



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

December 1, 2000

LOCAL AGENCY HMA QC/QA PROCEDURES

#00-11

COUNTY ENGINEERS/SUPERINTENDENT OF HIGHWAYS
MUNICIPAL ENGINEERS/DIRECTORS OF PUBLIC WORKS
CONSULTING ENGINEERS

Over the past several years local agency interest in the hot mix asphalt Quality Control/Quality Assurance (QC/QA) program has grown, and the number of local projects built using QC/QA has steadily increased. Due to inherent differences in administering local projects, the state QC/QA procedures were modified to meet the needs of local agencies. The attached procedures for local agencies are the result of a task force comprised of local agencies and the department. The procedures involved extensive coordination among task force members as well as their respective organizations.

The task force identified training as an integral component to the success of the QC/QA program. In order to administer the QA portion of the contract, the QA manager must be able to understand the data provided by the QC and QA tests, initiate corrective action, and accept the material based on the information provided by the tests.

To meet the training need and to minimize the cost to local agencies, a Quality Assurance Managers course was developed. This course will be offered in each district, free of charge to local agencies. Specific information on the training classes is being provided by separate letter.

The QC/QA program is available for use on all projects, regardless of size, which will utilize hot mix asphalt. If you choose to use QC/QA on future projects, these procedures should be utilized.

Sincerely,

A handwritten signature in cursive script that reads "Darrell W. McMurray".

Darrell W. McMurray, P.E.
Engineer of Local Roads and Streets

Attachment

Local Agency HMA QC/QA Procedures

Introduction

The bituminous QC/QA program is a process by which the daily quality control (QC) of the production and placement of the asphalt mixture is the responsibility of the contractor/vendor while the owner/user is responsible for periodic quality assurance (QA) testing and final acceptance of the product.

The QC/QA specifications have been developed with active participation from the Department and industry through a partnering and consensus decision making process. This partnering effort between the Department and industry continues through annual review of the QC/QA specifications. The benefits of a QC/QA program are:

- Provides a more uniform product.
- Responsibility for the quality of the product is shifted to the contractor.
- Quality assurance testing by the owner is reduced compared to the testing required by method specifications.
- Requires corrective action to be taken promptly during construction thereby improving the overall quality of the product.

Definitions

The following terms and definitions describe some of the various items and personnel involved in the QC/QA process:

- **Contractor** – Defined by Article 101 of the Standard Specifications for Road and Bridge Construction.
- **Engineer** – Defined by Article 101 of the Standard Specifications for Road and Bridge Construction.
- **Local Agency** – The unit of local government responsible for the administration of the construction contract and the QC/QA Special Provision.
- **Resident Engineer/Technician** – The Illinois Department of Transportation or Local Agency representative as defined by the Standard Specifications for Road and Bridge Construction and IDOT Construction Memorandum 95-6 (Attachment A).
- **QC/QA Special Provision** – An Illinois Department of Transportation contract provision that applies to the construction contract. The QC/QA Special Provision, along with its referenced documents, governs the contractor's quality control requirements. These documents also specify the quality assurance (QA) responsibilities of the Engineer and Local Agency.
- **QA Manager** – The person or entity responsible for the quality assurance and acceptance requirements described in the Special Provision.

- **QC Manager (Contractor)** – The individual employed by the contractor and who has the responsibility for compliance with the Quality Control provisions of the contract. The QC manager shall have training as established in the contract.
- **Trained Technician** – An individual that has successfully completed the prerequisites established by the Department for Quality Control and/or Quality Assurance testing, mix design, or contract administration.

Applicability

The QC/QA program is available for use on all projects, regardless of size, which will utilize Hot Mix Asphalt (HMA). The program will use the current Departmental specifications for QC/QA of Bituminous Concrete Mixtures.

Responsibilities

QC – The quality control aspect of the QC/QA program is the responsibility of the contractor. In order to qualify for participation in the program, the contractor must provide trained personnel to administer the QC portion of the contract both in the plant and field.

(a) The Contractor:

- (1) Must thoroughly understand all aspects and requirements of the procedures, manuals and documents referenced by the special provision.
- (2) Must agree that compliance with the requirements of the special provision and Annual Quality Control Plan and job-specific Quality Control Addenda approved by the Engineer is an essential element of the contract.

(b) Plant Testing – The contractor must have an approved lab on site, as approved by the Engineer, and shall perform inspections and tests to assure conformance to the contract requirements.

(c) Field Testing – The contractor shall be responsible for density testing of the bituminous mat at intervals specified in the special provisions.

QA – Administration of the QA portion of the program is the responsibility of the Local Agency QA Manager. The expertise to perform the QA Manager duties should be available through the Local Agency staff, a private source, or furnished by the IDOT district staff as available. Depending on the circumstances, an individual may serve as both QA Manager and Resident Engineer. These responsibilities include monitoring QC and QA test results and ensuring investigations and corrective actions are performed. The individual who will perform the duties of QA Manager will be named at the project pre-construction conference. IDOT will provide the QA plant testing with its materials personnel or qualified consultants hired to do this work.

(a) General

- (1) Laboratories – All laboratories used for mix design, mix design verification, quality control testing, or quality assurance testing shall be inspected and approved in accordance with Department standards. The QA Manager shall verify the use of approved labs.
- (2) Personnel Training– All personnel assigned to provide quality assurance services shall possess the level of training specified below. IDOT will identify sources for obtaining the required technical training. Minimum levels of training are as follows:
 - a. QA Manager (overall QA and acceptance responsibility)
 1. If a local agency employee is designated as the QA Manager, they must have completed the QA Manager training course. The training course is optional for local agency Registered Professional Engineers. In accordance with the Professional Engineering Practice Act, Professional Engineers are responsible to determine if they possess the knowledge and/or experience necessary to perform the QA Manager duties. However, all local agency Professional Engineers are strongly encouraged to complete the training course.
 2. Consultants acting on behalf of a local agency must be a HMA Level II Technician.
 - b. Mix Design/Mix Verification – HMA Level III Technician.
 - c. Assurance testing for gradation, voids, & AC content – HMA Level I Technician.
 - d. Assurance testing for density – Trained density technician.

(b) Pre-construction – The QA manager is responsible for the following:

- (1) Design Laboratory – Verify and document that the contractor’s mix design lab (if applicable) is approved by IDOT. This can be verified with the district Bureau of Materials or Materials Section.
- (2) Quality Control Laboratory – Verify and document that the contractor’s quality control lab is approved by IDOT. This can be verified with the district Bureau of Materials or Materials Section.
- (3) QC Personnel – Verify and document that the contractor’s quality control personnel have received the appropriate QC/QA training and are listed on the IDOT trained technician database. Names, Social Security Numbers and level of training must be provided. This information can be verified by the district Bureau of Materials or Materials Section.
- (4) Small Quantities and Pay Items –Review the contractor’s plan for quality control of small quantity production when allowed by the QC/QA special provision.
- (5) Quality Control Plan – Confirm and document that an approved annual quality control plan is on file with the IDOT district. Review and approve QC Plan addendum for the project.

(c) Mix Design – The contractor shall be responsible for all mix designs. The Department will verify all new mix designs (or contract for same). The QA Manager will document that a verified mix design is being used.

- (d) Start of Production – The QA Manager/Resident Engineer shall:
- (1) Verify and document that initial target values and Job Mix Formula adjustments are in accordance with the contract.
 - (2) Witness and document the contractor's placement of the test strip and nuclear density gauge/core correlation, if applicable by the special provision.
 - (3) Witness and document the contractor's development of growth curves.
 - (4) Observe and approve the contractor's proposed rolling pattern and density targets.
- (e) Quality Assurance Plant Testing – Tests performed on mix sampled at the plant (QA plant tests) will be performed by IDOT materials personnel or a representative of IDOT.
- (1) A consultant/independent lab may be utilized for the QA plant testing requirements (must be performed by a Level I HMA trained individual and have an IDOT approved lab).
 - (2) General Quality Assurance plant test requirements as specified in the special provisions:
 - a. Conduct independent assurance tests on split samples at the frequency specified in the Special Provision.
 - b. Perform split sample assurance tests for aggregate gradation.
 - c. Perform split sample assurance testing for volumetric properties.
 - d. Witness the contractor's sampling and splitting of samples.
 - e. Witness scale checks at least once per week. Only diary documentation is required if IDOT is regularly conducting scale checks for the plant.
- (f) Quality Assurance Field Tests – The Local Agency or its designated representative, is responsible for the quality assurance density testing as required by the special provisions. The following methods may be used provided the person has successfully completed the density tester class:
- (1) Density testing may be performed by Local Agency inspectors.
 - (2) Consultant may be retained to perform density testing for the Local Agency.
 - (3) Where density is to be established by coring, the associated laboratory testing is the responsibility of the Local Agency. QA cores will generally be split samples cored by the Contractor and witnessed by the Local Agency or their agent.
- (g) Investigations – The QA manager is responsible for the following:
- (1) Be available for consultation when the QC plan requires an investigation by the contractor.
 - (2) Investigate when the contractor's required test results deviate from the specified control limits.

- (3) As appropriate, perform additional split sample tests and review the contractor's technician performance and testing procedures.
- (h) Documentation – The Resident Engineer/QA manager is responsible for the following:
- (1) Provide written test results to the contractor for all required plant and density QA tests.
 - (2) Maintain a diary detailing all corrective action taken by the contractor.
 - (3) Include all activities and observations relating to production and tests in the diary.
 - (4) Maintain records to validate the specified acceptance criteria:
 - a. Validation of the Contractor's quality control by the assurance process.
 - b. The Contractor's process control and actions.
 - c. Assurance testing for voids and density.