

CHAPTER 8

STRUCTURES TRAINING AND QUALIFICATION PROGRAM

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CHAPTER 8

STRUCTURES TRAINING AND QUALIFICATION PROGRAM

8.1 PURPOSE

The purpose of this chapter is to address all structures related training and qualification programs that pertain to the construction of structures. Four programs are covered in this chapter: (1) Grouting Technician Training and Qualification, (2) Post-Tensioning (PT) Technician Training and Qualification, (3) Bridge Coating Inspector Training, and (4) Lead Paint Removal Training.

The principle of the ***Grouting Technician Training and Qualification Program*** is to improve the quality of grouting for post-tensioning steel by making grouting technicians aware of the significance of proper grouting and how important it is for the long-term durability of bridges; to ensure that job site grouting personnel fully understand grouting technology including methods, materials, and equipment; and to provide assurance to the Department, as the owner of the facility, that grouting is performed and inspected under the supervision of qualified personnel and in accordance with all contract documents.

The purpose of the ***Post-Tensioning Technician Training and Qualification Program*** is to ensure that the quality of post-tensioning (PT) of steel strands and tendons continues to be consistently high by making PT Technicians aware of the significance of proper post-tensioning procedures and how important they are for assuring the full structural strength as well as the long-term durability of bridges; to ensure that job site PT supervisors and inspectors fully understand PT technology including methods, materials, and equipment; and to provide assurance to the Department, as the owner of the facility, that PT is performed and inspected under the supervision of qualified personnel and in accordance with all contract documents.

Bridge Coating Inspector Training provides inspectors in charge of quality assurance for bridge painting projects with detailed information about the key concerns affecting the quality of bridge coating/painting operations.

Lead Paint Removal Training provides Project Administrators and other managerial level Construction, Engineering and Inspection (CEI) staff including Construction Project Managers, with comprehensive training in the complex field of disposal of the hazardous waste produced during lead and other hazardous coating removal operations.

8.2 BACKGROUND

Bridge post-tensioning steel (PT) is a critical structural element that provides a bridge with the capacity to carry the dead load, vehicular, and other live loads it is designed to resist during its service life. If PT is installed improperly, the load carrying capacity of the bridge could be reduced dramatically which could lead to the need for major repairs or even collapse. Because PT has such a critical structural function, its installation must be performed by qualified technicians.

The quality of workmanship during grout placement is an important factor in achieving a quality operation. The training and qualifications of those performing and inspecting the grouting is critical. It is for this reason that formal training and qualification of grouting technicians is required.

8.3 QUALIFICATIONS REQUIREMENTS BY JOB FUNCTION

8.3.1 Grouting Technician Qualification

This program offers two levels of qualification. Level 1 is for the CEI Inspector responsible for the inspection of the Contractor's grouting operation. The Contractor must also provide a Level 1 non-supervisory crew member performing grouting. Level 2 is for the foreman in charge of the grouting operation for the Contractor. Only CTQP qualified Grouting Technicians will be permitted to function in these roles. Applicants must satisfy the experience and training requirements covered in **Section 8.4.1**.

8.3.2 Post-Tensioning (PT) Technician Qualification

This program offers two levels of qualification. Level 1 includes the Contractor's non-supervisory PT crew member and the CEI Inspector responsible for inspection of the PT operation in the field. Level 2 is required of the Contractor's foreman responsible for the PT operation. Applicants must satisfy the experience and training requirements covered in **Section 8.4.2**.

8.3.3 Bridge Coating Inspector (not a CTQP qualification)

All bridge coating projects shall have a Senior/Lead Inspector who has successfully completed the Bridge Coating Inspector Training Course.

8.3.4 Lead Paint Removal Training (not a CTQP qualification)

Any Senior Project Engineer or Project Administrator responsible for a project with removal of coatings that are hazardous waste must have successfully completed this course prior to the start of coating removal operations.

8.4 STRUCTURAL QUALIFICATIONS AND COURSES

There are two structural qualifications with two levels per qualification and two “stand-alone” structural training courses:

- (1) Grouting Technician Training and Qualification (Levels 1 and 2)
- (2) Post-Tensioning (PT) Technician Training and Qualification (Levels 1 and 2)
- (3) Bridge Coating Inspector Training (not a CTQP qualification)
- (4) Lead Paint Removal Training (not a CTQP qualification)

8.4.1 Grouting Technician Requirements

There are two levels of qualification. Applicants must satisfy the experience and training requirements to be eligible for qualification.

8.4.1.1 Grouting Technician - Level 1

Level 1 Grouting Technicians are only authorized to perform inspections of grouting operations or work as a member of a Contractor’s grouting crew and are not authorized to supervise a Contractor’s grouting crew and grouting operation. Qualification will expire at the end of five (5) years. See **Section 8.5** for re-qualification requirements. No experience is required to be eligible for Level 1 qualification.

8.4.1.1.1 Grouting Technician Training (Levels 1 and 2)

Applicants must attend an FDOT accredited Grouting Technician Training Course or re-qualification course (CBT or classroom) and must receive a passing grade on the final examination for the course. A copy of an official certificate issued by the training course provider that confirms a passing examination grade must be submitted to CTQP with the application for qualification.

For a list of accredited grouting training courses, consult the Department's Office of Construction website.

8.4.1.2 Grouting Technician - Level 2

Level 2 Qualified Grouting Technician status is for Contractor employees and authorizes them to supervise Contractor grouting crews and grouting operations. Qualification will expire at the end of five (5) years. See **Section 8.5** for re-qualification requirements.

Applicants must have two thousand (2000) hours of certified experience in grouting of post-tensioning steel. Experience can include time spent as an inspector, construction worker, or as a construction foreman/supervisor directly involved in the grouting of post-tensioning steel. The two thousand (2000) hours must be computed by adding up the actual time spent directly involved in grouting operations. Total time spent on a project is permitted only when grouting is underway continuously during the entire duration of the project.

8.4.2 PT Technician Requirements

There are two levels of qualification. Applicants must satisfy the experience and training requirements to be eligible for qualification.

8.4.2.1 PT Technician - Level 1

Level 1 PT Technicians are only authorized to perform inspections of Post Tensioning operations or work as a member of a Contractor's PT crew and are not authorized to supervise a Contractor's PT crew and PT operations. Qualification will expire at the end of five (5) years. See **Section 8.5** for re-qualification requirements. No experience is required in order to be eligible for qualification.

8.4.2.1.1 PT Technician Training (Levels 1 and 2)

Applicants must attend an FDOT accredited PT Technician Training Course or re-qualification course and must receive a passing grade on the final examination for the course. A copy of an official certificate issued by the training course provider that confirms a passing examination grade must be submitted to CTQP along with the application for qualification.

For a list of accredited PT training courses, consult the Department's Office of Construction website.

8.4.2.2 PT Technician - Level 2

Level 2 PT Technician status is for Contractor employees and authorizes them to supervise Contractor PT crews and inspect PT operations. Qualification will expire at the end of five (5) years. See **Section 8.5** for re-qualification requirements.

Applicants must have two thousand (2000) hours of certified experience in PT of steel strand. This experience can include time spent as an inspector and/or as a construction worker directly involved in the PT of steel strand. The two thousand (2000) hours must be computed by adding up the actual time spent directly involved in PT operations. Total time spent on a project as experience is only permissible when PT is underway continuously during the entire duration of the project.

8.4.3 Bridge Coating Inspector Requirements

Senior/Lead coating inspectors must present their completion certificate to the appropriate FDOT official (Construction Project Manager, Resident Engineer, etc.) prior to the start of a bridge coating project to prove that they have received the required training.

8.4.3.1 Bridge Coating Inspector Training

Senior/Lead coating inspectors must successfully complete the Society for Protective Coatings (SSPC) course entitled "**Bridge Coating Inspector Program**" which is designated as SSPC course "BCI". This is a three (3) day course and includes an examination that must be passed in order for SSPC to issue a successful completion certificate. Consult the SSPC website [SSPC Training](#) for when and where BCI courses are offered. Instructions for how to register for the course are also provided on this website.

8.4.4 Lead Paint Removal Requirements

Senior Project Engineers and Project Administrators must present their course completion certificate to the appropriate Department official (Construction Project Manager, Resident Engineer, etc.) prior to the start of a coating removal project to prove that they have received the required training. This course is also

recommended for FDOT Construction Project Managers overseeing coating removal projects.

8.4.4.1 Lead Paint Removal Training

Senior Project Engineers or Project Administrators must successfully complete the Society for Protective Coatings (SSPC) course entitled "**Lead Paint Removal**" which is designated as SSPC course "C-3". This course includes an examination that must be passed in order for SSPC to issue a successful completion certificate. Consult the SSPC website ([SSPC Training](#)) for when and where C-3 courses are offered. Instructions for how to register for the course are also provided on the SSPC website.

8.4.5 Grouting and PT Course Accreditation

Courses accredited by the Department must provide at least sixteen hours of combined classroom and laboratory demonstration instruction, provide a comprehensive hard copy manual for each student, and require a final examination. Requalification courses must be at least four (4) hours if offered as a classroom course with an in person instructor or they may be offered as a Computer Based Training (CBT) course by the accredited provider.

The Department must approve the course content and final examination and observe a live presentation of the material prior to approving accreditation. Course providers seeking accreditation must contact the Department's State Construction Structures Engineer (Office of Construction) to arrange for Department review of the course.

8.5 REQUALIFICATION GROUTING AND PT COURSES

Applicants must take a re-qualification course (CBT or classroom) and pass the examination in order to be re-qualified for an additional five (5) years.

8.6 REVOCATION OF QUALIFICATION

See **Sections 1.14.7 CTQP Qualification Revocation Based on Lack of Proficiency** and **1.14.8 CTQP Qualification Revocation Based on Falsification of Records**.

8.7 DEPARTMENT RESPONSIBILITIES

In addition to those found at the end of **Chapter 1**, the following responsibilities are unique to the Grouting and Post-tensioning Technician Training and Qualification Programs. Responsibilities for these qualification programs are distributed among the Office of Construction, Districts, and CTQP Administrator's Office.

8.7.1 Office of Construction

Accredit grouting and post-tensioning training courses and providers.

8.7.2 Districts / District Construction Training Administrators

Provide a CTQP application to Department employees that request it for the Qualified Grouting Technician program and Qualified Post-Tensioning Technician Program.

8.7.3 CTQP Administrator's Office

- (1) Process applications that request Level 1 and Level 2, Grouting and Post-tensioning Technician qualifications. Verify that the application is filled out correctly and completely and verify that the applicant has passed an accredited Grouting or Post-tensioning Technician Training Course. Issue the qualification if all paperwork is in order.
- (2) Maintain a database of Level 1 and Level 2, Qualified Grouting and Post-tensioning Technicians.