



South Carolina  
Department of Transportation



UNIVERSITY OF  
SOUTH CAROLINA



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## SUMMARY REPORT

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South Carolina  
Department of Transportation  
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# Technology Transfer Programs for Concrete QC/QA Certification of Contractors and SCDOT Personnel

## STATEMENT OF THE PROBLEM AND SCOPE OF REPORT

The South Carolina Department of Transportation (SCDOT) is in the process of developing and initiating contractor Quality Control and Quality Assurance (QC/QA) programs for several of its construction-related processes. In the early 1990's, a research project was initiated to explore the feasibility of establishing a contractor QC/QA program for asphalt work. Subsequent research projects developed the process and SCDOT is now in the implementation phase with pilot projects being conducted and full implementation expected in 2000. Certifying SCDOT and contractors' personnel has been an integral part of the process.

In 1998, SCDOT initiated a research contract with Transtec Consultants (Austin, TX) to develop a Quality Assurance Program for Portland Cement Concrete in South Carolina. In late 2000, Transtec delivered their draft report entitled *Development of a Quality Assurance Program for Portland Cement Concrete in South Carolina*. This document included the Quality Assurance specification and supporting documentation. A significant component of the proposed specification is technician certification. An April 2001 revised draft copy of the SCDOT specification *Structural Concrete Quality Assurance* is included in Appendix A-*Concrete QC/QA Certification of Contractors and SCDOT Personnel - Module D - SCDOT Supplemental Material*. Appendix A represents the "course notes" for the pilot offering of the certification program.

The Department of Civil and Environmental Engineering (CEE) of the University of South Carolina (USC) undertook to develop a comprehensive certification program for Portland cement concrete contractors and SCDOT technical personnel. This program is aimed at providing certification for SCDOT technicians and inspectors and contractors' personnel pursuant to the adopted SCDOT Specification for *Structural Concrete Quality Assurance*.

The objectives of this program were to undertake the necessary planning, develop instructional materials, conduct a pilot program, and to put in place the infrastructure necessary to fully implement a concrete QC/QA certification program. The concrete QC/QA certification program complements a similar program developed by the investigators for aggregate suppliers.

American Concrete Institute (ACI) certification programs were adopted as the basis for SCDOT certification. Additional supplemental material, relevant to SCDOT practice was appended to the existing ACI certification program. This supplemental material is referred to as Module D. A detailed description of Module D and an overview of ACI certification is provided in this report.

ACI certification was selected as the basis because it is most cost efficient, complete, up-to-date and nationally recognized.

A pilot offering of the SCDOT certification program was offered June 19-21, 2001. Eighteen participants were selected. Eleven of these have received SCDOT certification while fourteen are currently eligible. Success rates are believed to be typical of what should be expected in the future.

Considerable feedback was solicited from the pilot program offering and appropriate changes are being made to the content and presentation. Currently, two offerings of Module D are scheduled and USC is prepared to host ACI certification as required.

It is believed that the experience of the pilot offering will be representative of future offerings in terms of operation, content and participant performance. It is further believed that the program described in this report satisfies the requirements set out in the SCDOT specification Structural Concrete Quality Assurance.

This research project was conducted at the University of South Carolina by Kent A. Harries, Ph.D., Michael F. Petrou, Ph.D. and M. Hanif Chaudhry, Ph.D.  
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