Quality Assurance Program for Design-Bid-Build Projects

May 2019

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SECTION 1 - INTRODUCTION

1.1 Overview

The Texas Department of Transportation (TxDOT) established the Quality Assurance Program (QAP) for Design-Bid-Build (D-B-B) Projects to ensure that materials and workmanship incorporated into highway construction projects are in reasonable conformity with the requirements of the approved plans and specifications, including any approved changes. This program conforms to the criteria in 23 CFR 637 B, where the Materials and Tests Division (MTD) central laboratory will be accredited under the AASHTO Accreditation Program (AAP) which oversees the statewide qualification program.

It consists of an "Acceptance Program" and "Independent Assurance (IA) Program" based on test results obtained by qualified persons and equipment.

The QAP allows for the use of validated Contractor-performed quality control (QC) test results as part of an acceptance decision. It also allows for the use of test results obtained by commercial laboratories in acceptance decisions. The acceptance of all materials and workmanship is the responsibility of the Engineer.

1.2 Support

For more information regarding the information and procedures in the program, contact the Materials and Tests Division (MTD) Administration at 512/506-5843.

SECTION 2 - ACCEPTANCE PROGRAM

2.1 Overview

The Quality Assurance Program (QAP) assures materials, incorporated into any highway construction project, are subject to verification sampling and testing, as well as quality control (QC) sampling and testing when required by the specifications.

The District Engineer will delegate an individual at the district level for the accountability of certification verification in SiteManager (SM) and at the laboratory for various project delivery options applicable to the DBB program.

The delegation of authority should encompass a mechanism that provides oversight authority and an audit function to ensure compliance. Additional information can be found in Section 6.7 – Dispute Resolution.

2.2 Sampling and Testing Frequency and Location

Verification sampling and testing will be performed at the location and frequency established in the Department's Guide Schedule of Sampling and Testing for Design-Bid-Build (DBB) Projects (DBB Guide Schedule) or specifications specific to each project.

2.3 Documentation

Testing will be documented within SiteManager on the department approved excel templates. When the tester does not enter test results directly into SM, the hardcopy will need to be scanned and attached to the SM sample documenting the tester's name.

2.4 Quality Control Sampling and Testing

Contractor-performed QC sampling and testing may be used as part of an acceptance decision when required or allowed by specification.

QC sampling and testing personnel, laboratories, and equipment will be qualified in accordance with Section 6 – Technician Qualification Program and Section 7 – Laboratory Qualification Program and will be evaluated under the Independent Assurance Program, as described in Section 3 of this document.

QC test results will be validated by verification test results obtained from independently taken samples. Qualified TxDOT personnel or their designated agents will perform verification sampling and testing.

2.5 Dispute Resolution

When QC test results are used in the acceptance decision, the MTD central laboratory or an accredited independent laboratory approved by MTD will perform the referee testing. The referee laboratory decision will be final.

SECTION 3 - INDEPENDENT ASSURANCE PROGRAM

3.1 Overview

The Independent Assurance (IA) program evaluates all sampling and testing procedures, personnel, and equipment used as part of an acceptance decision.

The IA program evaluates the qualified sampling and testing personnel and testing equipment and is established using the system approach. The system approach bases frequency of IA activities on time—regardless of the number of tests, quantities of materials, or numbers of projects tested by the individual being evaluated.

3.2 Required Frequencies and Activities

Table 1 gives the frequencies and activities required for evaluating sampling and testing personnel and equipment under the system approach to IA.

Table 1

Frequencies and Activities Required Under IA System Approach

Time	Activity
Before performing acceptance sampling and testing.	Qualification required under Section 6 and Section 7 of this QAP.
Within 12 months after Observation and Qualification, not to exceed 15 months.	Each qualified technician is required to participate in the first available proficiency or split sample for each test method requiring IA. Results must compare to the IA test results to within the established tolerance.
Within 24 months after Observation and Qualification, not to exceed 27 months.	Each qualified technician is required to participate in one proficiency or split sample test for each test method requiring IA. Results must compare to the IA test results to within the established tolerance.
Within 36 months of Qualification. (Only required for certifications issued by TxDOT or TXAPA with a 3-year cycle.)	Qualification is again required under Section 6 and Section 7 of this QAP.
Within 36 months after Observation and Qualification, not to exceed 39 months. (Only required for ACI, which has a 5-year certification cycle.)	Each qualified technician is required to participate in one proficiency or split sample test for each test method requiring IA. Results must compare to the IA test results to within the established tolerance.
Within 48 months after Observation and Qualification, not to exceed 51 months. (Only required for ACI, which has a 5-year certification cycle.)	Each qualified technician is required to participate in one proficiency or split sample test for each test method requiring IA. Results must compare to the IA test results to within the established tolerance.

Within 60 months of qualification (Only required for certifications issued by ACI with a 5-year cycle.)	Qualification is again required under Section 6 and Section 7 of this QAP.

Maintaining technician qualification under the IA system approach requires continuation of the above cycle of qualification and successful split or proficiency sample testing.

3.3 Testing Equipment

MTD will qualify district laboratory testing equipment used for acceptance sampling and testing, in accordance with Section 7 – Laboratory Qualification Program. Any non-TxDOT commercial laboratory used for acceptance sampling and testing must be accredited in accordance with Section 7.3 – Qualification.

MTD may designate the district laboratory to qualify commercial laboratory testing equipment, used for acceptance sampling and testing, in accordance with corresponding calibration test procedures. MTD or TxDOT district laboratory may hire a third-party entity to perform calibration or verification in accordance with corresponding calibration test procedures.

The qualifying authority will qualify testing equipment in accordance with the following guidelines.

A. Frequency for qualifying sampling and testing equipment must not exceed 1 year.
B. Calibration or verification is required whenever the laboratory or equipment is moved.

The qualifying authority will evaluate any equipment used to perform verification and QC sampling and testing in making an acceptance decision. This evaluation includes calibration checks and split or proficiency sample tests. The Department test procedures referenced in Section 7.4 – Calibration Standards and Frequencies for Laboratory Equipment give the requirements for, and frequency of, equipment calibrations.

3.4 Testing Personnel

MTD will qualify district and commercial laboratory personnel performing IA activities, in accordance with Section 6 – Technician Qualification Program.

MTD may designate a district laboratory to qualify other Department personnel and accredited commercial laboratory personnel performing IA activities. When a district qualifies commercial laboratory personnel, they must notify MTD in writing.

Individuals performing IA activities will be other than those performing verification or QC testing.

IA personnel will evaluate any individual performing verification or QC sampling and testing. This evaluation includes observations and split or proficiency sample testing.

3.5 Comparing Test Results

Comparison of the split sample test results can be used if equipment or procedures issues are suspected. Appendix B gives the acceptable tolerance limits for comparing test results from split and proficiency samples.

If the comparisons of the test results do not comply with the tolerances, an engineering review of the test procedures and equipment will be performed immediately to determine the source of the discrepancy.

3.6 Annual Report of IA Program Results

MTD will compose and submit an annual report to the Federal Highway Administration (FHWA) summarizing the results of TxDOT's systems approach IA program. See Appendix C for the annual report form.

This report identifies:

- number of sampling and testing personnel evaluated by the systems approach IA testing;
- number of IA evaluations found to meet tolerances in Appendix B;
- number of IA evaluations found to not meet tolerances in Appendix B; and
- summary of any significant system-wide corrective actions taken.

SECTION 4 - MATERIALS CERTIFICATION

4.1 Overview

The TxDOT District Area Engineer or Director of Construction will submit a materials certification letter, conforming in substance to the examples shown in Appendix D or E, as applicable.

For projects with federal oversight, submit the materials certification letter (Appendix D) to the FHWA division administrator, with a copy to MTD.

For non-federal oversight projects, submit the material certification letter (Appendix E) to the TxDOT District Engineer, with a copy to MTD.

Either letter must be submitted at final acceptance of the project.

SECTION 5 - CONFLICT OF INTEREST

5.1 Overview

To avoid an appearance of a conflict of interest, any qualified non-TxDOT laboratory will perform only one of the following functions on the same project:

- verification sampling and testing;
- QC sampling and testing;
- IA testing; or
- referee testing.

SECTION 6 - TECHNICIAN QUALIFICATION PROGRAM

6.1 Purpose

This program provides uniform statewide procedures for technician qualification to ensure that tests required by the specifications are performed according to the prescribed sampling and testing methods.

6.2 Technician Qualification

Sampling and testing personnel will be qualified to perform sampling and testing for the acceptance of materials in the areas of soils, bituminous, aggregate, and concrete materials.

The test methods for which individuals can be qualified are included in the following series of the TxDOT Test Procedures.

- 100-E Series (Soils)
- 200-F Series (Bituminous)
- 400-A Series (Aggregates and Concrete)
- 500-C Series (Asphalt – Tex-500-C and Tex-530-C)

6.3 Who Must Be Qualified?

Any individual who performs sampling and testing on the materials listed in Section 6.2 – Technician Qualification, for acceptance, must be qualified in each test procedure they perform.

NOTE—Reciprocity may be granted to individuals who have been successfully qualified under another state's program. These situations will be considered on a case-by-case basis and must meet the approval of the Materials and Tests (MTD) Division Director.

6.4 Who Can Qualify Sampling and Testing Personnel?

The following personnel may qualify an individual to perform the required sampling and testing of materials:

- MTD personnel;
- qualified district materials engineer or laboratory supervisor (except as noted below);
- qualified district laboratory personnel who have been authorized by the district materials engineer or laboratory supervisor to qualify others; and
- department-approved entities such as the Texas Asphalt Pavement Association (TXAPA) and the American Concrete Institute (ACI). Certifications received from these institutions may be used to satisfy the written exam and observation part of the Technician Qualification Program.

NOTE—Each district laboratory will maintain a minimum of one individual qualified by MTD or its designated agent, for each test procedure performed within the district. To perform testing and qualify district personnel for TxDOT concrete test methods, at least one individual from the district laboratory must have the corresponding ACI Field and Strength certifications issued by MTD.

6.5 Required Certifications for Commercial Laboratory and Contractor Personnel

Non-TxDOT laboratory personnel performing sampling and testing for TxDOT, or as required by specification, must obtain and keep current the following certifications pertinent to their scope of testing:

- ACI Concrete Field Testing Technician – Grade I,
- ACI Concrete Strength Testing Technician,
- TXAPA HMA Level 1A – Plant Production Specialist,
- TXAPA HMA Level 1B – Roadway Specialist,
- TXAPA HMA Level 2 – Mix Design Specialist,
- TXAPA SB 101 – Property Specialist,
- TXAPA SB 102 – Field Specialist,
- TXAPA SB 103 – Materials Analysis Specialist,
- TXAPA SB 201 – Strength Specialist,
- TXAPA SB 202 – Compressive Strength Specialist, and
- TXAPA AGG101 -– Aggregate Specialists.

For testing procedures not covered by the above certifications, the following personnel may qualify an individual to perform the required sampling and testing of materials:

- district laboratory personnel who have been authorized by MTD to perform technician qualifications, and
- MTD personnel.

6.6 Qualification Procedure

To qualify, an authorized evaluator must witness an individual successfully perform the specific test and the necessary calculations required to determine specification compliance. Successful performance is defined as demonstrating the ability to properly perform the key elements for each test method. If the individual fails to demonstrate the ability to perform a test, the individual will be allowed one retest per test method at the evaluator's

convenience. The maximum number of attempts cannot exceed three trials in a 90-day period of time.

In addition to successful performance of a test method, the individual must pass a written examination (minimum score of 80%) administered by an authorized evaluator. The maximum amount of time allocated per test will be one hour. If an individual cannot complete the written test in an hour, it will result in failure. An individual failing the written examination may request a retest. The retest must be scheduled and administered within 30 days of notification of failure; however, the maximum number of attempts cannot exceed three trials in a 90-day period of time.

Under unique circumstances, the qualification authority may grant a verbal examination upon request. The reasons for requesting a verbal examination must be presented and documented before the individual is allowed to take the examination. Should the technician fail the retest examination, the technician will not be allowed to test again unless a written notification is received from the technician's employer or supervisor stating that the technician has received additional training. MTD or its representative will determine the adequacy of the additional training. Failure to pass the third written examination will be considered as failing the entire qualification.

Successful qualification is defined as passing both the written and performance examinations.

In addition, the individual must participate in split or proficiency samples administered by the qualifying authority to validate the qualification as defined in Appendix B. MTD determines the qualifying authority for the split or proficiency sample.

Unless otherwise stated, qualification of an individual is valid for not more than 3 years, after which the individual must be re-qualified. Under the IA system approach, annual split or proficiency evaluations will be required as specified in Section 3.2 – Required Frequencies and Activities. Failure to satisfactorily complete annual split or proficiency testing will result in certification revocation.

6.7 Provisional Certifications

If the required certifications, listed in the Section 6.5 – Required Certifications for Commercial Laboratories and Contractor Personnel, cannot be readily obtained due to course availability, schedule conflicts, or other extenuating circumstances, provisional certifications administered by MTD or TxDOT's district laboratory will be allowed, per the following stipulations:

- provisional certifications must be approved by MTD or TxDOT district laboratory supervisor;
- provisional certifications will be valid for one month after the TXAPA and ACI examination dates; and
- the candidate must show evidence of having enrolled in the required ACI or TXAPA course.

6.8 Responsibility and Documentation

MTD and the district materials engineer, laboratory supervisor, or designee are responsible for maintaining documentation of all individuals qualified under their authority who perform required tests for acceptance of materials. The CE&I firm shall identify a coordinator with the responsibility to communicate with the Area Office who will then coordinate with the district level person to satisfy the requirements for qualified testers. SiteManager shall be used to send email notification on certification status to the owner (technician) as well as the district level responsible person. TxDOT's SiteManager will be the official system of record for qualified or certified TxDOT and commercial laboratory personnel.

Issuance of qualification certificates by the TxDOT qualifying authority is not required. A qualification summary listing all tests for which an individual is qualified is available in SiteManager and may be printed and signed at the district's discretion. Documentation is to be maintained through the Object Linking and Embedding (OLE) attachment window. This function allows all qualified personnel supporting documentation to be viewed in SM which includes:

- copies of certificates issued by ACI and TXAPA; or
- copies of certificates issued by MTD or TxDOT district laboratory, if issued;
- Quality Assurance Test (QAT) report with clear identification of technician's name, qualifier's name, score, and date taken; and
- original performance examinations for test procedures administered to each technician by the TxDOT qualifying authority, with clear identification of technician's name, qualifier's name, qualification status, and date.

Documentation retention will be for the life of the qualification, as detailed in the State of Texas Records Retention Schedule.

Results of annual proficiency testing administered by MTD or TXAPA will be stored in their respective central repositories through SharePoint. Annual split sample evaluations should be stored in SiteManager.

6.9 Disqualification

Accusations of misconduct by testing technicians are made to the responsible TxDOT district representative and reported to MTD. Table 2 defines the 3 levels of misconduct: neglect, abuse, and breach of trust.

Table 2

Levels of Misconduct

Term	Definition
Neglect	Unintentional deviations from testing procedures or specifications.
Abuse	Careless or deliberate deviation from testing procedures or specifications.
Breach of Trust	Violation of the trust placed in the certified technician including, but not limited to, acts such as: • falsification of records; • being aware of improprieties in sampling, testing, or production by others and not reporting them to appropriate supervisors involved in the project; • re-sampling or retesting without awareness and consent of appropriate supervisors involved in the project; and • manipulating compensation or production.

The certification steering committee will investigate accusations of misconduct with the assistance of the responsible district. Depending on the severity of the misconduct, MTD may impose penalties ranging from a written reprimand, a temporary suspension, or a permanent revocation of the certification, contingent upon the findings of the investigation. A technician with a revoked certification will be removed from the project and will not be allowed to be employed on any TxDOT project statewide.

SECTION 7 - LABORATORY QUALIFICATION PROGRAM

7.1 Purpose

This program provides uniform statewide procedures to ensure that laboratory facilities and equipment are qualified for the performance of required sampling and testing methods.

7.2 Laboratory Responsibility

The responsibilities are spread among varying roles and are defined below to achieve a level of quality and to maintain program compliance.

7.2.1 CE&I

The CE&I firm shall:

- determine all test methods and certification requirements for a project and submit to the area office coordinator within ten (10) days after the execution of the contract and before the kick off meeting;
- submit required technician certifications and commercial lab requests submittals to the AO; and
- provide a quality plan to the AO that will demonstrate how quality is to be achieved through acceptance testing, per project. Include how the firm will track and ensure that only certified technicians perform acceptance on equipment that is calibrated and in good working order.

7.2.2 District AO Personnel

The Area Engineer will delegate the District AO coordinator. The AO coordinator shall:

- provide the district lab personnel with monthly status of the CE&I projects;
- provide the district lab contacts for CE&I firms and their commercial labs;
- invite the district lab personnel to the kick off and associated preconstruction meetings;
- will forward all CE&I technician certifications and laboratory submittals or requests to the district lab;
- will review the CE&I project specific testing, certification, and equipment needs; and
- submit the CE&I's quality plan to the district lab.

7.2.3 District lab coordinator

The district lab coordinator shall:

- review and make recommendations to the AO coordinator for approval or rejection of the CE&I quality plan;
- coordinate the inspection of the commercial lab facility and equipment once the quality plan has been approved;
- communicate the status of the inspection with the CE&I firm;
- use SM to auto notify the owner (technician) and the district lab designee before certification expiration; and
- conduct an internal review for continual compliance for all levels of certifications annually.

7.3 Qualification

All laboratories performing sampling and testing for TxDOT require qualification. These include, but are not limited to the following:

- Materials and Tests Division (MTD) central laboratory;
- District laboratories;
- area or project laboratories (including field laboratories at hot mix and concrete plants);
- MTD field laboratories; and
- commercial laboratories.

7.3.1 District Lab Accreditation

MTD is responsible for accrediting the district and MTD field laboratories. Upon completion of the laboratory accreditation process, the district lab is assigned a rating. The rating system identified in Table 3 is based on the associated risks to the department.

Table 3
Rating Legend

Number	Rating Legend
1	Excellent review with minor or no deficiencies notated.
2	Several deficiencies or repetitive observation were notated.
3	A level of negligence was found programmatically violating compliance requirements.

Each laboratory inspection summarizes the accreditation visit where a finding is classified as either a deficiency or an observation, defined as follows:

Deficiency: A finding that indicates policy or practice contrary to the requirements of the applicable test methods or documented quality procedures.

Observation: Observations are intended as comments for improvements relating to specific technical information to offer recommendations for best practice. Specifically, observations are noted for any technically related deficiencies where judgment and experience indicate it is not likely to affect the laboratory's ability to produce valid and accurate test results.

Resolution of Findings

A corrective action report (CAR) and supporting documentation is collectively submitted to MTD to address the findings notated in the report. The CAR will document actions that have been taken to prevent reoccurrence and to show a formal resolution to the findings.

Deficiencies:
Deficiencies require a formal written response describing the corrective actions taken or planned and enough documentation, i.e., records, copies of new or revised procedures, equipment invoices, or photographs to substantiate actions taken. Corrective actions should be permanently implemented to prevent recurrence of the problem.

Observations:
No written response is required for findings identified as observations. The laboratory should; however, take necessary corrective action to address the observation to prevent possible recurrence. Repeat observations may result in deficiencies.

The resolution should be completed in 21 days from the issuance of the report. If the laboratory cannot satisfy the findings in the report, an extension may be requested for additional time to resolve any outstanding or pending findings. Additional time extensions may be granted on a case by case scenario but should not exceed 90 days. When the findings cannot be resolved within the 90-day period, the MTD Division Director (DD) will escalate the outstanding issues at his discretion to the DOC or DE as needed. See Section 7.5 – Non-Compliance.

7.3.2 Commercial Lab and CE&I Qualification Process

At the district level, the district laboratory will be the qualifying authority for area office and commercial laboratories, only in the areas for which the district laboratory is accredited. They are also responsible for participating and conducting a peer review that will include a minimum of two projects conducted by CE&I firms to ensure program compliance. The peer review shall be documented and conducted within 12-24 months after MTD conducts the QAP district accreditation.

When a district qualifies a commercial laboratory, they must notify MTD in writing and submit a copy of the laboratory qualification certificate. A directory of all TxDOT-qualified laboratories is available through the MTD crossroads intranet.

The laboratory qualifying authority will use Form 2682, "Quality System Inspection – Commercial Laboratory," to document the following:

- identify the scope of testing to be performed;
- verify that test methods used to perform tests are available and current;
- document that the laboratory has the required equipment to perform the tests;
- check the calibration or verification records for each piece of equipment, to include:
    - description of equipment,
    - identification of any traceable standard used,
    - frequency of calibration,
    - date of calibration,
    - date of last calibration,
    - date of next calibration,
    - calibrating technician,
    - procedure used to calibrate or verify equipment, and
    - detailed results of calibration; and
- verify that the laboratory has qualified or certified technicians to perform required testing.

In addition, all equipment may be subject to calibration verification or other inspection by the qualifying authority. Laboratories performing acceptance sampling and testing should use results from TxDOT's Material Producer List (MPL), and perform materials sampling and testing in accordance with TxDOT's DBB Guide Schedule. Materials that are not monitored or not pre-approved by TxDOT are subject to sampling and testing as part of the acceptance program, except as noted in the DBB Guide Schedule remarks.

NOTE—Project or field laboratories performing Tex-113-E, Tex-117-E, and Tex-242-F tests must be an approved laboratory from TxDOT's MPL.

Laboratories are qualified every 3 years, at a minimum, although accreditation may be an ongoing process. Calibration or verification is required whenever laboratory or equipment is moved or per the minimum laboratory standards defined in Section 7.4 – Calibration Standards and Frequencies for Laboratory Equipment.

An annual internal audit should be conducted by designated staff to ensure continual compliance with technician records and equipment intervals. The following are tools and resources available to aid in managing the program for compliance:

- SM Material Users Query that allows filtering to determine expiring certifications, and
- Form 2682.

7.4 Calibration Standards and Frequencies for Laboratory Equipment

The standards for calibration and the frequencies for laboratory equipment calibrations are shown in:

- Tex-198-E, "Minimum Standards for Acceptance of a Laboratory for Soils and Flexible Base Testing,"
- Tex-237-F, "Minimum Standards for Acceptance of a Laboratory for Hot Mix Testing,"
- Tex-498-A, "Minimum Standards for Acceptance of a Laboratory for Concrete and Aggregate Testing," and
- Tex-900-K Series, procedures for calibrating, verifying, and certifying equipment and devices.

7.5 Non-Compliance

A laboratory that does not meet all the above requirements is subject to disqualification or suspension.
Any equipment in a qualified laboratory failing to meet specified equipment requirements for a specific test method will not be used for that test method. MTD or the TxDOT district laboratory responsible for the certification or audit will immediately notify all applicable Area Offices of non-conformance for those test methods.

7.6 Documentation

The qualifying authority is responsible for verifying that laboratories are qualified to perform sampling and testing. Documentation will be required to be kept by the qualifying authority and the qualified laboratory. Calibration records will be maintained for a minimum of 10 years. Upon satisfactory completion of the laboratory qualification process, the qualifying authority will issue a certificate within 14 days covering the scope of testing in which the laboratory has been qualified, with a copy to MTD.

Laboratory qualification documentation to be maintained by the qualifying authority includes:

- availability and calibration or verification records for each piece of equipment;
- personnel qualified or certified to perform required testing; and

- copy of laboratory qualification certificate issued.

7.7 Dispute Resolution

The next higher qualification authority will resolve disputes concerning calibration and verification of equipment. For disputes that cannot be resolved at the district level, MTD will be the final authority.

Appendix A
Acronyms and Definitions

The following terms and definitions are referenced in this document and have the meanings set forth below.

AAP	AASHTO Accreditation Program (AASHTO re:source and CCRL)
AASHTO	American Association of State Highway Transportation Officials
ACI	American Concrete Institute
AO	Area Office
AQMP	Aggregate Quality Monitoring Program
CAR	Corrective Action Report
CCRL	Concrete and Cement Reference Laboratory
CE&I	Construction Engineering and Inspection
CFR	Code of Federal Regulations
MTD	Materials and Tests Division
CMEC	Construction Materials Engineering Council
FHWA	Federal Highway Administration
HMA	Hot-Mix Asphalt
HMAC	Hot-Mix Asphalt Center
IA	Independent Assurance
L-A-B	Laboratory Accreditation Bureau
MPL	Material Producer List
QAP	Quality Assurance Program
QAT	Quality Assurance Test
QC	Quality Control
SM	SiteManager
TXAPA	Texas Asphalt Pavement Association
TxDOT	Texas Department of Transportation

Abuse—Careless or deliberate deviation from testing procedures or specifications.

Acceptance Program—All factors that comprise TxDOT's program to determine the quality of the product as specified in the contract requirements. These factors include verification sampling, testing, and inspection and may include results of QC sampling and testing.

Accredited Laboratories—Laboratories that are recognized by a formal accrediting body as meeting quality system requirements including demonstrated competence to perform standard test procedures.

Breach of Trust—Violation of the trust placed in the certified technician including, but not limited to, acts such as: falsification of records; being aware of improprieties in sampling, testing, or production by others and not reporting them to appropriate supervisors involved in the project; re-sampling or retesting without awareness and consent of appropriate supervisors involved in the project; and manipulating compensation or production.

Certified Technician—A technician certified by some agency as proficient in performing certain duties.

Independent Assurance (IA) Program—Activities that are an unbiased and independent evaluation of all the sampling and testing procedures, equipment, and personnel qualifications used in the acceptance program.

Material Producer List (MPL)—TxDOT-approved products and materials from various manufacturers and producers are located at:
http://www.txdot.gov/business/resources/producer-list.html

Neglect—Unintentional deviations from testing procedures or specifications.

Proficiency Samples—Homogenous samples that are distributed and tested by 2 or more laboratories or personnel. The test results are compared to assure that the laboratories or personnel are obtaining the same results.

Qualified Laboratories—Laboratories that are capable as defined by appropriate programs established by TxDOT. As a minimum, the qualification program must include provisions for checking testing equipment, and the laboratory must keep records of calibration checks.

Qualified Sampling and Testing Personnel—Personnel who are capable as defined by appropriate programs established by TxDOT.

Quality Assurance (QA)—All planned and systematic actions necessary to provide confidence that a product or service will satisfy given requirements for quality.

Quality Control (QC)—All Contractor operational techniques and activities performed or conducted to fulfill the contract requirements.

TxDOT Standard Specifications—the *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* adopted by the Texas Department of Transportation, including all revisions thereto applicable on the effective date of the contract documents.

Verification Sampling and Testing—Sampling and testing performed to verify the quality of the product.

Appendix B
Test Methods for Split or Proficiency Evaluation

After observation and qualification, each qualified technician is required to participate annually in one proficiency or split sample test for each test method requiring independent assurance. Split sample test results must compare to the independent assurance test results below. Proficiency sample test results must be within ±2 standard deviations of the proficiency sample mean.

Laboratory Testing Procedures and Tolerance Limits

Test Procedure	Description	Tolerance
Tex-104-E	Liquid Limit of Soils	15% of mean[1]
Tex-105-E	Plastic Limit of Soils	15% of mean[1]
Tex-106-E	Plasticity Index of Soils	20% of mean[1]
Tex-107-E	Bar Linear Shrinkage of Soils	± 2%
Tex-110-E	Particle Size Analysis of Soils, Part I	> No. 4 sieve: ± 5% points
		≤ No. 4 sieve: ± 3% points
Tex-113-E	Moisture-Density Relationship of Base Materials	Density ± 2.0 PCF
		Moisture Content ± 0.5%
Tex-117-E	Triaxial Compression for Disturbed Soils and Base Materials, Part II	Strength ± 15 psi
		Moisture Content ± 0.5%
Tex-200-F	Asphaltic Concrete Combined Aggregate	>5/8" sieve: ± 5.0% points (individual % retained)
		≤5/8" sieve–No. 200: ± 3.0% (individual % retained)
		Passing No. 200: ± 1.6% points
Tex-206-F	Compacting Test Specimens of Bituminous Mixtures	± 1.0% laboratory-molded density in accordance with Tex-207-F
Tex-207-F	Determining Density of Compacted Bituminous Mixtures	Laboratory-Molded Density: ± 1.0%
		Laboratory-Molded Bulk Specific Gravity: ± 0.020
		In-place air voids (cores): ± 1.0%
Tex-227-F	Theoretical Maximum Specific Gravity of Bituminous Mixtures	± 0.020
Tex-236-F	Asphalt Content of Asphalt Paving Mixtures by the Ignition Method	± 0.3%

Test Procedure	Description	Tolerance
Tex-241-F	Compacting Bituminous Specimens Using the Superpave Gyratory Compactor (SGC)	± 1.0% laboratory-molded density in accordance with Tex-207-F
Tex-418-A	Compressive Strength of Cylindrical Concrete Specimens	17% of mean[1] (4 × 8" specimen)
		14% of mean[1] (6 × 12" specimen)

1. The difference between compared test results must not exceed the indicated percentage of the mean of the compared test results, where the mean is the average of the two test results.

EXAMPLE: Plasticity Index

Tolerance = 20% of the mean

Technician test value	18
IA technician test value	22
Mean	20
20% difference	4

Both values are within 20% of the mean.

Appendix C
IA Annual Report

{Date}

Thomas L. Smith
Independent Assurance Program Manager
Materials and Tests Division (MTD)
Texas Department of Transportation
125 East 11th Street
Austin, TX 78701

RE: Annual Report of Independent Assurance (IA) Program Results – {Project Name}

Dear Mr. Smith:

In accordance with the requirements set forth in the TxDOT Quality Assurance Program for Design-Bid-Build Projects, the information below summarizes the results of system approach independent assurance (IA) testing conducted by our firm on the {Project Name} project for calendar year {XXXX}.

Independent Assurance Program Results – {Year}	
IA Activities	{Project Name}
1. Number of personnel evaluated under system approach.	
2. Number of IA evaluations meeting tolerance.	
3. Number of IA evaluations not meeting tolerance.	
4. Corrective actions:	

cc: Jere A. Williams, P.E.
Materials and Tests, Division Director
TxDOT – MTD

Appendix D
Materials Certification Example Letter for Projects with Federal Oversight

{Date}

Al Alonzi
FHWA Texas Division Administration
FHWA Texas Division Office
300 East 8th Street
Austin, TX 78701

RE: Materials Certification Letter

Project: SH Contract No.:
CSJ:
HWY:
County:
Federal-Aid Project No.:

Dear Mr. Alonzi:

This letter is to certify:

The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and in the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications.

Both the Acceptance and Verification results were evaluated by an independent assurance sampling and testing program, the results of which were submitted to FHWA by the department in the Annual Report of Independent Assurance Program Results and independent of this materials certification.

☐ Exceptions to the plans and specifications are explained on the back hereof (or on attached sheet).
☐ There are no exceptions to the plans and specifications on this project.

Sincerely,
{TxDOT District Area Engineer or Director of Construction}, P.E.
{Title}

cc: Jere A. Williams, P.E.
Materials and Tests, Division Director
TxDOT – MTD

Appendix E
Materials Certification Example Letter for Projects with Non-Federal Oversight

{Date}

{TxDOT District Engineer}
{Title}

RE: Materials Certification Letter

Project: SH Contract No.:
CSJ:
HWY:
County:

Dear Mr. {District Engineer}:

This letter is to certify:

The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and in the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications.

Both the Acceptance and Verification results were evaluated by an independent assurance sampling and testing program, the results of which were submitted to MTD in the Annual Report of Independent Assurance Program Results and independent of this materials certification.

☐ Exceptions to the plans and specifications are explained on the back hereof (or on attached sheet).
☐ There are no exceptions to the plans and specifications on this project.

Sincerely,
{TxDOT District Area Engineer or Director of Construction}, P.E.
{Title}

cc: Jere A. Williams, P.E.
Materials and Tests, Division Director
TxDOT – MTD

Appendix F
Archived Versions

The following archived versions of this document are available.

- Effective January 2016–April 2018:
  ftp://ftp.dot.state.tx.us/pub/txdot-info/cst/qap_dbb_0116.pdf