Hot Mix Asphalt Construction

Certification and Accreditation Programs

Scott Shuler and
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editors

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Foreword

This publication, *Hot Mix Asphalt Construction: Certification and Accreditation Programs*, contains papers presented at the symposium of the same name held in Nashville, Tennessee, on December 8, 1998. The symposium was sponsored by ASTM Committee D-4 on Road and Paving Materials. Scott Shuler, Lafarge, Denver, Colorado and James S. Moulthrop, Koch Materials Company, Austin, Texas, presided as symposium Co-Chairmen and are the editors of the resulting publication.

Contents

Overview

Many construction processes are controlled by comparing a desired product, conceived during design, to the product produced during construction. The asphalt pavement construction process is often controlled in this manner. Control is often based on testing of components and assemblies of materials, the construction process, and the finished asphalt pavement. Success of the asphalt pavement construction project is usually judged based on how well test results produced during construction compare with criteria considered representing the desired product conceived during design.

Since success of an asphalt paving project is judged based on test results, it is logical that individuals conducting these tests be provided whatever training is necessary to assure the tests are conducted properly. The importance of this cannot be overemphasized. Significant sums of money depend on tests properly conducted. These sums of money represent not only the initial cost of the project, including payments to the contractor and subcontractors, but more significantly, performance of the pavement. Therefore, if test results do not reflect accurately true values of criteria representing pavement behavior, performance of the pavement may be in jeopardy.

There are at least three important components to consider when developing a process to control pavement construction. First, tests, which determine compliance with specifications, must be standardized. In asphalt pavement construction in the U.S., the process of developing and standardizing these tests is an ongoing process within bodies such as ASTM and AASHTO. Second, apparatus necessary to conduct the tests must be evaluated to determine competency. Third, the capability of personnel conducting the tests must be judged.

Statistical quality control and quality assurance (QC/QA) programs in hot mix asphalt pavement construction have become a significant contributor to more consistent and higher quality products. The result has been a steady improvement in the performance of asphalt pavements. The success of any QC/QA program is directly related to the quality of the data generated by technicians conducting the tests. Although standard test procedures published by ASTM and other bodies are used, differences in test results can still occur between the QC and QA laboratories. Reducing the potential for these differences is important so that an accurate estimate for the true value of each test result can be determined. Having confidence in these test results is important for controlling the manufacturing process. Certification and accreditation programs for both asphalt technicians and laboratories have been and are continuing to be developed to improve the consistency and quality of laboratory test results on asphalt paving construction projects. Successful programs accomplish this goal and provide additional benefits in the form of improved cooperation between the owner and contractor. The result is improved paving quality leading to increased performance in turn producing cost savings over the pavement life cycle.

Many states, municipalities, and other organizations responsible for asphalt paving have adopted various forms of certification programs for asphalt technicians and laboratories. Many more organizations intend to establish such programs in the near future either because the need has been clear or in response to FHWA, which has mandated certification programs by June 29, 2000 on federal aid projects as described in 23 CFR, Part 637.

Purpose of Symposium

This volume has been assembled to share the experiences of an assortment of organizations that have established or begun to establish programs for certification and accreditation for

technicians working in the asphalt pavement construction industry. This information should be useful not only to those wishing to start new programs, but also to organizations with existing programs desiring to make improvements.

Our intent was to assemble as wide a variety of certification and accreditation programs from around the U.S. as possible. We hope those wishing to establish successful certification programs of their own can find helpful examples in the approaches presented.

Summary

It will become clear when reading this volume that a wide range of approaches has been taken when developing technician certification and accreditation programs around the country. A diverse group of organizations' experience has been compiled by the editors of this volume including departments of transportation, a trade association, a college and several universities, a paving contractor, and AASHTO. However, in spite of differences, much commonality can be identified between programs.

Perhaps the most ambitious program presented is described in the paper "New England Transportation Technician Certification Program (NETTCP): A Regional Approach." This program is a cooperative arrangement between six states that have agreed on the methods utilized to certify technicians so that an individual may work in any of the participating states. Training is an element in this program, which includes asphalt plant and laydown activities, aggregates, soils and portland concrete. In addition to certification, the program also is developing standardized test procedures to be followed in each of the six participating states.

"Asphalt Technician Certification: The Rocky Mountain Way" describes a program developed as a partnership between the Colorado DOT and the Colorado Asphalt Pavement Association. This partnership used seed money provided by CDOT and full-time personnel and dedicated laboratory space provided by CAPA, which operates and administers the program, to develop a combined classroom instruction and practical laboratory program to allow technicians to demonstrate proficiency. Five levels of certification are available: A—Laydown, B—Plant, C—Mixture Design, D—Profilograph, and under development, and E—Aggregates.

The AASHTO laboratory accreditation program is presented in the paper "The AASHTO Accreditation Program: Serving the Hot Mix Asphalt Industry." This paper summarizes the program beginning in 1988, which has accredited over 200 asphalt laboratories. The program requires that laboratories satisfy many quality systems and participate in the AASHTO Materials Reference Laboratory (AMRL) on-site assessment and proficiency sample program. The paper describes improved repeatability and reproducibility for accredited laboratories compared with the non-accredited.

"Experiences With Bituminous Paving Technician Training and Certification in Pennsylvania" describes a program which combines classroom and laboratory training with certification based on written exams. Three levels of asphalt plant technician are offered and one laydown technician. The program is primarily designed to be instructional with three- to four-day schedules for the various levels of certification. Although proficiency of technicians is not demonstrated in the laboratory, the program managers believe the close supervision provided during instruction is a good substitute. However, the paper states that practical proficiency demonstrations would be desirable if the scope of the program is expanded to accommodate it.

Arkansas DOT developed their program with the University of Arkansas described in the paper "A First-Year Summary of the Arkansas Hot Mix Asphalt Technician Certification Program." This program offers certification and training in aggregate technology, hot mix asphalt, portland concrete and soils. Written examinations are combined with practical laboratory evaluations of technician skill in conducting the various tests. Instructors are university staff, which

has created some difficulty in scheduling the courses since summer is the best time for staff to conduct courses but the poorest time for prospective attendees.

A view of technician certification by a contractor is presented in the paper "Certification and Accreditation Programs: A Contractor's Perspective." The focus of this paper is to identify salient features of such programs such as written examinations, hands-on laboratory proficiency and laboratory accreditation. The message is to take advantage of the opportunity to standardize the technician certification and laboratory accreditation processes throughout the country so that different programs are not created in each state.

The only national certification program for asphalt technicians was developed starting in 1976 by the National Institute for Certification in Engineering Technologies (NICET). The program is described in the paper "Basic Elements in the Design of a Certification Program for Hot Mix Asphalt Construction Personnel." This paper describes the NICET model for certification which includes four elements: 1) acceptable completion of a written examination, 2) verification of practical competency by a direct supervisor, 3) satisfying the minimum work experience, and 4) satisfying a personal recommendation requirement. Some benefits of this program include third-party evaluation of strengths and weaknesses based on a standardized written examination, and a relatively rapid, economical program.

A community college in Illinois in partnership with two asphalt concrete producers provides certification for technicians in accordance with Illinois DOT requirements. The paper "Lake Land College/Illinois Department of Transportation: Quality Control/Quality Assurance Training Program—Development and Implementation" describes a program which includes certification in aggregates, three levels of hot mix asphalt, portland concrete, Superpave field control, and nuclear density testing. The program operates two laboratories located in strategic areas of the state to make it more convenient for attendees. Course length varies from two to five days.

"South Carolina's Experience With Certification and Accreditation" is a paper that describes five certifications available ranging from QC/QA laboratory and field personnel to mixture design and laboratory managers. University personnel administer the program but teams consisting of university, industry, and DOT experts teach classes. Written exams are part of all five courses and practical demonstrations of proficiency are required for two courses. Courses are limited to approximately 12 attendees and range from three to five days in length.

Closure

As more owners become aware of the benefits of quality control and quality assurance, the advantages of technician certification and laboratory accreditation will simultaneously become apparent. The intention of this volume is to present an assortment of certification and accreditation programs which measure the ability of personnel and the competency of the apparatus engaged in quality control and assurance testing. It is the editors' hope in assembling this volume that information provided here would be useful to practitioners wishing to establish new programs or improve existing programs by viewing the experience of others.

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