



U.S. Department
of Transportation
**Federal Highway
Administration**

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September 24, 2008

Mr. Joseph W. Prather, Secretary
Kentucky Transportation Cabinet
200 Mero Street, Room 613
Frankfort, Kentucky 40622

Attn: Mr. Chuck Knowles

Dear Mr. Prather:

We have reviewed the Updated Quality Assurance Program that was submitted by Mr. Newman's April 1, 2008 letter. As requested, the program has been reviewed and is approved. We find that the document is in accordance with the requirements and criteria established in 23CFR 637 (B).

Please contact me if there are any questions or the need for additional assistance in this matter.

Sincerely,

Evan Wisniewski
Engineering and Program Coordinator

cc: Ms. Greta Smith, KYTC, Director of Construction

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ECONOMY**





TRANSPORTATION CABINET

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Steven L. Beshear
Governor

Joseph W. Prather
Secretary

April 1, 2008

Mr. Jose Sepulveda
Division Administrator
Federal Highway Administration
Kentucky Division
330 West Broadway
Frankfort, KY 40601

SUBJECT: Updated Quality Assurance Program
for Materials Testing and Acceptance

Dear Mr. Sepulveda:

The attached Quality Assurance Program has been updated and is submitted for review and approval. It is intended to assure that the 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 maintains conformance with the criteria contained in 23CFR 637 (B). It consists of an Acceptance Program and an Independent Assurance Program based on test results obtained by qualified persons and equipment.

Sincerely,

A handwritten signature in black ink, appearing to read "O. Gilbert Newman".

O. Gilbert Newman, P.E.
State Highway Engineer

OGN:WCG:aw

c: Chuck Knowles, Deputy State Highway Engineer, Project Delivery
Greta Smith, Director, Division of Construction
Materials TEBMS



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Kentucky
Department of Highways

Quality Assurance Program
For
Materials Testing and Acceptance

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I. Introduction

The Kentucky Department of Highways has established the following Quality Assurance (QA) program to assure that the materials and workmanship incorporated into any highway construction project are in reasonable conformity with the requirements of the approved plans and specifications, including any approved changes. This program has been developed in conformance with the criteria contained in 23CFR 637 (B). It consists of an acceptance program and an Independent Assurance (IA) program based on test results obtained by qualified personnel and equipment.

This Quality Assurance program 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 the Independent Assurance (IA) program as well as in acceptance decisions. The acceptance of all materials and workmanship shall be the responsibility of the Engineer.

II. Acceptance Program

Materials incorporated into any highway construction project shall be subject to verification sampling and testing, as well as QC sampling and testing when required by the specifications.

- A. **Sampling and Testing Frequency and Location - Verification** sampling and testing shall be performed at the location and as prescribed in the "Materials Field Sampling and Testing Manual." Frequency of sampling is defined in Site Manager Materials and is applied on a contract basis as appropriate for the material and application.
- B. **Acceptance Sampling and Testing** - The QC sampling and testing personnel, laboratories, and equipment shall be qualified in accordance with the Kentucky Department of Highways Sampling and Testing Personnel Qualification Program (Appendix A) and the Laboratory Qualification Program (Appendix B), and shall be evaluated under the Independent Assurance program contained in this document. All sampling for acceptance decisions will be in accordance with Kentucky Method 64-113, "Sampling Materials by Random Number Sampling". Quality assurance and acceptance decisions will be made as detailed under the following options:

OPTION 1 Contractor or vendor performed QC sampling and testing may be used as part of an acceptance decision when required or allowed by specification. Furthermore, these QC test results shall be validated by verification test results obtained from samples taken independently. Qualified Kentucky Department of Highways personnel or their designated agents shall perform any verification sampling and testing.

OPTION 2 Contractor or vendor performed QC sampling and testing is not allowed as part of the acceptance decision. Qualified Kentucky Department of Highways personnel or their designated agents shall perform all sampling and testing for quality assurance and acceptance decisions.

- C. **Quality Control Plan** - When required by the specifications, a Quality Control Plan (QCP) must be developed by the contractor and submitted to the Engineer for approval.

- D. **Dispute Resolution System** - All disputes arising between the Department verification testing and Contractor or vendor performed QC sampling and testing will be resolved as detailed in Section 113 of The Kentucky Department of Highways Standard Specifications for Road and Bridge Construction.

III. **Independent Assurance Program**

The Independent Assurance program shall evaluate all sampling and testing procedures, personnel, and equipment used as part of an acceptance decision.

The Independent Assurance program will use the project-based approach. The project approach bases the frequency of Independent Assurance activities primarily on the quantities of materials being tested and requires minimum Independent Assurance activities on federally funded NHS projects or state funded projects on Interstates each exceeding \$1,000,000.

- A. **Sampling and Testing Frequency and Location** - Independent Assurance sampling and testing shall be performed on a contract basis at a frequency defined in SiteManager Materials and as prescribed in the "Field Sampling and Testing Manual." Testing procedures performed at the MCL shall not be subject to the Independent Assurance program.
- B. **Testing Equipment** - District laboratory testing equipment used for IA sampling and testing shall be qualified by the MCL in accordance with the **Laboratory Qualification Program (Appendix B)**. The District laboratories shall qualify all other Department testing equipment and any equipment of designated agents of the Department within the District. Any commercial laboratory equipment used for the IA program shall require AASHTO accreditation program approval. The frequency for qualifying IA equipment shall not exceed twenty-four months but shall be reduced to twelve months if previous inspection revealed deficiencies or there has been reason to question laboratories conformance to accreditation requirements. Calibration/verification is required whenever the laboratory or equipment is moved. The IA equipment shall be other than that used for performing verification or QC testing.

Any equipment used to perform verification and/or QC sampling and testing when making an acceptance decision shall be evaluated by IA personnel. This evaluation shall include calibration checks and split or proficiency sample tests. The requirements for, and frequency of, equipment calibrations are shown in AASHTO R 18. Tolerance limits for IA comparisons are contained in Kentucky Method 64 - 112, "Numerical Limits for Comparing Test Results".

- C. **Testing Personnel** - District laboratory personnel who perform IA testing shall be qualified by the MCL in accordance with the Sampling and Testing Personnel Qualification Program (Appendix A). All AAP commercial laboratory personnel performing IA testing shall be qualified under the authority of the Quality Assurance Training Team.

IA Personnel shall evaluate any individual who performs acceptance or verification sampling and testing. This evaluation shall include observations and split or proficiency sample testing. Acceptable tolerance limits for the comparison of test results from split or proficiency samples are contained in Kentucky Method 64 -112.

- D. **Comparison of Test Results** - The Engineer shall perform a prompt comparison of the test results obtained by the individual being evaluated and the IA tester. Acceptable tolerance limits for the comparison of test results from split or proficiency samples are contained in Kentucky Method 64 - 112. If the comparison of the test results does not comply with the tolerances, an engineering review of the sampling and testing procedures and equipment shall be performed immediately to determine the source of the discrepancy. Corrective actions must be identified and incorporated as appropriate, followed by additional IA testing. Test results from all samples involved in the IA program shall be documented and reported in the appropriate project files.

IV. Materials Certification

A materials certification, conforming in substance to **Appendix C**, shall be submitted to the FHWA Division Administrator for each construction project, which is subject to FHWA construction-oversight activities.

V. Conflict of Interest

To avoid an appearance of a conflict of interest, any qualified *non-Kentucky* Department of Highways laboratory shall perform only one of the following types of testing on the same project: verification testing, QC testing, IA testing, or dispute resolution.

APPENDIX A

KENTUCKY DEPARTMENT OF HIGHWAYS SAMPLING AND TESTING PERSONNEL QUALIFICATION PROGRAM

Purpose

This program provides uniform statewide procedures for qualifying sampling and testing personnel qualification to ensure that tests required by the specifications are performed in accordance with the prescribed sampling and testing methods.

Sampling and Testing Personnel Qualification

Sampling and testing personnel will be qualified to perform tests for the acceptance of materials in the areas of portland cement concrete, soils, aggregates, bridge coatings inspection, pavement markings and asphalt mixtures.

The methods for which individuals will be qualified may include, but are not limited to, the following:

- *Division of Structural Design/Geotechnical Branch*
Kentucky Test Methods (500 Series)
- *Division of Materials/Asphalt Branch*
Kentucky Test Methods (400 Series)
- *Division of Materials/Structural Materials Branch*

Chemical Section
Kentucky Test Methods (200 Series)

Concrete Section
Kentucky Test Methods (300 Series)

Aggregate Section
Kentucky Test Methods (600 Series)

Who Must Be Qualified?

Any individual who samples or performs required tests on materials for acceptance must be qualified.

Who Can Qualify Sampling and Testing Personnel?

The Quality Assurance Training Team will administer qualification of personnel. The following positions will be represented on this team:

Deputy State Highway Engineer for Project Delivery
Director, Division of Materials
Director, Division of Construction
Director, Division of Employee Support
TEBM for Asphalt Branch, Division of Materials
TEBM for Geotechnical Branch, Division of Structural Design
TEBM for Structural Materials Branch, Division of Materials
Representative, Federal Highway Administration

The Quality Assurance Training Team may authorize qualification by any of the following:

- *Materials Central Laboratory personnel,*
- *Qualified District Materials Engineers,*
- *Qualified District laboratory personnel,*
- *Other qualified Department personnel, and*
- *Independent sources, such as the American Concrete Institute, Kentucky Ready Mix Concrete Association, Plantmix Asphalt Industry of Kentucky, Kentucky Crushed Stone Association, Kentucky Association of Highway Contractors, and the Society for Protective Coatings.*

Qualification Procedure

To qualify, an individual must successfully perform the specific test and the necessary calculations required to determine the specification compliance in the presence of an authorized evaluator. 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.

After successful performance of a test method, the individual must also pass a written examination administered by an authorized evaluator. An individual failing the written examination may request a retest. The retest must be scheduled and administered within 30 days of the notification of failure. Failure to pass the second written examination shall be considered as failing the entire qualification.

If an individual fails to be qualified on a specific test method or the qualification is revoked, the individual must obtain additional training before being tested on that specific test again.

A standard set of examinations will be used statewide. The examinations will be developed by a committee composed of personnel from the MCL, District laboratories, Central Office Construction, and may include industry representatives.

In addition, the individual may be required to participate in proficiency sample testing given by the qualification authority to validate the qualification. The results of the proficiency samples will be evaluated for compliance with acceptable tolerance limits. If the comparison of the test results does not comply with the tolerances, an engineering review of the test procedures and equipment shall be performed immediately to determine the source of the discrepancy. Corrective actions must be identified and incorporated as appropriate, prior to the individual performing additional testing on that test method.

Qualification of an individual is valid for not more than five years. After that time, the individual must qualify again. Under the IA systems approach, interim evaluations will be required as specified.

Individuals certified by other independent sources for specialty items as required by the specifications shall be exempt from the qualification procedure outlined above.

Documentation

The District Materials Engineer assures individuals performing testing on projects under their supervision are properly qualified. Documentation of individual qualifications is to be maintained in the Kentucky Qualified Technicians and Laboratories (KQTL) database.

Disqualification

Accusations of abuse or neglect of these rights and responsibilities shall be made to the Qualification Program Steering Committee, chaired by the Director of the Division of Materials. The difference between neglect and abuse is intent and shall be determined by the Qualification Program Steering Committee. Penalties shall be implemented upon recommendation by the Qualification Program Steering Committee and approval by the Director of the Division of Materials. Penalties shall range from a minimum of a written warning to a maximum of permanent revocation of all qualification types. Detailed procedures are outlined in KM 64-001, Qualification Program for Technicians.

APPENDIX B

KENTUCKY DEPARTMENT OF HIGHWAYS

LABORATORY QUALIFICATION PROGRAM

The requirements for laboratory qualification are uniform for all laboratories doing acceptance testing. Compliance with equipment requirements of AASHTO R 18, *Establishing and Implementing a Quality System for Construction Materials Testing Laboratories*, is necessary for a laboratory to be qualified. Laboratories that cannot produce records documenting compliance with AASHTO R 18 are not qualified to perform acceptance sampling or testing for Department projects.

Qualification of Central Office and District Materials Laboratories

All sections of the Central Laboratory for which an AASHTO accreditation exists are fully accredited. This accreditation includes inspections of testing equipment, AMRL and CCRL Proficiency testing, qualified personnel conducting testing and documentation of personnel qualifications and training.

The Central laboratory has established a Lab Qualification team that performs inspections at each of the District Laboratories. These inspections are modeled after the AMRL and CCRL inspections performed at the Central Laboratory for AASHTO accreditation. The inspection process includes determination of compliance of laboratory testing equipment and review of personnel qualifications.

The District Laboratory qualification will be valid for eighteen months. The Central laboratory Lab Qualification team will perform at least one inspection during that eighteen-month period for renewal of the District laboratory qualification. All testing equipment that is not in compliance with applicable AASHTO or Kentucky Methods may not be used for acceptance evaluations. Provision is made to replace defective equipment, if necessary, for the continuation of the testing program.

*Qualification for Other Laboratories Providing Acceptance Data
For Department Projects*

All Asphalt Mix Design Laboratories and Cement laboratories will be required to obtain AASHTO accreditation to continue testing and acceptance for Highway Department projects.

All vendors with out of state laboratories that supply materials (by certification) to projects will be required to obtain laboratory accreditation through an acceptable source such as the AASHTO Accreditation Program.

The District Materials Engineer will qualify any laboratory that performs acceptance testing (that is not covered above) in the District where the laboratory is located. Qualification applies to testing performed within confines of the laboratory accredited and testing performed in the field (on-projects). This includes any contractor laboratory that performs acceptance testing on construction materials as well as the Resident Engineers' field testing equipment and technicians. The qualification for these laboratories will be valid for twenty-four months except the interval shall be reduced to twelve months if previous inspection revealed deficiencies or there has been reason to question a laboratories conformance to accreditation requirements. Independent Assurance Sample (IAS) comparison tests and proficiency sample testing will be performed on a random frequency.

When District personnel complete the required review of records and equipment for qualification of the laboratory; any missing documentation or equipment that it is not meeting the appropriate specification will be addressed. The laboratory shall be verbally notified at the end of the inspection. A written notification will follow as soon as possible. The written notification will include notice of the required response time and consequences for non-compliance. The Contractor laboratories that do not comply with the equipment requirements and associated documentation requirements of AASHTO R 18 will be permitted ten (10) calendar days to respond to each deficiency with written description of the corrective action taken. They should also provide all applicable substantiating evidence. If an acceptable response is not received within this period, the affected contractor laboratory should be notified of revocation of qualification. The laboratory is then ineligible to perform acceptance sampling or testing for Department projects. Requests for qualification renewal of contractor laboratories should be forwarded to the Central Office when all deficiencies have been adequately addressed.

A Resident Engineer's Crew shall be notified verbally when deficient equipment is found and the equipment may not be used for acceptance testing unless

repaired. The District Materials Engineer shall provide a written notice to the Resident Engineer with the equipment inspected and the status of the equipment. Repair or replace equipment in the Resident Engineer's Crew as soon as possible to maintain the testing capability within the Crew. When equipment is repaired or replaced, notify District Materials Engineer so that appropriate records can be kept for this equipment and acceptance and verification testing may continue without interruption.

APPENDIX C

Example Certification of Materials Letter

Transportation Cabinet
Department of Highways
Division of Materials
Frankfort, Kentucky

CERTIFICATION OF MATERIALS

Date: March 19, 2008

Division Administrator
Federal Highway Administration
Kentucky Division
Frankfort, Kentucky 40601

COUNTY: STEPHENSON
PROJECT: SPQR (151)
PCN #: 012345

Dear Sir:

This is to certify that the results of the tests on acceptance samples indicate that the materials incorporated in the construction work and the construction operations controlled by sampling and testing were in reasonable close conformity with the approved plans and specifications. Results of independent assurance samples and tests, as required by the Department's Independent Assurance Program (IA), compare favorably with the results of acceptance samples and tests.

Sincerely,

WESLEY GLASS
DIRECTOR
DIVISION OF MATERIALS

EXCEPTIONS: District Office personnel reported that the certifications for four bid items were not entered into KMIMS although all of the certifications were obtained as required: Sloped Box Outlet Type 1-15" (6), Signs (500), Variable Message Board (2), and Flashing Arrow Board (2). No IAS samples were involved in this data entry error.

FHWA (2)
ACCOUNTS
DME
TEBM
CONSTRUCTION

APPENDIX D

*Summary of the Organizational Plan
for
Qualified Inspector Training
and
Laboratory Qualification*

Plan Administration

I) The Quality Assurance Training Team will administer qualification of personnel. The following positions will be represented on this team:

Deputy State Highway Engineer for Project Delivery
Director, Division of Materials
Director, Division of Construction
Director, Division of Employee Support
TEBM for Asphalt Branch, Division of Materials
TEBM for Geotechnical Branch, Division of Structural Design
TEBM for Structural Materials Branch, Division of Materials
Representative, Federal Highway Administration

The Quality Assurance Training Team will administer and manage the process of technician qualification and laboratory qualification. One individual with the MCL will be dedicated to the coordination of the training effort. Additionally, one individual from each MCL Branch will assist the Materials coordinator and be directly responsible for the training and qualification effort for their Branch. The team will coordinate class schedules and materials for each class.

The MCL coordinator will work with the Division of Employee Support. When appropriate Employee Support will process class fees and contract with the training organizations for instructors and facilities to hold the training classes. The coordinator will oversee maintenance of the qualified-personnel database, and the notification of the affected contractor personnel and laboratories.

The coordinator will be responsible for notifying students of their qualification status. The coordinator will direct the Laboratory Qualification Team in maintaining District laboratory qualifications and assembling all contractor and vendor laboratory qualifications.

II) Inspector and Laboratory Database

The Materials Central Laboratory will maintain a database of all qualified inspectors (Department, contractor, state-designated agent). This database shall contain any information relevant to the individual qualifications held by each inspector, with qualifying and expiration dates for each area of qualification.

Individuals will be notified six months prior to a qualification expiration date so that they may have an opportunity to renew their qualification status and continue to do the inspection work.

The database shall also be maintained for the qualified laboratories. Notifications will be sent when a laboratory is due for qualification renewal.

If an inspector or a laboratory fails to renew their qualification status, they will not be allowed to perform acceptance testing on any projects. The qualification database is available on-line for the Districts and authorized personnel.