IMPLEMENTATION MANUAL

FOR

QUALITY ASSURANCE

A Report of the
AASHTO Highway Subcommittee
on Construction

February 1996

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INTRODUCTION

This Implementation Manual for Quality Assurance is published as a committee report of the AASHTO Highway Subcommittee on Construction. Because it has not been ballotted by the AASHTO Standing Committee on Highways and the AASHTO Board of Directors, it is not considered an official AASHTO guide or voluntary standard.

This Committee report was prepared by a Joint Construction/Materials Quality Assurance Task Force of the AASHTO Highway Subcommittee on Construction. The members of the Subcommittee voted during their August, 1995 meeting to publish the Committee Report and authorized its distribution. The AASHTO Highway Subcommittee on Materials passed a resolution in August, 1995 endorsing the report.

This Implementation Manual for Quality Assurance committee report is a companion to a separate report of the Subcommittee on Construction titled Quality Assurance Guide Specification, published concurrently with this report.

The Subcommittee on Construction welcomes comments on this Committee Report, and will consider all that are received. It is planned to continue development of the Committee Report, leading to its ultimate acceptance and publication as a n official AASHTO guide.

Comments on this Committee Report should be sent directly to AASHTO at the address displayed below.

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INTRODUCTION

The term Quality Assurance, as defined in the companion committee report titled, Quality Assurance Guide Specification, is:

> "All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality."

The term Quality Control/Quality Assurance (QC/QA) has often been used synonymously with Quality Assurance. The above definition considers Quality Assurance to be an all encompassing concept which includes quality control (QC), acceptance, and independent assurance (IA). Therefore, Quality Assurance is the proper term and is used in this manual.

The implementation of a statistically based Quality Assurance specification can be a big change for Agency and industry personnel. As with any change, resistance should be expected. However, Quality Assurance specifications have positive elements for everyone associated with construction. The Agency's manager should continually stress these positive points to help ensure an orderly transition. The following presents important considerations in developing and implementing a Quality Assurance program.

AGENCY MANAGEMENT SUPPORT

Support of upper Agency management is essential. Their prior knowledge of the program objectives and provisions will enable them to support the concept in instances where they are contacted by frustrated individuals. Their support is critical in the area of providing necessary personnel, equipment, and training for an effective and successful program. Management must understand that there will be initial implementation costs, particularly in training and certification, which are critical to the long-term success of the program.

INDUSTRY SUPPORT

Support of and involvement by industry associations in the development and implementation phases of the Quality Assurance program is equally as essential. Their involvement can be extremely valuable in the technical aspects of the program as well as assisting in promotion of the concepts. It may be suitable to form a joint Agency and industry task force to assist in developing specifications and programs. The Agency must, however, first outline required parameters such as acceptance procedures, information requirements for materials control systems, etc.

PROGRAM GOALS

The primary goal of a Quality Assurance program should be to improve quality and provide for the effective use of existing personnel. Agencies should not implement Quality

Assurance programs for the purpose of reducing personnel requirements. Many Agencies have lost personnel through the years and are now faced with a critical need to maximize the productivity of existing personnel. A well organized Quality Assurance program will help satisfy this need to more efficiently use existing personnel.

Minor incremental improvements in the quality and durability of individual highway projects can translate into large system-wide improvements through increased performance. Some within the contracting industry view Quality Assurance as unloading work and responsibility from the Agency to the Contractor. Quality Assurance should be approached as a partnership effort between an Agency and the Contractor, but with well defined and separate responsibilities.

GENERAL SPECIFICATION PRINCIPLES

One of the keys to success of a Quality Assurance program is the specification design itself. Contact with other Agencies that have implemented a Quality Assurance program can provide useful insight. Don't set out to "reinvent the wheel," but rather to improve upon what others have already learned. Many decisions will have significant impacts on Contractors so their input is important. In addition to industry input, experts in material testing, statistics, pavement engineering, contract administration, etc. should be consulted during specification development. Emphasis should be placed on QC during production and acceptance and payment provisions based on final in-place measurements and analysis.

OUTLINE THE IMPLEMENTATION PLAN

Establish a "critical path" for the implementation plan, showing mileposts as to what is to be accomplished from beginning to full implementation. Do not rush the implementation but rather stretch it out over a 4 or 5 year period. This time period will give everyone a chance to adjust to any new procedures. Begin with one or two projects. Evaluate the outcome of those projects before starting additional projects. Report the outcome to the engineering staff and the industry. Address resource impacts such as staff, costs, etc.

Consider running "dual procedures" during the early phases on those selected projects. Running parallel test procedures will let Contractors gradually adjust to new procedures and pay adjustment provisions. Simply calculating, but not applying, pay adjustments in the beginning may be desirable. Gradually increase the number of projects over the following years making sure all geographic areas have some exposure. Price adjustment provisions can also be gradually changed.

COMPREHENSIVE PRESENTATION OF THE PROGRAM

Jointly present the plan to Agency personnel, Contractors, and suppliers. They need to know that there is to be a structured system for handling payments on a "payment for value received basis." This is a strong point of the program because conservation of the tax dollar is a concern to all.

The presentation should have enough detail to show actual results of several "what if" scenarios. Agency and Contractor personnel must understand how the program works and what to expect. Some Agencies do not plan to extend Quality Assurance to all projects. Full implementation may be only for projects over certain quantities or on certain highway systems. The intent of the Agency should be made clear in the presentation.

Joint training sessions should be an integral part of the program and should include Contractors, suppliers, and Agency personnel. Technical training should be provided for both Agency and Contractor personnel to ensure that each group receives the same level of information. A certification program should be required for all testing personnel.

THE ENGINEERING PERSONNEL

Many Agency engineering personnel have been involved in construction management for many years. They may believe that there is no need to change and that you are trying to "fix something that isn't broken." Some may interpret the Quality Assurance program as a form of automation and believe that they are being stripped of responsibilities. They may feel that their only responsibilities are to "observe and record" test results and when the work is done, just apply the proper pay adjustment. The inspectors must realize that their responsibility has not changed and that inspection is still a critical element of acceptance. If a Contractor is producing unacceptable work, the Contractor must be notified as soon as possible.

Most Agencies have always had a pay adjustment provision for substandard work. However, it has always been a problem for the resident engineer/project manager to determine the proper amount of adjustment. With the Quality Assurance program, the adjustment is determined by specification which is one of the significant benefits. Another benefit is improved communication between Agency and Contractor personnel regarding performance and adjustments.

THE CONTRACTOR

Contractors and suppliers that have been in business for many years have tailored their operations to the current specifications. Any change will likely affect the way they pursue profit. This is all the more reason for moving slowly. Prime Contractors will have to reassess their relationship with subcontractors and suppliers.

All Contractors need to fully understand the mechanics of the Quality Assurance program so that the bidding process will be as equitable as possible. The goal of the program is quality work. There are opportunities for experienced Contractors to be more competitive by allowing more flexibility within the specifications as well as being better able to control their costs.

One of the major complaints from successful Contractors is that they are expected to provide a good quality product while others receive full payment for providing a "not-so-good" quality product. This complaint would be resolved by a well organized Quality Assurance specification. This aspect should be pointed out when presented to the industry. Some