



South Carolina
Department of Transportation



CLEMSON
UNIVERSITY



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SUMMARY REPORT

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Establishment of Foundation Inspector's and Earthwork and Base Inspector's Certification Courses

Introduction

The South Carolina Department of Transportation (SCDOT) is responsible for constructing and maintaining thousands of miles of roads and pavements as well as bridges and overpasses. The quality of these roads and structures depends heavily on the efficiency and quality of the construction and maintenance programs used by the SCDOT on a daily basis. Poor quality construction that leads to premature road and bridge failures not only costs the State excess money, but can be a hazard as well (i.e., safety issues).

Many of these road and bridge failures can be attributed to improper procedures and techniques used during the construction of the subgrade and base courses of these roads or the foundations of the bridges. One method that the SCDOT has traditionally used to ensure proper construction is that of on-site inspection during the construction process. Typically, on-site inspection has been performed by an employee of the SCDOT who has received training and an in-house certification to perform such inspections. These field inspectors work with contractors on SCDOT projects during subbase and base construction or foundation construction to ensure that the construction is being performed properly.

Due to the increase in volume of construction projects and number of inspectors needed, SCDOT has begun mandating that contractors working on SCDOT projects hire and train their own technicians to perform project inspection. The SCDOT is beginning to turn its inspector certification classes over to a third party (e.g., Clemson University).

Project Objective

The primary objective of this project was to develop certification courses for inspectors working on SCDOT earthwork and foundations projects.

Development of Courses and Implementation

Prior to Clemson University's involvement with these courses, both the Earthwork and the Foundation Inspector's Courses were primarily taught by SCDOT officials as well as some guest speakers and industry representatives. The Foundation Inspector's Course consisted of three days of classroom teaching. In general, one day was devoted to construction and inspection of piles, one day was devoted to the inspection and construction of drilled shafts, and the third day was devoted to general discussions, review, and the final exam.

The Earthwork Inspector's Course was a four day course that consisted of both class room teaching as well as demonstration of testing procedures in the field. This course devoted two days to lectures, one day to testing procedures in the field, and one day to the final exam.

In addition to attending the SCDOT's courses, a meeting was also held between all of the SCDOT officials responsible for the current courses and representatives from Clemson University. The results of this meeting are as follows:

- The content, notes, and presentations of each of the courses should remain relatively unchanged.
- Both the Earthwork and Foundation Inspector's Courses would be held at a location at or near Clemson University.
- Class size would be reduced from fifty students to approximately twenty to twenty five students.
- Representatives from the Clemson University Civil Engineering Department would be responsible for coordinating and teaching the classes, grading all certification tests, and issuing and tracking certifications for the attendees.

It was also determined that the actual demonstration of proficiency in testing procedures would be required during the Earthwork Course instead of at a later date. This would enable the attendees to complete their certification all at once instead of at a later date after the course. This would also reduce the course coordinator's trips to multiple locations that would be required to field certify all of the attendees. In addition, for this course all the attendees would be certified by a nuclear gauge manufacturer. Therefore, one day of the course will be dedicated for this purpose.

Summary and Conclusions

Due to an increasing number of construction projects and number of inspectors needed, the SCDOT has begun mandating that contractors working on DOT projects hire and train their own technicians to perform project inspection. For several years, DOT was responsible for certifying inspectors; however, this task became an overwhelming responsibility to manage in addition to normal day to day operations. Therefore, the SCDOT decided to turn the Earthwork and Foundations Inspector's Certification classes over to Clemson University, Civil Engineering Department. The principal author of this report is also responsible for the Hot Mix Asphalt (HMA) Certification program for DOT.

Several meetings were held to obtain as much information regarding these courses taught by DOT. The final agenda for each course was developed after discussing several issues with DOT officials. Several major changes were suggested and approved. One major change was to add one additional day to the Foundations course. Another major change was that anyone attending the Earthwork course will be nuclear gauge certified. In addition, the attendees will be field certified for the Earthwork courses while attending the course. A Certification Board will be set up to have a couple of meetings each year to discuss the progress of the courses.