A Commentary on FDOT Technician Certification Program

By

Charles Nunoo Ph.D., P.Eng.
Assistant Professor / Advisor
Civil and Environmental Engineering Department
Florida International University
10555 West Flagler Street
Miami, FL 33174
Tel: 305-348-4102 Fax: 305-348-2802
Email: cnunoo@eng.fiu.edu

Hasham Ali, Ph.D., PE
District Materials Engineer
Florida Department of Transportation
14200 W State Rd. 84
Davie, FL 33325
Email: Hesham.ali@dot.state.fl.us

Felix Delgado
Student Assistant
Civil and Environmental Engineering Department
Florida International University
10555 West Flagler Street
Miami, FL 33174
Tel: 305-528-1595
Email: felixhdo@yahoo.com

Word Count:

Words = 4750
3 Table @ 250 words = 750
8 Figures @ 250 words = 2000
Total word count = 7500

A paper Prepared for Presentation
at the 82nd Annual Meeting of
Transportation Research Board
Washington, D.C.
January 2003

TRB 2003 Annual Meeting CD-ROM
Original paper submittal – not revised by author.
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ABSTRACT
The Florida Department of Transportation (FDOT) has recently revamped its materials quality assurance practice. The new philosophy advocates improving the technical qualifications of technicians involved in materials sampling and testing. The higher level of professionalism allows FDOT to rely on Contractors personnel to be in full charge of their quality control, and reduce the Department’s materials sampling and testing responsibility.

The new quality control system is based on several component programs that must function together in a complementary manner. The first is the Construction Training and Qualification Program (CTQP), which are designed to provide the training and certification of technicians in several materials areas. The second is the Independent Assurance Program (IA), which is aimed at evaluating the performance of construction technicians while performing their duties. The third is the new specifications (referred to as QC 2000) that give the contractor the ability to be in full charge of his production through quality control testing, with limited verification testing performed by Department personnel. The fourth is the Laboratory Qualification Program that allows the contractor to use a private laboratory to perform materials sampling and testing for acceptance purposes, subject to approval and qualification of the laboratory by the Department.

This paper describes the training and qualification program (CTQP) used by FDOT and some of the perceived advantages and disadvantages of the new system, compared to the old system and to practices in other state DOT’s. This paper is based on extensive information review and expert opinion by the authors.

KEY WORDS
Construction Quality Assurance, Materials, Sampling and Testing, Technician Qualification, Independent Assurance, FDOT.
1. BACKGROUND

The Federal Highway Administration (FHWA) is striving to improve the quality of highway construction, maintenance, rehabilitation, and reconstruction projects. One of the many ways to achieve this exceptional goal is to ensure that superior highway materials are incorporated into the finished highway infrastructure element. The only way to achieve such goal is to be able to guarantee the utmost quality assurance (QA) possible. This improved QA is to be obtained by the inclusion of qualified field and plant technicians involved on the processes of sampling and testing.

These technicians are to be qualified only after the successful completion of a certification program. As a result of the many construction materials currently under use and the vast amount of tests required to verify their characteristics, the certifications are limited to a specific material, and are based on the technicians’ expertise and capabilities.

FHWA has given certain maneuvering space to the state DOT’s that allows them to set up their own certification program as long as it achieves its main objective - to produce qualified technicians (1). This freedom allows the state DOT’s to set up their own eligibility requirements, and re-certification procedures in a manner that best fits their particular needs. The principal objective of this paper is to document the new technician certification practice of the Florida Department of Transportation (FDOT), this includes the types of licenses available, their requirements, and the main differences and similarities on FDOT’s practices with respect to the recommendations originally made by FHWA.

The U.S. Department of Transportation through the Federal Highway Administration required that subsequent to June 29, 2000, all field and plant technicians involved in federal-aid projects on the National Highway System to be certified in their respective States. Technicians are required to be certified in their particular field of operation. Some of the available certifications include, but are not limited to, asphalt, concrete, aggregate and earthworks. The number of certifications in each field, and the number of fields that require certification vary from state to state. This paper intends to document the current development of certification programs for field and plant technicians involved in the sampling and testing of roadway materials in the State of Florida. The weaknesses and strengths of the certification program in place in Florida; together with the opinion of the contractor community in regards to the certification process is documented.

2. THE CREATION OF A QUALIFICATION PROCESS IN FLORIDA

According to the General Training and Qualification Administration of the State of Florida, Fla., has had “self study courses and construction training qualification/certification programs since 1970s.” (2). Florida Department of Transportation (FDOT) had two certification programs; the Density Earthwork Inspection Training Program (DEIT) and the American Concrete Institute (ACI) concrete certification, they only partially satisfied the newly required federal standard described in 23 CFR 637, on the other hand, the already existing asphalt and aggregate training programs did not meet them. To create a consistent training program FDOT contracted with the University of Florida, specifically the Transportation Research Center (TRC), to create what has come to be known as the Construction Training/Qualification Program (CTQP). This program is currently being tested in pilot construction projects and the effort has been labeled QC2000.
Currently, CTQP offers training in asphalt, concrete, aggregate, earthwork, geo-technical and management. To offer a better training program, the University of Florida subcontracted with various training consultants to develop and prepare the content of several of the training courses. The Construction and Materials Engineering Council, Inc (CMEC), the sponsoring organization in Florida of The American Concrete Institute (ACI), develops and presents the courses in aggregates and concrete quality certification. The National Center for Asphalt Technology (NCAT), at Auburn University, joined with various consultants to deliver all of the asphalt related courses. Finally, Williams Earth Science, Inc., one of the premier geotechnical-engineering firms in the southeastern United States, provides the earthwork courses.

Furthermore, CTQP’s mission included the creation of a well-designed database that would store the qualification data related to the offered courses, as well as the technicians themselves; Its goal is to supply reliable information on inquiries from the trainees, employers (contractors or consultants) and FDOT. This database was also designed to be compatible with current and future FDOT’s data management systems.

In addition, four teams composed by members from both, the industry and FDOT, keep an ongoing revision of the course’s technical contents to ensure a quick response to any flaw the program might have. To guarantee the success of QC2000, several industry associations, contractors, consultants, FHWA, and FDOT have formed an Advisory Committee. Its function is to provide overall program direction and to deal with policy issues.

3. FACILITIES USED FOR TECHNICIAN TRAINING IN FLORIDA

FDOT has created two training facilities for those courses that require special laboratory equipment and materials; they are the Gainesville Training Lab, and the Snapper Creek Service Plaza. Those other courses that do not require the use of a laboratory are offered on locations that are convenient for the trainees.

4. AREAS OF QUALIFICATION

4.1. Aggregate

In the domain of aggregates, two types of workers need certifications; those who labor in the field and those in the laboratory. In the field there are three types of certification available:

4.1.1. Qualified Sampler: this person is in charge of obtaining and accepting samples for testing. A sample flow chart of the qualification process for this certification is shown in figure 2.

4.1.2. Aggregate and field-testing: this technician, a plant or a mine employee, is eligible to obtain acceptance samples and perform field tests, such as gradation, minus 200 and organic impurities. Furthermore, all of FDOT’s employees working on a mine must obtain this certification.

4.1.3. Limerock Bearing Ratio (LBR) technician: This laboratory or contractor employee is qualified to perform acceptance tests such as moisture-density relations of soils, Limerock Beraing Ratio and lab moisture content for granular soils by microwave oven. In addition, all of FDOT’s employees that perform moisture-density relations or LBR tests must obtain this certification.
Meanwhile, there are only two types of certifications required for laboratory workers, depending on their occupation:

4.1.4 Laboratory Testing: This is the technician, private lab or contractor employee who is qualified to perform acceptance tests such as Specific Gravity and Absorption of Coarse/Fine Aggregates, Unit Weights and Voids in the Aggregate, sulphate soundness, fine aggregate angularity, fractured faces, flat and elongated particles and L.A. Abrasion tests. Figure 1 represents a sample flow chart of the qualification process to obtain this certification.

4.1.5 Aggregate Chemical Analyst: This technician, private lab or contractor is qualified to perform chemical tests and inspections on mineral aggregates. Figure 3 shows a sample flow chart of the qualification process to obtain this certification.

4.2. Asphalt

The second domain is that of Asphalt. Asphalt technicians are certified according to their place of work and level of expertise. The first type is the asphalt field technician (roadway) qualification:

4.2.1 Roadway Level I: This is the technician, private lab or contractor employee who is qualified to perform acceptance tests such as Surface Tolerance (Rolling Straightedge and Cross Slope), Random Sampling, Core Sampling and Testing, and Density calculation. Entry-level Department employees performing these tests should obtain this qualification.

4.2.2 Roadway Level II: This is the more experienced roadway technician, private consultant or contractor employee who is knowledgeable of the specification requirements, paver and roller operations, balancing of the paving operation, uniformity of the mat and components of hot mix asphalt placement. Additionally this individual is able to identify trends, norms, problem areas, other best management practices, and adjust paving operations as necessary. Department employees performing lead inspector duties at the roadway are asked obtain this qualification. In figure 4 one can observe a sample flow chart of the qualification process to obtain this certification.

The rest of asphalt technicians are those who work on laboratories or plants, the available qualifications are:

4.2.3 Plant Level I: This is the technician, private lab or contractor employee who is qualified to sample hot mix, aggregate or asphalt cement and perform acceptance tests such as Bulk Specific Gravity, Max Specific Gravity, Gyratory Compaction, AC Content by Ignition Oven or non-Chlorinated Solvent Method, Gradation and Permeability Department employees performing acceptance tests at the plant should obtain this qualification. A sample flow chart of the qualification process to obtain this certification is presented in figure 5.
4.2.4 **Plant Level II:** This is the more experienced plant technician, private consultant or contractor employee who is knowledgeable of the specification requirements, stockpiling, cold feeds, blending and adjustments, interpreting quality control charts, plant calibration/inspection/operation, temperature control and load out. Additionally, this individual is able to identify trends, norms, problem areas and other best construction management practices related to uniform mix and intricacies of hot mix asphalt production. Department employees performing duties at the asphalt plant should obtain this qualification.

4.2.5 **Asphalt Mix Designer:** This is the experienced bituminous specialist who is qualified to design hot mix asphalt blends. He/she has the knowledge of aggregates, bituminous materials, volumetric calculations, GTR mixes, RAP mixes and Florida’s Superpave specification. All FDOT’s employees performing Resident Asphalt Engineer or District Bituminous Engineer duties are required to obtain this qualification. Figure 6 represents a sample flow chart of the qualification process to obtain this certification.

4.2.6 **Asphalt Quality Control Manager:** This person is in charge of quality control for a contractor and is identified in the Quality Control Plan as the responsible to perform analysis and control the quality of the product. Furthermore, this person can determine the coordination of production/paving operations, quality pay factors and understand the intent of statistically based quality control specifications (which are consistency, variability, data interpretation and random sampling). District Bituminous Engineers working for FDOT are required to obtain this certification. For more detailed information please refer to figure 7, which represents a sample flow chart of the qualification process to obtain this certification.

For an overall description of the requirements and responsibilities of each asphalt related certification please refer to table 2.

### 4.3. Concrete

Concrete is another material commonly used in paving operations, due to its very distinct characteristics and particular properties a totally different type of certification is required for those who work in this discipline. Alike the previous qualifications seen for different materials, concrete qualifications divide among field and laboratory certifications.

**Field certifications for Concrete technicians:**

4.3.1 **Concrete Field Inspector - Level I:** This is the technician, private lab or contractor employee who is qualified to perform acceptance tests such as slump, temperature, air content and making/curing concrete cylinders. They also have specific knowledge of FDOT’s 346 Specification. Department employees performing these tests/tasks should obtain this qualification.

4.3.2 **Concrete Transportation Construction Inspector (CTCI) - Level II:** This is the technician, private lab or contractor employee who is responsible for the quality of the concrete being placed on a major bridge. They also have specific knowledge of FDOT’s 400 Specification. The target audience for the Department is the lead inspector on major bridge projects.
Laboratory certifications for concrete technicians are required to the following individuals:

4.3.3 Concrete Laboratory Technician - Level I: This is the concrete strength technician, private lab or contractor employee who is qualified to break cylinders and record concrete strength. Department employees performing these tests should obtain this qualification.

4.3.4 Concrete Laboratory Technician - Level II: This is the mix designer for concrete mix submittals. Figure 8 represents a sample flow chart of the qualification process to obtain this certification.

4.3.5 Concrete Batch Plant Operator: This is the contractor employee who is identified in the Quality Control Plan as the individual who matches the concrete mix. Some Department employees may be interested for professional knowledge but this qualification is not required for FDOT personnel.

For an overall description of the requirements and responsibilities of each concrete related certification please refer to table 3.

4.4. Earthwork

Those who work with earth are required specialized Earthwork qualifications. Due to the peculiar properties of earth, and since it is not an engineered material only field certifications are available for earthwork. Before the current qualification program took place, FDOT through the Density Earthwork Inspection Training (DEIT) program qualified earthwork technicians. Those who had already obtained that certification are automatically qualified as Earthwork Construction Inspection (ECI) levels I and II.

4.4.1 Earthwork Construction Inspection - Level I: This is the technician, private lab or contractor employee who is qualified to perform acceptance tests such as Nuclear Density Tests, Speedy Moisture, sampling soils and reporting results in the Density Log Book. Entry-level Department employees performing these tests should obtain this qualification.

4.4.2 Earthwork Construction Inspection - Level II: This is the technician, private lab or contractor employee who is qualified to perform acceptance tests as a Level I and knowledge of Density Theory, preparation, completion and Certification of the Density Log Books, Florida Specifications and Design Standards. For the Department, the position targeted is the earthwork inspector for the project.

4.5. Geotechnical

Those who labor in the discipline of geotech can have two different field technician titles.

4.5.1 Drilled Shaft Inspector
4.5.2 Pile Driving Inspector
4.6. Management
Finally, those who desire to be managers are required to obtain a single certification

4.6.1 QC Manager: this person is the one who understands the key elements from quality control programs, is able to develop QC plans, knows how FDOT handles QC programs and knows what steps to take when a QC plan is denied by the department.

5. COST RANGE FOR TECHNICIAN CERTIFICATION PROGRAMS IN THE STATE OF FLORIDA

Most of these programs consist on one course, one written exam and one proficiency exam. The price for a full certification program (course and the two exams) fluctuates between 350 to 1500 dollars, depending on the certification being sought.

6. REQUALIFICATION; QA OF THE QUALITY ASSUROR

Placing a certified technician to verify that the materials used in construction, maintenance, rehabilitation, and re-construction are of optimal quality has value as long as the technician in charge is still knowledgeable of the current standards and industry practices. In order to guarantee that the already certified technicians are still qualified to fulfill their duty, that is they are familiar with the new specifications, materials and processes in use, FDOT issues most of its certifications valid for 60 months (2). After this period applicants who desire to continue working as a technician need to take their respective course written examination. If the technician allows the license to expire, then the applicant is required to take the written examination along with applicable proficiency examinations.

Requalification is one of the six items that the FHWA suggests as elements of a complete qualification program. However, the same FHWA suggests a maximum interval of 3 years before requalification is required (4). The current 60 months or 5-year validity of the technician certification in Florida is well above the federal recommendation. This long period of time elapsed between examinations saves substantial resources to FDOT, in administration and management expenses, plus to the contractors and consultants that pay for their technician’s certifications; this is done at the expense of undermining the main objective of the requalification program – to ensure that the currently certified technicians perform adequately and are familiar with the relevant advances of the industry.

7. SUSPENSION OF CERTIFICATION IN FLORIDA

Those technicians caught performing “erroneous field sampling, testing or reporting techniques shall be subject to review by a DOT qualified IA person” (5). The procedure followed to castigate those who err repetitive times is the following:

- First error: verbal warning
- Second error: written warning
- Third error: suspension of qualification by the District Materials Engineer.

Although this “big stick” might seem drastic due to the easiness with which errors escalate over a long period of time the “speak softly” part of the policy is that if after 365 days of the error
observation, the technician has errors free observation by the IA personnel, then the “error is deleted from the technicians qualification record” (2).

A technician that has been suspended can have the qualification reinstated. To do that the “technician must attend and complete any applicable qualification course(s), any applicable written examination and any applicable proficiency examination. This includes meeting all initial, conditional requirements” (2). This suspension provision allows the employer to obtain better results and motivates its technicians to perform adequately.

8. DISQUALIFICATION IN FLORIDA

FDOT has implemented disqualification as the adequate response to dishonesty and corruption. The Construction Training and Qualification Manual stipulates, “should any qualified technician falsify Department records, his/her qualification will be subject to possible revocation by the District Materials Engineer and the District Construction Engineer, jointly. Falsification of project related documentation may be subject to further investigation and penalty under State Statures and Federal Law.” (2). This provision satisfactorily acts as a strong deterrent for possible intentionally unethical actions. However, should any technician believe his/her certification has been removed unjustly; he/she has the right to appeal within 90 days to the State Construction Engineer whose decision has no contestation. As a last resort, “anyone having their qualification revoked shall be eligible to apply for new qualification after a period of two years” (2).

9. SHORCUTS FOR TECHNICAL CERTIFICATION IN FLORIDA

In Florida exist many ways in which prerequisites or requisites for certification can be avoided provided the applicant meets another criteria. Some of the possibilities for avoiding them are known as:

9.1. Waiver of Requirements for Qualification

According to the Construction Training and Qualification Manual, “an applicant may appeal a requirement for qualification”. This request is to be submitted to the State Construction Training Engineer, this will forward a copy to the respective Technical Review Team chairperson, who will make a recommendation on the case to the State Construction Engineer. Only the State Construction Engineer has authority to grant any waiver of qualification requirements. The only requirement that cannot be waived is prior experience where requested.

9.2. Challenging and Examination

This option is directed to those individuals who already posses abundant experience and know-how of a particular subject. These trainees can skip the qualification course and take the examination (2). FDOT encourages all the technicians certified in other states seeking certification in Florida to challenge the examination in order to save time and money since no reciprocity agreements exist.

9.3. Grandfathering

According to FHWA, grandfathering is “the acceptance of a Professional Engineer of Engineer-in-Training certificate” (4) as another type of certification. This behavior, strongly opposed by
FHWA, is “not considered to be appropriate criteria for achieving or maintaining qualification status” (4). Their reasoning implies that an engineer might know the theoretical part of every test and sample; however, he/she is not familiar with the practical procedures followed in the field or plant. This procedure is not practiced in Florida.

10. CERTIFICATION COURSE PREQUALIFICATION

Some training courses require experience and/or another course as prerequisites. Generally all of the prerequisite courses are self-study courses, and make part of FDOT’s distance learning program, they consist of a manual and a written examination. “There are currently fourteen (14) construction Self-Study courses”. Those who obtain a passing grade of 70% or more in all the Self-Study courses receive a letter of congratulations as Special Recognition from the State Construction Engineer. In many cases an applicant may avoid taking the pre-qualification self-study courses, providing he/she already possesses that knowledge.

11. RECIPROCITY; A GOAL TO STRIVE FOR IN FLORIDA

Florida’s certification and training program has no automatic reciprocity at the present and seems to have no serious intention of obtaining it in any of its neighboring states. However, many states, such as Louisiana, have a method to offer reciprocity based on individual basis. Florida seems to have overlooked the benefits that come along with reciprocity; reduced efficiency and increased costs are the price that Florida, and any other state that has no reciprocity agreements, has to pay.

To obtain reciprocity many state DOTs sit together to develop Technical Certification Programs that are common to all of them. When this takes place the costs of mounting a certification program, training future technicians, monitoring the program, and miscellaneous materials needed to implement it are split apart among the participating states. Saving money has been the greatest worry of all impecunious DOTs, FDOT is no exception; it is very hard to understand why Florida has decided to move forward with a unique technician certification program at the expense of a large costs, and isolation while it could have obtained similar or even better results if it had collaborated with bordering states. Furthermore, FDOT would not have been the only one to save significant amounts of money; local contractors involved in multi-state operations would have also benefited from reciprocity since they would not have needed to have their technicians re-certified in other states that had reciprocity arrangements with Florida. For contractors to certify a technician in several states is very costly, they have to pay the certification program, necessary training, the technicians salary, travel expenses, etc.

Unlike Florida, many states have joined forces and created regional certification programs to proportionate reciprocity to their trainees, a total of three State partnerships have formed in the United States (3). The first of these partnerships is the New England Transportation Technician Certification Program (NETTCP), it compromises six states: Massachusetts, Rhode Island, Connecticut, Vermont, New Hampshire and Maine. NETTCP differs from the other two partnerships in the fact that the states do not certify their technicians; instead NETTCP is in direct charge of this function. The Western Alliance for Quality Transportation Construction (WAQTC) is the second partnership and includes the states of Alaska, Arizona, California, Colorado, Hawaii, Washington, Idaho, Montana, Nevada, Oregon and Utah. These states are each responsible for certificating their trainees, but reciprocity is
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granted between the participant states. The Third partnership is the North Central Multi-
Regional Training and Certification Program (M-TRAC), includes the states of Iowa, Kansas,
Missouri, Nebraska, Ohio, Michigan, Wisconsin, Minnesota, Illinois and Indiana. Even as the
States in this partnership benefit from reciprocity, they are responsible for certifying their own
technicians.

Although Florida does not belong to any existing partnership, it is a member of the
Southeast Task Force for Technician Training and Qualification. To this task force belong the
states of Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South
Carolina, Tennessee, Virginia, West Virginia and Florida as previously stated. The member
States do not enjoy reciprocity nor does the task force act as a training body. The function of this
task force according to Tom Marlek, member of FDOT, “is to share information to assist in
developing individual States' training and qualification programs.” (3). Among the task force’s
priorities figure the development of a shared training program library, updating existing training
programs and developing new training programs based on the congregate needs of the member
States. This task force, created by SASHTO’s Regional Quality Workshop for Materials and
Construction Steering Committee, aims to build reciprocity relations and to develop methods to
share information that will develop individual state programs.

However, FDOT’s arguments for not having implemented reciprocity agreements or
joined any regional certification programs also have validity. FDOT argues that most of the
Southern States already have good certification programs in place, furthermore, that reciprocity
is far more important in the north, where the states are smaller and projects seem to overlap them
easily. Meanwhile, in the south, states and their DOTs are larger so projects very rarely extend
to more than one State; moreover, developing independent certification programs is
economically more feasible. According to Jim Warren, executive director of the Asphalt
Contractors Association of Florida Inc., Florida has greater problems to solve, or in his own
words “bigger fish to fry” (3), such is the case of “of implementing Superpave, developing new
QC 2000 acceptance specs, and training employees and contractors in those specs” (same quote).
He correctly pointed that “if reciprocity is to be achieved, it needs to be done now while we are
reworking our qualification program) (3).

12. ADVANTAGES AND DISADVANTAGES OF THE CTQP

Florida is a right to work state. In the past, workers in the construction field, including quality
assurance had a less formal training and certification program that was administered by FDOT
personnel. To FDOT, training and certification was a secondary function, and training was
largely subsidized by FDOT, and made available to department and industry personnel.

New philosophy in FDOT supported improving the qualification of sampling and testing
technicians to allow the department to rely on the Contractor to be in full charge of his quality
control process. The new CTQP system has the following advantages:

1. The program is centralized and administered by the University of Florida. The fact that the
program is centralized, as opposed to being run independently by seven districts, makes it
more consistent than the in the past, where training was given by local instructors and was
subject to considerable variability.

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Original paper submittal – not revised by author.
2. Trainers and instructors are believed to be of high level of experience and credibility. The program attracts members of academia, FDOT and industry as it allows for reasonable compensation.

3. The Training facilities are well suited and well equipped for training.

4. The CTQP database and website allow for verification of training and certification-- an advantage that did not exist in the older system.

5. Based on the Independent Assurance technician evaluations since October 2001, failure rate of technicians is less than 3%. Those evaluations were based on split samples, proficiency samples, or technician observation.

The Disadvantage of the new system include:

1. Industry and FDOT complained about the cost of training and certification. The cost of training in each area of qualification ranges between $350 and $1500. Many contractors and consultants send their trainees to multiple areas of qualification. The cost could add up to thousands of dollars per trainee.

2. As the program is centralized, many trainees have to travel to attend the training, which is offered at certain locations. This adds travel expenses, and lost work to the cost of training.

3. There have been complaints about the significant amount of training and retraining required to cope with spec changes. For instance, asphalt specs have been totally revamped in the past year. New asphalt refresher course is now mandatory to attend and pass. However, this is a short-term concern as the new specs are in place and not expected to change significantly in the near future.

4. Lack of reciprocity, as indicated earlier. Although Florida is a member of the Southeast Task force for Technician Training and Qualification (STFFTTQ), along with eleven southeastern states, no agreement has been made between these states to recognize and accept their training and qualification. This makes the CTQP certification valuable only in the state of Florida.

13. SUMMARY

The Florida Department of Transportation (FDOT) has recently revamped its materials quality assurance practice. The new philosophy advocates improving the technical qualifications of technicians involved in materials sampling and testing. The higher level of professionalism allows FDOT to rely on Contractors personnel to be in full charge of their quality control, and reduce the Department’s materials sampling and testing responsibility.

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This paper describes the training and qualification program (CTQP) used by FDOT and some of the perceived advantages and disadvantages of the new system, compared to the old system and to practices in other state DOT’s. This paper is based on extensive information review and expert opinion by the authors.

14. CONCLUSION

Among the advantages of the CTQP program are greater consistency, quality training, adequate facilities, improved technician performance, and provision of a web based information system for data access and verification. High cost of training, significant travel expenses, additional training requirements and lack of reciprocity with regional states are among the disadvantages of the program. Overall, CTQP is believed to be a step in the right direction for improved training and construction quality in the state of Florida. It is hoped that this effort will be improved with time so that it will be attractive to the construction community.

REFERENCE


3) Tracy D. DeStazio, “Mandatory Qualification is Eminent” July 25, 2002 <http://www.asphalt.com/training/mand.html>


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Table 1 Current Qualifications Certified in Florida.

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<tr>
<td>Geotech</td>
<td>Field</td>
<td>Drilled Shaft Inspector</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pile Driving Inspector</td>
</tr>
<tr>
<td>Management</td>
<td></td>
<td>QC Manager</td>
</tr>
</tbody>
</table>
### TABLE 2. Summary of Qualifications for Asphalt Related Technicians (2)

<table>
<thead>
<tr>
<th>Qualification Level</th>
<th>Responsibilities and Duties</th>
<th>Prerequisite</th>
<th>Specific tests Performed in Level</th>
<th>Training Materials</th>
<th>Length of Qualification (years)</th>
<th>Test for Initial Qualification</th>
<th>Other requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Plant Level I</td>
<td>Performs all testing used in the acceptance decision at the asphalt plant</td>
<td>Asphalt Testing Self-Study</td>
<td>T 30, T 40, T 166, T 168, T 209, TP 4, FM 5-544, FM 5-545, FM 5-563</td>
<td>In-House materials developed by NCAT</td>
<td>5</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Asphalt Plant Level II</td>
<td>Responsible for oversight of testing and production activities at asphalt plant</td>
<td>Passed written exam for Plant Level I, Asphalt Plant Self-Study</td>
<td>None</td>
<td>In-House materials developed by NCAT</td>
<td>5</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Asphalt Paving Level I</td>
<td>Performs all testing used in the acceptance decision at the roadway</td>
<td>None</td>
<td>D 3665, T 238</td>
<td>In-House materials developed by NCAT</td>
<td>5</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Asphalt Paving Level II</td>
<td>Responsible for oversight of testing and paving activities at roadway</td>
<td>Asphalt paving Self-Study</td>
<td>None</td>
<td>In-House materials developed by NCAT</td>
<td>5</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Asphalt Mix Designer</td>
<td>Designs asphalt mixes</td>
<td>Passed written exam for Plant Level I</td>
<td>D 5821, T 304, T4791, T176, TP 4, TP 84, TP 85, TP 209, TP 283, FM 5-565</td>
<td>In-House materials developed by NCAT</td>
<td>5</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Asphalt QC Manager</td>
<td>Overall responsibility for all Quality Control for a Company/District</td>
<td>Passed written exam for Asphalt Mix Designer, Plant Level II, Paving Level II, and General Control. 12 months experience in asphalt</td>
<td>None</td>
<td>In-House materials developed by The University of Florida</td>
<td>5</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Notes:**
- Written: YES/NO
- Demonstration of Proficiency: YES/NO
- Other requirements: 90 Days asphalt related work experience
### TABLE 3. Summary of Qualification for Concrete Related Technicians (2)

<table>
<thead>
<tr>
<th>Qualification Level</th>
<th>Responsibilities and Duties</th>
<th>Prerequisite</th>
<th>Specific Tests Performed in Level</th>
<th>Training Materials</th>
<th>Length of Qualification (Years)</th>
<th>Test for initial qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACI Grade 1 workbook and course presentation for FDOT section 346</td>
<td>5</td>
<td>For ACI Grade 1</td>
</tr>
<tr>
<td>FDOT Concrete Field Inspector Level I</td>
<td>Tests Concrete for Plastic Properties in the Field or in the Lab</td>
<td>None</td>
<td>All tests required for ACI Concrete Field testing Technician Grade 1 and the FDOT section 346 Course for Structural concrete</td>
<td>ACI Grade 1 workbook and course presentation for FDOT section 346</td>
<td>5</td>
<td>For ACI Grade 1</td>
</tr>
<tr>
<td>FDOT Concrete Field Inspector Level II</td>
<td>Senior Inspector on the project and required for Large Bridge Projects</td>
<td>Concrete Field Inspector Level I and Experience Required by CTCI</td>
<td>CTCI Course Materials and Handout for FDOT section 400</td>
<td>CTCI course material and handout for FDOT section 400</td>
<td>5</td>
<td>CTCI and Section 400</td>
</tr>
<tr>
<td>FDOT Concrete Laboratory Technician Level I</td>
<td>Test Concrete for Flexural and Compressive Strength</td>
<td>None</td>
<td>ACI Strength Testing technician workbook and course presentation and workbook for FDOT section 346</td>
<td>ACI Strength Testing Technician Workbook and Course Presentation and Workbook for FDOT Section 346</td>
<td>5</td>
<td>ACI Strength Testing Technician and FDOT Section 346</td>
</tr>
<tr>
<td>FDOT Concrete Laboratory Technician Level II</td>
<td>Senior Laboratory Technician, concrete Mix Designer</td>
<td>FDOT Concrete Laboratory Technician Level I</td>
<td>FDOT concrete laboratory technician plus ACI concrete laboratory testing technician Grade 1</td>
<td>ACI Concrete Testing Technician Grade 1</td>
<td>5</td>
<td>For ACI Strength Testing Technician Grade 1</td>
</tr>
<tr>
<td>FDOT Batch Plant Operator</td>
<td>Batcher of FDOT Concrete</td>
<td>90 Days Experience in Batch Plant Operations</td>
<td>General Knowledge of Batch Plant Operations</td>
<td>Districts publish a handout of general information covered in the exam</td>
<td>5</td>
<td>FDOT Batch Plant Operators Exam</td>
</tr>
</tbody>
</table>

**Note:** The original paper submittal – not revised by author.
Begin

Complete the application and pay the fee

Scheduled and attend a FDOT Aggregate Lab Testing Technician course and/or exam and/or proficiency exam

Did applicants pass/fail the FDOT Aggregate Lab Testing Technician exam and/or proficiency exam?

Pass both

See flow chart for ACI Aggregate Field Testing Technician

No

Is applicant ACI Aggregate Field Testing Technician qualified?

Yes

Is applicant FDOT Aggregate Field Testing Technician qualified?

No

See flow chart for FDOT Aggregate Field Testing Technician

Yes

Enter qualification in the TQDB & issue certificate

* Note: These qualification requirements may be satisfied prior to taking the FDOT Aggregate Field Testing Technician exam and/or proficiency exam

FIGURE 1. Sample Qualification Flow Chart for Aggregate Lab Testing Technician (2)
Begin

Complete the application and pay the fee

Scheduled and attend a Qualified Sampler Technician course and/or exam and/or proficiency exam

Did applicant pass/fail the Qualified Sampler Technician exam and/or the proficiency exam?

Fail one or both

Pass both

No

Did the applicant watch the aggregate video?

Yes

Enter qualification in the TQDBS & issue the certificate

The Qualified Sampler Technician course is optional

FIGURE 2. Sample Qualification Flow Chart for Sampler Technician (2)
Begin

Complete the application and pay the fee

Scheduled and attend an Aggregate Chemical Analyst course and/or exam

Take the Aggregate Chemical Analyst self study course (optional)

PASS/FAIL?

Fail

Pass

Enter qualification in the TQDBS & issue certificate

FIGURE 3. Sample Qualification Flow Chart for Aggregate Chemical Analyst (2)
Begin

Complete the application and pay the fee

Has the Asphalt Paving Self Study Exam been passed?

Yes

Schedule and attend and Asphalt Paving level II course and/or exam

Fail

Pass/Fail?

Pass

Has applicant passed the Asphalt Paving Level I exam?

No

Applicant must pass the Asphalt Paving Level I exam

Note: The experience requirement and the level I exam requirement may be satisfied in any order

Does Applicant have 90 days asphalt paving or asphalt roadway testing experience?

No

Qualification will be withheld until 90 days experience is verified by District Bituminous Engineer

Yes

Enter qualification in the TQDBS & issue the certificate

FIGURE 4. Sample Qualification Flow Chart for Asphalt Paving Level II (2)
Begin

Complete the application and pay the fee

Has the FDOT Asphaltic Concrete Testing self study exam been passed?

Yes

Schedule and attend an Asphalt Plant Level I Course and/or written exam and/or proficiency exam

Did applicant fail the course written exam and/or fail the Asphalt Plant Level I proficiency exam?

Pass both

Enter qualification in the TQDBS & issue the certificate

No

Take and pass FDOT Asphaltic Concrete Testing self study exam

Fail one or both

FIGURE 5. Sample Qualification Flow Chart for Asphalt Plant level I (2)
NOTE: the experience requirement and the Level I Asphalt Plant exam requirement may be satisfied in any order.

Begin

Complete the application and pay the fee

Schedule and attend an Asphalt Mix Design course and/or exam

FAIL/FAIL?

Pass

Has applicant passed the Level I Asphalt Plant exam?

No

Applicant must pass the Asphalt Plant Level exam

Yes

Does Applicant have 90 days experience in asphalt testing?

No

Qualification will be withheld until 90 days experience is verified by the District Bituminous Engineer

Yes

Enter qualification in the TQDBS & issue the certificate

FIGURE 6. Sample Qualification Flow Chart for Asphalt Mix Designer (2)
Begin

Complete the application and pay the fee

Schedule and attend an Asphalt QC Manager course and/or exam

PASS/FAIL

Pass

Is Applicant Asphalt mix Design qualified?

No → See flow chart for Asphalt Mix Designer Qualification

Yes

Is Applicant Asphalt paving Level II qualified?

No → See flow chart for Asphalt paving Level II Qualification

Yes

Is Applicant Asphalt Plant Level II qualified?

No → See flow chart for Asphalt Plant Level II Qualification

Yes

Does applicant have 365 days experience in asphalt industry?

No → Qualification will be withheld until 365 days asphalt experience can be verified by the Department’s District Bituminous Engineer

Yes

Enter qualification in the TQDBS & issue the certificate

NOTE: These four requirements may be satisfied in any order

FIGURE 7. Sample Qualification Flow Chart for Asphalt QC Manager (2)
Complete the application and pay the fee

applicant must choose 1 of these 3 paths to qualification

OR

hold a current ACI Concrete Laboratory Testing Technician Grad I certification

OR

Hold a current ACI Aggregate Field Testing Technician and a current ACI Aggregate Laboratory Testing Technician Certification

OR

Be a Qualified Aggregate Field Technician and a Aggregate laboratory Technician

Is the applicant qualified Concrete laboratory Technician level I?

See flow chart for Concrete laboratory Technician Level I Qualification

Yes

Does the applicant have 1 year of experience in laboratory sampling and testing?

No

Qualification will be withheld until 1 year of laboratory experience can be verified

Yes

Has the applicant passed the Florida Concrete Specifications Section 346 exam?

No

Applicant must pass the FDOT Concrete Specification Section 346 examination

Yes

Enter qualification in the TQDBS & issue the certificate

FIGURE 8. Sample Qualification Flow Chart for Concrete Laboratory Technician Level II (2)