From stockpile at concrete plant	Two, each source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (D)
		5-cycle Magnesium Sulfate Soundness (A) (B)	Tex-411-A	From stockpile at concrete plant	Two, each source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (D)
	FINE AGGREGATE	Sand Equivalent (B)	Tex-203-F	From stockpile at concrete plant	Each 1,000 cu. yd. of concrete (each source or combination of sources) (C)	Test combined aggregate when used.
		Organic Impurities (B)	Tex-408-A	From stockpile at concrete plant	One per project, per source	
		Sieve Analysis (A) (B)	Tex-401-A	From stockpile at concrete plant	Each 1000 cu. yd. of concrete (each source)	At the beginning of the project, one test will be made for each 500 cu. yd. of concrete until three consecutive passing tests are obtained. The first test must be performed at the beginning of project production. Then frequency of testing can be reduced to one test per 1,000 cu. yd. of concrete. For Fineness Modulus, test combined aggregate when used.
		Fineness Modulus (B)	Tex-402-A			
		Deleterious Material (B)	Tex-413-A			

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TABLE III (Continued)

HYDRAULIC CEMENT CONCRETE - STRUCTURAL (Classes: C, F, H, S, DC, CO, K, LMC, or SS)

MATERIAL OR PRODUCT		TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING (E)	FREQUENCY OF SAMPLING	
MINERAL AGGREGATE (continued)	FINE AGGREGATE (continued)	Acid Insoluble Residue (A) (B)	Tex-612-J	From stockpile at concrete plant	Two, each source	Only for concrete subject to direct traffic. Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (D)
	MINERAL FILLER	Sieve Analysis (A)	Tex-401-A	From stockpile or silo at concrete plant	Two, each source	
CEMENT		Compliance with DMS-4600		Railroad car, truck or cement silos	Each 1,000 bbls. (For each type and brand)	Sampling may be waived when the source is listed in the current Material Producer List for Cement . (D)
FLY ASH		Compliance with DMS-4610	Tex-733-I	Sampled, tested and approved by CSTM&P		Only materials from CSTM&P approved sources listed in the Material Producer List for Fly Ash will be accepted. (D)
GROUND GRANULATED BLAST FURNACE SLAG		Compliance with DMS-4620 (A)		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	Sampling may be waived when source is listed in the current Material Producer List for GGBFS . (D)
SILICA FUME		Compliance with DMS-4630 (A)		Railroad car, truck, bags or silos	Each 1,000 bbls. (For each type and brand)	
METAKAOLIN		Compliance with DMS-4635 (A)		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	
ULTRA-FINE FLY ASH		Compliance with DMS-4610 (A)		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	

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TABLE III (Continued)

HYDRAULIC CEMENT CONCRETE - STRUCTURAL (Classes: C, F, H, S, DC, CO, K, LMC, or SS)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (E)	FREQUENCY OF SAMPLING	
WATER	Compliance with the Standard Specifications	Item 421, Tables 1 and 2	At source (if not approved)	One test (each source)	Municipal supply approved by the State Department of Health will not require testing.
ADMIXTURE	Compliance with DMS-4640	As specified	Sampled, tested and approved by CSTM&P		Only materials from CSTM&P approved sources listed in the Material Producer List for Concrete Admixtures will be accepted. (D)
JOINT MATERIAL	Compliance with DMS-6300		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P. See remarks.	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer List for Joint Sealers . (D)
CURING COMPOUND	Compliance with DMS-4650		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer List for Concrete Curing Compounds . (D)
	% Solids	ASTM D 2369	Sampled at jobsite	One per project	Sample from spray nozzle or from storage container. Ensure container has been agitated and mixed prior to sampling.
EVAPORATION RETARDANTS	Compliance with DMS-4650		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer list for Evaporation Retardants.
REINFORCING STEEL	Compliance with the Std. Specifications & Spec. Provisions	As Specified	Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P. See remarks.		Only materials from CSTM&P approved sources listed in the Material Producer List for Reinforcing Steel Mills and Seven Wire Steel Strand will be accepted. (D)
MECHANICAL COUPLERS	Compliance with DMS-4510	Tex-743-I	Sampled at jobsite; Tested by CSTM&P	3 couplers per lot (500 couplers) for each type, model, bar size and grade	Only materials from CSTM&P approved sources listed in the Material Producer List for Mechanical Couplers will be accepted. (D)

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 (Continued)

HYDRAULIC CEMENT CONCRETE - STRUCTURAL (Classes: C, F, H, S, DC, CO, K, LMC, or SS)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (E)	FREQUENCY OF SAMPLING	
LATEX	Compliance with DMS-4640 for concrete chemical admixtures		Sampled at jobsite.	Min of 1 test per project	
WATERSTOP	Compliance with DMS-6160, unless otherwise shown on plans				This material is approved at the job site by the Engineer on a basis of certification. No testing is required.
EPOXY	Compliance with DMS-6100, unless otherwise specified		Sampled at jobsite if not pre-approved by CSTM&P.	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer List for Epoxyes and Adhesives . (D)
CONCRETE	Compressive Strength (A)	Tex-418-A	At point of concrete placement	Two sets (4 cylinders) for each 60 cu. yd. or fraction thereof or per class/day	Sampling must be in accordance with Test Method Tex-407-A. Two cylinders shall be tested at 7 days and if the average value is below the target value as defined in 421.4.B, the remaining two cylinders shall be tested at 28 days. If the average value of the two cylinders tested at 7 days meets the minimum design strength listed in Item 421 Table 5, the two remaining cylinders are not required to be tested. However, testing and recording the 28 day strengths would be helpful when adjusting the required strength overdesign.
	Slump	Tex-415-A	At point of concrete placement	One test per two sets of strength specimens	Sampling must be in accordance with Test Method Tex-407-A. For Class S, F and H ready mix concrete for bridge slab only, air, slump, and temperature must be checked on the first few loads of concrete as necessary to obtain a desired consistency. Thereafter, test each third load for both slump and air content. Perform slump and air content tests on the same load from which strength test specimens are made. Check temperature of every load for bridge slabs and mass concrete placements. When air-entrainment requirements have been waived by the plans but the concrete mix still includes an air-entrainment agent, continue to test for air at the listed frequency.
	Entrained Air (A)	Tex-416-A or Tex-414-A			
Temperature of Concrete (A)	Tex-422-A				

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 (Continued)

HYDRAULIC CEMENT CONCRETE - STRUCTURAL (Classes: C, F, H, S, DC, CO, K, LMC, or SS)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING (E)	FREQUENCY OF SAMPLING	REMARKS
CONCRETE	Thickness and Steel Cover of Concrete Bridge Deck	Tex-423-A	After finishing operations	One test per 50 sq. yd., no less than 6 and no more than 18 per span	

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B These Project Tests may be used for one or more projects being furnished concrete from the same plant during the same period.
- C No less than one per week's production. Where the fine aggregate is from a source with a history of sand equivalent values greater than 85 or the specified sand equivalent value of +5 more, the frequency of testing may be reduced to one per 1200 cu. yd. but no less than once per month during production. If any individual test fails below 85 or the specified sand equivalent value of +5 or more, the test frequency should be one per 300 cu. yd. but no less than once per week during production until the value is 85 or the specified sand equivalent value of +5 more, or higher for four consecutive weeks.
- D Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- E For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:
 - Aggregates: Sample aggregates nearest the point of incorporation into the work. Vary sampling between stockpiling operations, completed stockpile, and if deemed necessary, railroad cars/trucks. Vary the time of day sampling is performed.
 - Concrete (structural and miscellaneous): Always sample as near as practicable to the point of placement. For strength testing, vary the time of day or the number of truck from which the concrete is sampled. Tests for slump, air, and temperature should be done often to ensure the consistent control of the concrete production.

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.

GUIDE SCHEDULE OF SAMPLING AND TESTING

(Per Contract)

TABLE IV

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

(Normally, aggregate tests are not required for non-structural concrete. Where deemed necessary by the Engineer, plant inspection may be required and used to determine specification compliance.)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING (C)	FREQUENCY OF SAMPLING	REMARKS
CONCRETE	Compressive Strength (A)	Tex-418-A	At point of concrete placement	One test (2 cylinders) per 180cu.yd., per class	Sampling must be in accordance with Test Method Tex-407-A. Strength will be determined by 7-day specimens.
	Entrained Air (A)	Tex-416-A or Tex-414-A	At point of concrete placement	One per set of strength specimens	When required by specifications or plans. Sampling must be in accordance with Test Method Tex-407-A.
CEMENT	Compliance with DMS-4600		Railroad car, truck or cement silos	One test per project, per class (for each type and brand)	Sampling may be waived when the source is listed in the current Material Producer List for Cement . (B)
FLY ASH	Compliance with DMS-4610		Sampled, tested and approved by CSTM&P		Only materials from CSTM&P approved sources listed in the Material Producer List for Fly Ash will be accepted. (B)

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 (Continued)

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

(Normally, aggregate tests are not required for non-structural concrete. Where deemed necessary by the Engineer, plant inspection may be required and used to determine specification compliance.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING (C)	FREQUENCY OF SAMPLING	
GROUND GRANULATED BLAST FURNACE SLAG	Compliance with DMS-4620		Railroad car, truck or silos	One test per project, per class (for each type and brand)	Sampling may be waived when source is listed in the current Material Producer List for GGBFS . (B)
SILICA FUME	Compliance with DMS-4630		Railroad car, truck, bags or silos	One test per project, per class (for each type and brand)	
METAKAOLIN	Compliance with DMS-4635		Railroad car, truck or silos	One test per project, per class (for each type and brand)	
ULTRA-FINE FLY ASH	Compliance with DMS-4610		Railroad car, truck or silos	One test per project, per class (for each type and brand)	
WATER	Compliance with the Standard Specifications	AASHTO T-26	At source (if not approved)	One test (each source) per project	Municipal supply approved by the State Department of Health will not require testing.

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- C For acceptance testing, especially that which directly determines payment for the Contractor, sampling personnel should provide randomness in sampling by avoiding patterned sampling routines. Examples of such sampling practices are as follows:
 - Concrete (structural and miscellaneous): Always sample as near as practicable to the point of placement. For strength testing, vary the time of day or the number of truck from which the concrete is sampled. Tests for slump, air, and temperature should be done often to ensure the consistent control of the concrete production.

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.

GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE V

HYDRAULIC CEMENT CONCRETE PAVEMENTS (Classes: P, DC, CO, LMC, K, or HES)

			PROJECT TESTS			
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	REMARKS	
MINERAL AGGREGATE	COARSE AGGREGATE	Decantation	Tex-406-A	From stockpile at concrete plant	Each 20,000 cu. yd. of concrete (each source)	
		Sieve Analysis (A)	Tex-401-A	From stockpile at concrete plant	As necessary for control	Test combined aggregate when used.
		Deleterious Materials	Tex-413-A	From stockpile at concrete plant	Each 20,000 cu. yd. of concrete (each source)	
		L.A Abrasion (A)	Tex-410-A	From stockpile at concrete plant	Two, each source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (C)
		5-cycle Magnesium Sulfate Soundness (A)	Tex-411-A			
	FINE AGGREGATE	Sand Equivalent	Tex-203-F	From stockpile at concrete plant	Each 3,000 cu. yd. of concrete (Each source or combination of sources)	Test combined aggregate when used. No less than one per week's production
		Organic Impurities	Tex-408-A	From stockpile at concrete plant	One per project, per source	
		Sieve Analysis (A)	Tex-401-A	From stockpile at concrete plant	As necessary for control	Test combined aggregate when used.
		Fineness Modulus (B)	Tex-402-A			
		Deleterious Material (B)	Tex-413-A	From stockpile at concrete plant	Each 20,000 cu. yd. of concrete (each source)	

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 (Continued)

HYDRAULIC CEMENT CONCRETE PAVEMENTS (Classes: P, DC, CO, LMC, K, or HES)

MATERIAL OR PRODUCT		TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
				LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	
MINERAL AGGREGATE (continued)	FINE AGGREGATE (continued)	Acid Insoluble (A)	Tex-612-J	From stockpile at concrete plant	One per project/per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for CRSQC , meets the project specifications. (C)
	MINERAL FILLER	Sieve Analysis	Tex-401-A	From storage at concrete plant	3000 cu. yd. of concrete	At the beginning of the project one test will be made for each 1500 cu. yd. of concrete until three consecutive passing tests are obtained. Then frequency of testing can be reduced to each 3,000 cu. yd. of concrete.
CEMENT		Compliance with DMS-4600		Railroad car, truck or cement silos	Each 1,000 bbls. (For each type and brand)	Sampling may be waived when the source is listed in the current Material Producer List for Cement . (C)
FLY ASH		Compliance with DMS-4610		Sampled, tested and approved by CSTM&P		Only materials from CSTM&P approved sources listed in the Material Producer List for Fly Ash will be accepted. (C)
GROUND GRANULATED BLAST FURNACE SLAG		Compliance with DMS-4620		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	Sampling may be waived when source is listed in the current Material Producer List for GGBFS . (C)
SILICA FUME		Compliance with DMS-4630		Railroad car, truck, bags or silos	Each 1,000 bbls. (For each type and brand)	
METAKAOLIN		Compliance with DMS-4635		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	
ULTRA-FINE FLY ASH		Compliance with DMS-4610		Railroad car, truck or silos	Each 1,000 bbls. (For each type and brand)	
WATER		Compliance with the Standard Specifications	Item 421, Tables 1 and 2	At source (if not approved)	One test (each source)	Municipal supply approved by the State Department of Health will not require testing.

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 (Continued)

HYDRAULIC CEMENT CONCRETE PAVEMENTS (Classes: P, DC, CO, LMC, K, or HES)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	REMARKS
ADMIXTURE	Compliance with DMS-4640	As specified	Sampled, tested and approved by CSTM&P		Only materials from CSTM&P approved sources listed in the Material Producer List for Concrete Admixtures will be accepted. (C)
JOINT MATERIAL	Compliance with DMS-6310		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P. See remarks.	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer List for Joint Sealers . (C)
CURING COMPOUND	Compliance with DMS-4650		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer List for Concrete Curing Compounds . (C)
	% Solids	ASTM D 2369	At point of concrete placement – spray nozzle	Two per project	Sample from spray nozzle or from storage container. Ensure container has been agitated and mixed prior to sampling.
EVAPORATION RETARDANTS	Compliance with DMS-4650		Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P	One per batch or shipment	Sampling may be waived when the source is listed in the Material Producer list for Evaporation Retardants.
REINFORCING STEEL	Compliance with the Std. Specifications & Spec. Provisions	As Specified	Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P. See remarks.		Only materials from CSTM&P approved sources listed in the Material Producer List for Reinforcing Steel Mills and Seven Wire Steel Strand will be accepted. (C)
MULTIPLE PIECE TIE BARS			Sampled at jobsite if not sampled at source by CSTM&P; tested by CSTM&P. See remarks.	Refer to Tex-711-I for sampling rates if not CSTM&P approved.	Sampling may be waived when the source is listed in the Material Producer List for Multiple Piece Tie Bar Producers . (C)
EPOXY	Compliance with DMS-6100		Sampled at jobsite if not pre-approved by CSTM&P	One batch per shipment	Sampling may be waived when the source is listed in the Material Producer List for Epoxies and Adhesives . (C)

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 (Continued)

HYDRAULIC CEMENT CONCRETE PAVEMENTS (Classes: P, DC, CO, LMC, K, or HES)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION OR TIME OF SAMPLING	FREQUENCY OF SAMPLING	
CONCRETE	Strength (A) (B)	Tex-448-A or Tex-418-A	At point of concrete placement	One test (2 specimens) for every 10 contractor job control testing	Sampling shall be in accordance with Test Method Tex-407-A. When the contract requires the project testing to be by the Engineer, the frequency and job control testing will be in accordance with the item of work. Split sample verification testing used when contractor performs job control testing. When job control testing by the contractor is waived by the plans, the frequency of sampling shall be one test (2 specimens) for each 3,000 S.Y. of concrete or fraction thereof or per day and split sample verification testing shall be waived.
	Slump	Tex-415-A	At time and location strength specimens are made	One test per set of strength specimens	Slump is not required for slip-formed pavement. Sampling shall be in accordance with Test Method Tex-407-A.
	Entrained Air (A)	Tex-416-A or Tex-414-A			When the contract requires the project testing to be by the Engineer, the frequency and job control testing will be in accordance with the item of work. Split sample verification testing used when contractor performs job control testing. When air-entrainment requirements have been waived by the plans but the concrete mix still includes an air-entrainment agent, continue to test for air at the listed frequency.
	Temperature	Tex-422-A	At time and location strength specimens are made	One test per set of strength	
	Thickness	Tex-423-A	Center of each lane	Every 500 feet, or fraction thereof	Methods other than Tex-423-A may be shown on the plans.

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 PAVEMENTS (Classes: P, DC, CO, LMC, K, or HES)

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B When a project test does not meet the specified strength requirements and a reduced pay factor is assigned, the analysis shall be documented on the Letter of Certification of Materials Used.
- C Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.

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.

GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE VI

ASPHALT CONCRETE PAVEMENT (Items 341, 342, 344, and 346) (Not required when contract quantities are less than 5,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION (per design)	FREQUENCY	
COARSE AGGREGATE	L. A. Abrasion (A)	Tex-410-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (C)
	Magnesium Sulfate Soundness (A)	Tex-411-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (C)
	Gradation	Tex-200-F	Stockpile (B)	1 per project, per source	To determine that no more than 20% passes a #8 sieve. Performed at the discretion of the Engineer.
	MicroDeval	Tex 461-A	Stockpile (B)	Approximately one per every 12 Sublots	Testing frequency may be reduced or eliminated based on a satisfactory test history.
	Flat and Elongated Particles	Tex-280-F	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Coarse Aggregate Angularity	Tex-460-A Part I	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Deleterious Material and Decant	Tex-217-F	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.

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 (Continued)

ASPHALT CONCRETE PAVEMENT (Items 341, 342, 344, and 346)
(Not required when contract quantities are less than 5,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	
RAP	Decant	Tex-217-F	Stockpile (B)	1 per project, per source	RAP not allowed in Item 342.
	Plasticity Index	Tex-106-E	Stockpile (B)	1 per project, per source	Only required when the Decant exceeds 5% RAP not allowed in Item 342.
FINE AGGREGATE	Bar Linear Shrinkage	Tex-107-E	Stockpile (B)	1 per project, per source	Does not apply to Item 342 Permeable Friction Course. Performed at the discretion of the Engineer.
	Organic Impurities	Tex-408-A	Stockpile (B)	1 per project, per source	Does not apply to Item 342 Permeable Friction Course. Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	Stockpile (B)	1 per project, per source	Does not apply to Item 342 Permeable Friction Course. Performed at the discretion of the Engineer. Used to determine if the material meets gradation requirements of fine aggregates.
MINERAL FILLER	Bar Linear Shrinkage	Tex-107-E	Bin or Silo	1 per project, per source	Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	Bin or Silo	1 per project, per source	Performed at the discretion of the Engineer.
COMBINED AGGREGATE	Sand Equivalent	Tex-203-F	Stockpiles, hot bins or feeder belts	1 per project, per source	Does not apply to Item 342 Permeable Friction Course. Performed at the discretion of the Engineer.
ASPHALT BINDER	Compliance with Item 300 Binder & Tack coat (A)		Sampled, tested and preapproved by CSTM&P. Plant for Binder & Road for Tack Coat	1 each for binder and tack coat per project, per grade, per source	Test at least one sample taken from the project. Sample tack coat at the distributor on the roadway. Sample binder at hot mix plant. Binder should arrive on the project pre-approved. If not pre-approved, sample binder before use.

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 (Continued)

ASPHALT CONCRETE PAVEMENT (Items 341, 342, 344, and 346)
(Not required when contract quantities are less than 5,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		PROJECT INDEPENDENT ASSURANCE TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	LOCATION	FREQUENCY	
COMPLETE MIXTURE	Asphalt Content (%) (A)	Tex-236-F	Engineer Truck Sample (D)	Minimum of 1 per Lot			Determine correlation factors for ignition oven use at a minimum of one per project
	Voids in Mineral Aggregates (VMA)	Tex-207-F	Truck Sample Plant Produced (D)	1 per Sublot	Truck	1 per 10 Lots only if press is shared by Contractor and State	Does not apply to Item 342 Permeable Friction Course.
	Gradation (A)	Tex-236-F	Engineer Truck Sample	Minimum 1 per 12 Sublots			Determine correlation factors for ignition oven use at a minimum of one per project
	Boil Test	Tex-530-C	Truck Sample	1 per project			Unless waived by the Engineer.
	Indirect Tensile – Dry	Tex-226-F		1 per project			Unless waived by the Engineer. Does not apply to Item 342 Permeable Friction Course.
	Moisture Content	Tex-212-F Part II	Engineer Truck Sample	1 per project			
	Lab Molded Density (A)	Tex-207-F	Truck Sample	1 per Sublot 1 per Lot for Item 342	Truck	1 per 10 Lots only if press is shared by Contractor and State	
	Drain Down Test (A)	Tex-235-F	Engineer Truck Sample	1 per project 1 per Lot for Item 342			Not required for Item 341 and Item 344.
	Hamburg Wheel Tracker (A)	Tex-242-F	Engineer Truck Sample	1 per project			Sample during production. Does not apply to Item 342 Permeable Friction Course.

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 (Continued)

ASPHALT CONCRETE PAVEMENT (Items 341, 342, 344, and 346)
(Not required when contract quantities are less than 5,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	
ROADWAY	In-Place Air Voids (A)	Tex-207-F	Roadway (D)	2 cores per Sublot	Two cores taken per Sublot and averaged. Does not apply to Item 342 Permeable Friction Course.
	Segregation Profile (A)	Tex-207-F Part V	Roadway	1 per project	Does not apply to Item 342 Permeable Friction Course.
	Joint Density (A)	Tex-207-F Part VII	Roadway	1 per project	Does not apply to Item 342 Permeable Friction Course.
	Tack Coat Adhesion	Tex-243-F	Roadway	1 per project	Performed at the discretion of the Engineer.
	Thermal Profile	Tex-244-F	Immediately behind paver	1 per project	
	Ride Quality (A) Type A Type B	Tex-1001-S	Travel Lanes	As Per Specification	Engineer may verify contractor's results.
	Permeability	Tex-246-F Part I	Roadway	1 per project	For Item 342.

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 (Continued)

ASPHALT CONCRETE PAVEMENT (Items 341, 342, 344, and 346)

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field. This letter is required only for Asphalt Content and/or Gradation when production of complete mixture is suspended as required by QC/QA specifications.
- B 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.
- C Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- D Perform random sampling as specified in Tex-225-F, Random Selection of Bituminous Mixture Samples.

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.

GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE VII

ASPHALT CONCRETE PAVEMENT (Items 330 and 334) (Not required when contract quantities are less than 3,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	
COARSE AGGREGATE	L. A. Abrasion (A)	Tex-410-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (D)
	Magnesium Sulfate Soundness (A)	Tex-411-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (D)
	Gradation	Tex-200-F	Stockpile (B)	1 per project, per source	To determine that no more than 20% passes a #8 sieve. Performed at the discretion of the Engineer.
	MicroDeval	Tex-461-A	Stockpile (B)	1 per project, per source	Testing frequency may be reduced or eliminated based on a satisfactory test history.
	Flat and Elongated Particles	Tex-280-F	Stockpile (B)	1 per project, per source	
	Coarse Aggregate Angularity	Tex-460-A Part I	Stockpile (B)	1 per project, per source	
	Deleterious Material and Decant	Tex-217-F	Stockpile (B)	1 per project, per source	
	White Rock Count	Tex-220-F			Not required for Item 334.

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 VII (Continued)
ASPHALT CONCRETE PAVEMENT (Items 330 and 334)
(Not required when contract quantities are less than 3,000 tons.)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	
FINE AGGREGATE	Bar Linear Shrinkage	Tex-107-E	Stockpile	1 per project, per source	Not required for Item 330.
	Organic Impurities	Tex-408-A	Stockpile	1 per project, per source	Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	1 per project	1 per project, per source	Not required for Item 330. Used to determine if the material meets gradation requirements of fine aggregates.
MINERAL FILLER	Bar Linear Shrinkage	Tex-107-E	Bin or Silo	1 per project, per source	Not required for Item 330. Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	Bin or Silo	1 per project, per source	Not required for Item 330. Performed at the discretion of the Engineer.
COMBINED AGGREGATE	Sand Equivalent	Tex-203-F	Stockpiles, hot bins or feeder belts	1 per project, per source	Not required for Item 330. Performed at the discretion of the Engineer.
ASPHALT BINDER	Compliance with Item 300 Binder & Tack Coat (A) (C)		Sampled, tested and preapproved by CSTM&P. Plant for Binder & Road for Tack Coat	1 each for binder and tack coat per project, per grade, per source	Test at least one sample taken from the project. Sample tack coat at the distributor on the roadway. Sample binder at hot mix plant. Binder should arrive on the project pre-approved. If not pre-approved, sample binder before use.

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 VII (Continued)

ASPHALT CONCRETE PAVEMENT (Items 330 and 334)
(Not required when contract quantities are less than 3,000 tons.)

MATERIAL OR PRODUCT	LOCATION	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY (per design)	
COMPLETE MIXTURE	Asphalt Content (%) (A)	Tex-236-F	Truck Sample (E)	Minimum of 1 per 5,000 tons	Determine correlation factors for ignition oven use at a minimum of one per project. Not required for Item 330.
	Voids in Mineral Aggregates (VMA)	Tex-207-F	Truck Sample Plant Produced (E)	1 per 5,000 tons	Not required for Item 330.
	Gradation (A)	Tex-236-F	Truck Sample	Minimum 1 per 5,000 tons	Determine correlation factors for ignition oven use at a minimum of one per project. Performed at the discretion of the Engineer for Item 330.
	Boil Test	Tex-530-C		1 per project	Performed at the discretion of the Engineer for Item 330.
	Moisture Content	Tex-212-F Part II	Truck Sample	1 per 5,000 tons	Performed at the discretion of the Engineer for Item 330.
	Hydrocarbon-Volatile Content	Tex-213-F	Truck Sample	1 per 5,000 tons	Not required for Item 330.
	Lab Molded Density (A)	Tex-207-F	Truck Sample	1 per 5,000 tons	
	Hveem Stability (A)	Tex-208-F	Truck Sample	1 per 5,000 tons	Performed at the discretion of the Engineer for Item 330.
ROADWAY	Tack Coat Adhesion	Tex-243-F	Roadway	1 per project	Performed at the discretion of the Engineer.
	Ride Quality Type A Type B (A)	Tex-1001-S	Travel Lanes	As per specifications	Engineer may verify Contractor's results.

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 VII (Continued)
ASPHALT CONCRETE PAVEMENT (Items 330 and 334)

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B Sampling may be performed at the plant, quarry, or both. Aggregate properties may be re-tested at any time during the project.
- C Or as called for in the Specifications.
- D Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- E Perform random sampling as specified in Tex-225-F, Random Selection of Bituminous Mixture Samples.

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.

GUIDE SCHEDULE OF SAMPLING AND TESTING (Per Contract)

TABLE VIII

ASPHALT CONCRETE PAVEMENT (Item 340)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY	
COARSE AGGREGATE	L. A. Abrasion (A)	Tex-410-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (C)
	Magnesium Sulfate Soundness (A)	Tex-411-A	Stockpile (B)	1 per project, per source	Sampling and testing are not required when the published value of the source, as listed in the current Material Producer list for BRSQC , meets the project specifications. (C)
	Gradation	Tex-200-F	Stockpile (B)	1 per project, per source	To determine that no more than 20% passes a #8 sieve. Performed at the discretion of the Engineer.
	MicroDeval	Tex 461-A	Stockpile (B)	Approximately one every 5,000 tons of production	Testing frequency may be reduced or eliminated based on a satisfactory test history.
	Flat and Elongated Particles	Tex 280-F	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Coarse Aggregate Angularity	Tex-460-A Part I	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Deleterious Material and Decant	Tex-217-F	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.

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 VIII (Continued)
ASPHALT CONCRETE PAVEMENT (Item 340)

			PROJECT TESTS		
MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	LOCATION	FREQUENCY	REMARKS
RAP	Decant	Tex-217-F	Stockpile (B)	1 per project, per source	
	Plasticity Index	Tex 106-E	Stockpile (B)	1 per project, per source	Only required when the Decant exceeds 5%.
FINE AGGREGATE	Bar Linear Shrinkage	Tex-107-E	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Organic Impurities	Tex-408-A	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	Stockpile (B)	1 per project, per source	Performed at the discretion of the Engineer. Used to determine if the material meets gradation requirements of fine aggregates.
MINERAL FILLER	Bar Linear Shrinkage	Tex-107-E	Bin or Silo	1 per project, per source	Performed at the discretion of the Engineer.
	Gradation	Tex-200-F	Bin or Silo	1 per project, per source	Performed at the discretion of the Engineer.
COMBINED AGGREGATE	Sand Equivalent	Tex-203-F	Stockpiles, hot bins or feeder belts	1 per project, per source	Performed at the discretion of the Engineer.
ASPHALT BINDER	Compliance with Item 300 Binder & Tack Coat (A)		Sampled, tested and preapproved by CSTM&P. Plant for Binder & Road for Tack Coat	1 each for binder and tack coat per project, per grade, per source	Test at least one sample taken from the project. Sample tack coat at the distributor on the roadway. Sample binder at hot mix asphalt. Binder should arrive on the project pre-approved. If not pre-approved, sample binder before use.

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 VIII (Continued)

ASPHALT CONCRETE PAVEMENT (Items 340)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY	
COMPLETE MIXTURE	Asphalt Content (%)	Tex-236-F	Truck Sample (D)	Minimum of 1 per day	Determine correlation factors for ignition oven use at a minimum of one per project.
	Voids in Mineral Aggregates (VMA)	Tex-207-F	Truck Sample Plant Produced (D)	1 per day	
	Gradation (A)	Tex-236-F	Truck Sample	Minimum 1 per day	Determine correlation factors for ignition oven use at a minimum of one per project.
	Boil Test	Tex-530-C	Truck Sample	1 per project	Unless waived by the Engineer.
	Indirect Tensile – Dry	Tex-226-F		1 per project, per design	Unless waived by the Engineer.
	Lab Molded Density (A)	Tex-207-F	Truck Sample	1 per day	
	Hamburg Wheel Tracker (A)	Tex-242-F	Truck Sample	1 per project	Sample during production.

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 VIII (Continued)
ASPHALT CONCRETE PAVEMENT (Item 340)

MATERIAL OR PRODUCT	TEST FOR	TEST NUMBER	PROJECT TESTS		REMARKS
			LOCATION	FREQUENCY	
ROADWAY	Tack Coat Adhesion	Tex-243-F	Roadway	1 per project	Performed at the discretion of the Engineer.
	Air Voids (A)	Tex-207-F	Selected by Engineer (D)	1 per day (2 Cores)	
	Ride Quality Type A Type B (A)	Tex 1001-S	Travel Lanes	As per Specification	Engineer may verify Contractor's results.

Footnotes

- A When this project acceptance test fails but the product is accepted, document the reasons for acceptance on the Letter of Certification of Materials Used or in the SiteManager Remarks field.
- B 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.
- C Attach the corresponding QM test report for SiteManager projects to satisfy project sampling and testing requirements.
- D Perform random sampling as specified in Tex-225-F, Random Selection of Bituminous Mixture Samples.