

## **CHAPTER 6**

# **GEOTECHNICAL TRAINING PROGRAM**

### **6.1 PURPOSE**

The purpose of this chapter is to codify all geotechnical-related training and qualification programs that pertain to the construction of driven piles, drilled shafts and retaining walls.

The purpose of the Pile Driving Inspection Training (PDIT) and Drilled Shaft Inspection Training (DSIT) Qualification Programs and Mechanically Stabilized Earth (MSE) Wall Training program are to set a specific level of knowledge and hands-on capability for the persons responsible for the inspection of deep foundations and retaining wall installation in Florida Department of Transportation (Department) construction projects.

### **6.2 AUTHORITY**

Sections 20.23(4)(a), 334.048 Florida Statutes (F.S.)

Section 455; Section 548 FDOT Specifications

### **6.3 BACKGROUND**

Since July 1995, the Department's PDIT/DSIT inspector qualification program has been in effect, and the State Construction Office (SCO) administered the course. In June 2001 these courses were turned over to the Department's Construction Training Qualification Program (CTQP). This procedure describes the process of administration and also explains how previously qualified PDIT/DSIT inspectors can renew their qualification.

### **6.4 QUALIFICATIONS**

#### **6.4.1 PDIT/DSIT Qualification Requirements**

A qualified PDIT or DSIT technician will safely and effectively inspect and document pile driving and drilled shaft installation operations. The following requirements are needed for an inspector to be qualified.

## 6.5 PDIT/DSIT Course Instructor Qualifications

### Instructor:

1. Professional Engineering (PE) license is required plus three (3) years of field experience in Pile Driving/ Drilled Shaft installation.
2. PE not required, but must have an Engineering Degree, plus five (5) years of field experience in Pile Driving/ Drilled Shaft installation.
3. Technical Review Team (TRT) decides whether any of the TRT members should attend the course and evaluate the first time instructor.

## 6.6 PDIT Course

### 6.6.1 Details

The Construction Training Qualification Program (CTQP) shall teach the pile driving as a single course.

#### 6.6.1.1 Full Course

The course will be taught as a two and half (2 1/2) day course followed by a multiple choice exam at the end that covers the principles and practices, materials and equipment used for pile installation. This course shall be offered to classes of up to 40 trainees.

#### 6.6.2 PDIT Qualification Requirements

- (1) Each trainee shall obtain at least 30 days of on-site experience in which at least he/she has directly observed, inspected, and recorded the full installation of fifteen (15) driven piles under the supervision of a CTQP qualified inspector. At least ten (10) of the piles inspected shall be driven with an open ended Diesel Hammer where the trainee must use the saximeter<sup>TM</sup>. Thereafter, applicants shall sign a statement to certify they have the required experience and submit evidence of this experience. Evidence for this experience shall be the corresponding logs of the driven piles in which the supervising CTQP qualified inspector includes a note in the first page of the Pile Installation log, indicating the name of the trainee and states that the trainee has inspected the full installation of the pile.

- (2) Pass the PDIT course written examination.

After the trainee meets all of these qualification requirements, the trainee's FDOT qualification date will be added to the training database. PDIT Qualification shall last for five (5) years (60 months).

### 6.6.3 PDIT Training Course

Information about course provider contacts may be obtained by accessing the CTQP web site. Scheduling and cost information is available from the individual providers.

### 6.6.4 PDIT Course Prerequisites

To participate in the PDIT course, each applicant must complete all of the following prerequisites:

- (1) Review:
  - (a) ***Section 455, FDOT Standard Specifications for Road and Bridge Construction and amendments thereto; and***
  - (b) An FDOT project plan set.
- (2) Pass the following FDOT Construction Self-Study Courses (available on-line from the CTQP Administrator):
  - (a) Construction Math
  - (b) Contract Plans Reading
  - (c) Structures Inspection - Part One
  - (d) Structures Inspection - Part Two
- (3) Pass the electronic Pile Driving Tutorials:

- (a) Pass the Pile Driving Inspection Self-Study tutorial for the written examination prior to attending the written examination.
- (b) Computer Field Data Entry Self-Study tutorial.

### **6.6.5 PDIT Written Examination**

The passing score for each of the examinations mentioned in **6.6.2** is 70%.

The written examinations will be electronically graded by the CTQP Administrator and posted in the Training and Qualification Data Basis System (TQDBS).

## **6.7 DSIT Qualification Requirements**

- (1) Each trainee shall obtain at least 30 days of on-site experience in which at least he/she has directly observed, inspected, and recorded the full installation of ten (10) shafts under the supervision of a CTQP qualified inspector. At least five (5) of the drilled shafts inspected shall be on shafts constructed using the wet method. Thereafter, applicants shall sign a statement to certify they have the required experience and submit evidence of this experience. Evidence for this experience shall be the corresponding logs of the shafts in which the CTQP qualified inspector includes a note in the first page of the Drilled Shaft Excavation log, indicating the name of the trainee and states that the trainee has inspected the full installation of the shaft.
- (2) Pass the DSIT course written and proficiency examination.

After the trainee meets all of these qualification requirements, the trainee's FDOT qualification date will be added to the training database. The date of qualification shall be the date the last qualification requirement was satisfied. Qualification shall last for five (5) years (60 months).

### **6.7.1 DSIT Training Course**

This training course is three (3) days duration. A written examination along with a proficiency examination will be administered.

Information about course provider contacts may be obtained by accessing the CTQP web site. Scheduling and cost information is available from the individual providers.

### **6.7.2 DSIT Course Prerequisites**

To participate in the DSIT course, each applicant must complete the following prerequisite requirements:

- (1) Review:
  - (a) Section 455, Standard Specifications for Road and Bridges Construction
  - (b) A Department project plan set
- (2) Pass the following FDOT Construction Self-Study Courses: (available online from the CTQP Administrator):
  - (a) Construction Math
  - (b) Contract Plans Reading
  - (c) Structures Inspection - Part One
  - (d) Structures Inspection - Part Two
  - (e) Portland Cement Concrete Testing
  - (f) Pass Drilled Shaft Inspection Self Study tutorial

### **6.7.3 DSIT Written and Proficiency Examination**

The written examination consists of 50 questions, (multiple choice) and is administered on the third day of the DSIT qualification course. The passing score for this examination is 70%. The proficiency examination is the 51<sup>st</sup> question and is a Pass/Fail Examination. In order to obtain CTQP Drilled Shaft Inspection Qualification, the trainee must pass both the written and proficiency examinations.

The written examinations will be electronically graded by the CTQP and proficiency examination is manually graded by the qualified instructor. Results are posted in the TQDBS.

## **6.8 QUALIFICATION REQUIREMENTS BY JOB FUNCTION AND IMPLEMENTATION SCHEDULE**

Any person involved in the material acceptance process on a construction project involving pile installation shall be CTQP/PDSIT qualified. Any person involved in the inspection and acceptance process during pile driving operations shall be CTQP/PDIT qualified.

Any person involved in the material acceptance process on a construction project involving drilled shaft installation shall be CTQP/DSIT qualified. Any person involved in the inspection and acceptance process during drilled shaft installation shall be CTQP/DSIT qualified.

## **6.9 REQUALIFICATION PDIT/DSIT COURSES**

Due to frequent changes in specifications, materials, and processes, Certificates of Qualification are issued for 60 months.

Applicants for requalification will be required to reapply and take the examination.

Applicants will be allowed to challenge the PDIT/DSIT examination without attending the class presentations for requalification.

Applicants considering requalification should submit the necessary application and fee at least six (6) months prior to the expiration of their certificate. Extensions past the 60-month qualification period **will not** be granted and these applicants should take the Drilled Shaft Proficiency examination.

## **6.10 Pile and Drilled Shaft Inspector Qualification Revocation Based on Lack of Proficiency**

In order to maintain qualification status, pile and drilled shaft inspectors will be evaluated by the District Geotechnical Engineers or their designees during the

- test or production pile/shaft installation. If the District Geotechnical Engineers or designees witness a qualified inspector making an error (mistake that impacts

acceptability of foundations) without adequate knowledge of specifications, **CPAM** procedures or erroneous reporting techniques, then the District Geotechnical Engineer shall file a qualification performance report stating the inspector shall be subject to the process below per individual qualification. One copy of the report shall be given to the employee, one copy to the employee's supervisor, one copy retained in the Project records, one copy each sent to the CTQP Administrator, to the State Construction Geotechnical Engineer (SCGE) and the original sent to the State Construction Training Administrator (SCTA). Inspection results from a suspended inspector will not be allowed for decisions. Inspector's employers shall provide engineering analysis report to ensure that foundations meet contract requirements.

1<sup>st</sup> Error- Verbal (documented) warning from the District Geotechnical Engineer.

District Geotechnical Engineer or designee will schedule a follow up review during the duration of the project. If no other errors are witnessed during the subsequent review then the record of the 1st error shall not be the basis for further Department action. A copy of the documentation of the verbal warning shall be sent to the SCTA and SCGE.

2<sup>nd</sup> Error- Written warning from the District Geotechnical Engineer.

A copy of the documentation of the written warning shall be sent to the SCTA and SCGE. If no other errors are witnessed within one year (365 days) of second error, then the record of those errors shall not be the basis for further Department action.

3<sup>rd</sup> Error- Revocation of qualification the by the SCTA.

Should the 3<sup>rd</sup> error be determined valid, the District Materials Engineer (DME) will discuss the matter with the District Construction Engineer (DCE), and recommend action in writing to the Director, Office of Construction (DOC), SCGE and the SCTA. The DOC may revoke the inspector's qualification for up to one year. The inspector will be notified via a "return receipt requested" revocation notification letter mailed to the inspector and their employer (or DCE if a Department employee). The SCTA shall receive a copy of this revocation notification letter and the SCTA

shall also notify the CTQP Administrator that the inspector's qualification shall be removed from the database and that the inspector shall not be allowed to reinstate that qualification for the period specified in the DOC's revocation notification letter

The inspector has 90 days from receipt of notice to appeal this decision. This decision may be appealed to the Department's Chief Engineer, whose decision is final.

Prior to having any revoked qualification reinstated, the inspector must complete all requirements for that qualification again. This includes meeting all initial requirements, any conditional requirements set in the revocation notification letter, as well as passing the written examination and any applicable proficiency examination.

## 6.11 Qualification Revocation Based on Falsification of Records

Active, qualified inspectors must conform to the Department's practices with regard to testing, acceptance and quality control activities. Should any qualified inspector falsify Department records, his/her qualifications will be subject to possible revocation for up to two years by the DOC. Falsification of project related documentation may be subject to further investigation and penalty under State Statutes and Federal Law. If a DCE or DME becomes aware of such activity they shall forward a written account of the details including their recommendation: to the DOC and the SCTA. Some of the CTQP qualifications list "a certain number of days work experience" as a qualification requirement. The applicant shall certify as meeting/not meeting any work experience requirements on the signed certification page of the **CTQP Exam Booklet**. Should the District Geotechnical Engineer or designee question inspector's required work experience, proof of required work experience will be requested. Failure to furnish proof of required work experience could result in revocation. If the District Geotechnical Engineer or designee becomes aware of such failure to furnish proof of required work experience, then he/she shall forward the details in writing to the DME, the DCE, and the SCTA. When the DCE or DME becomes aware of such activity they shall forward their recommendation in writing to the DOC and the SCTA.

The DCO shall have the authority to revoke an inspector's qualification or qualifications for the falsification of any Department records. The inspector will be notified via a "return receipt requested" revocation notification letter mailed to the inspector and their employer (or DCE if a Department employee). The SCTA

shall receive a copy of this revocation notification letter and the SCTA shall also notify the CTQP Administrator that the inspector's qualification shall be removed from the TQDBS and that the inspector shall not be allowed to reinstate that qualification for the period specified in the DOC's revocation notification letter.

The inspector has 90 days from receipt of notice to appeal this decision. This decision may be appealed to the Department's Chief Engineer, whose decision is final.

Prior to having any revoked qualification reinstated, the inspector must complete all requirements for that qualification again. This includes meeting all initial requirements, and any conditional requirements set in the revocation notification letter, as well as passing the written examination and any applicable proficiency examination.

## **6.12 ADMINISTRATION OF MSE WALL TRAINING COURSE**

MSE Wall Course is available on-line at CTQP web site. All technicians should take this course and the quiz at the end of each chapter and pass the final examination to be qualified to inspect MSE Wall installation in the field. Project Administrators should verify if the inspectors satisfied these requirements.

## **6.13 ADMINISTRATION OF AUGERCAST PILE TRAINING COURSE**

Augercast Pile Course is available on-line at CTQP web site. All technicians should take this course and the quiz at the end of each chapter and pass the final examination to be qualified to inspect Augercast Pile installation in the field. Project Administrators should verify if the inspectors satisfied these requirements.