

## **CHAPTER 2**

# **AGGREGATE TECHNICIAN TRAINING AND QUALIFICATION PROGRAM**

### **2.1 PURPOSE**

The purpose of this section is to describe the Aggregate Technician Training and Qualification Program. This qualification program is for persons responsible for the manufacture, monitoring, sampling, testing, reporting and inspection of mineral aggregates incorporated as components of various structures; (i.e., asphalt, concrete, base courses, bank and shore protection) and up to and including any use specified in contract documents on Florida Department of Transportation (Department) highway construction projects. This procedure shall list the details of the qualification program including the associated training courses.

### **2.2 AUTHORITY**

Code of Federal Regulations, Quality Assurance Procedures for Construction, 23 CFR 637

Sections 334.044(8)(3), Florida Statutes (F.S.)

Subsection 6-3, FDOT Standard Specifications for Road and Bridge Construction.

Chapter 14-103, Florida Administrative Code, "Aggregate Source Approval"

### **2.3 REFERENCE**

The following manuals are included with this procedure for projects requiring Aggregate Testing.

Topic No. 675-000-000, Materials Manual

Construction Aggregate Manual (Produced by the State Materials Office)

## 2.4 BACKGROUND

The Department has had the producers performing their own Quality Control( QC) tests for a number of years. The reliability of test results that are generated by the producers, FDOT and private laboratories for mineral aggregates are of great importance for asphaltic concrete, Portland Cement Concrete and all other end use products and therefore must have qualified personnel performing the various Quality Control, Verification and Independent Assurance functions.

The Department uses a combination of American Concrete Institute (ACI) certifications and other elements to make up its aggregate qualification requirements. In January 2008 ACI discontinued its programs for Aggregate Field Testing and Aggregate Lab Testing and replaced them with Aggregate Testing Technician (ATT) Levels I and II, and Aggregate Base Testing Technician (ABTT). The Department has adjusted its program to adopt ATT Level I and ABTT. The Department will continue to recognize the qualifications of any who qualified with the earlier ACI certifications until those qualifications expire.

## 2.5 QUALIFICATIONS

There are four aggregate qualifications:

- (1) Aggregate Testing Technician
- (2) Aggregate Base Testing Technician
- (3) Qualified Sampler Technician
- (4) Limerock Bearing Ratio (LBR) Technician

### 2.5.1 General Aggregate Qualification Requirements

Certain qualifications in the aggregate program require ACI certification. In these instances, it will be the responsibility of the technician seeking qualification to submit an Application for Qualification Form to the CTQP administrator along with the ACI certification (wallet card) number. This form is available from the CTQP administrator at <http://www.ctqpflorida.com>. The date of qualification will be the date the administrator receives notification that all requirements have been met.

All aggregate qualifications require watching the Department training video on sampling aggregates. This video is shown in all aggregate courses delivered by CTQP providers. Technicians who challenge exams, or obtain ACI certificates outside the CTQP program must certify that they viewed the video to the CTQP administrator on the application for qualification. This video can be viewed online at [http://www.ctqpfloida.com/course\\_preparation\\_materials.asp](http://www.ctqpfloida.com/course_preparation_materials.asp)

## **2.5.2 Aggregate Testing Technician Qualification Requirements**

The objective of this qualification is to ensure all test methods for coarse and fine aggregate materials acceptance are completed in accordance with contract documents.

All trainees seeking the Aggregate Testing Technician qualification must:

- (1) Obtain the ACI Aggregate Testing Technician Level 1 certification.

After a trainee has successfully completed all qualification requirements, the trainee's qualification date shall be added to the CTQP database. The date of qualification shall be the date the last qualification requirement was satisfied. The CTQP qualification shall expire on the date of expiration of the ACI Aggregate Testing Technician Level 1 Certification.

### **2.5.2.1 ACI Aggregate Testing Technician Level 1 Training Course**

This course is an ACI certification course and can be obtained through your local ACI sponsoring agent. In Florida, industry can receive the training from the Construction Materials Engineering Council Inc. @ [www.cmec.org](http://www.cmec.org). Government employees may receive training from either the Construction Materials Engineering Council Inc. or the Center for Transportation Training <http://ctt.ce.ufl.edu>

Information about the course content, prerequisites and examination requirements can be found at [http://www.concrete.org/certification/cert\\_prog.asp](http://www.concrete.org/certification/cert_prog.asp)

## **2.5.3 Aggregate Base Testing Technician Qualification Requirements**

The objective of this qualification is to ensure all test methods for soils and base materials acceptance are completed in accordance with contract documents.

All trainees seeking Aggregate Base Testing Technician qualification must:

- (1) Obtain ACI Certification as an Aggregate Base Testing Technician.

After a trainee has successfully met all qualification requirements, the trainee's qualification date shall be added to the CTQP database. The date of qualification shall be the date the last qualification requirement was satisfied. The CTQP qualification shall expire on the date of expiration of the ACI Base Testing Technician Certification.

### **2.5.3.1 ACI Aggregate Base Testing Technician Training Course**

This course is an ACI certification course and can be obtained through your local ACI sponsoring agent ( in Florida this is the Construction Materials Engineering Council Inc. @ [www.cmec.org](http://www.cmec.org) ) .

Information about the course content, prerequisites and examination requirements can be found at  
[http://www.concrete.org/certification/cert\\_prog.asp](http://www.concrete.org/certification/cert_prog.asp)

### **2.5.4 Qualified Sampler Technician Qualification Requirements**

The objective of this qualification is to ensure all materials tested for acceptance are sampled in accordance with contract documents.

All trainees seeking Qualified Sampler Technician qualification must:

- (1)
  - a) Pass the Qualified Sampler Technician written examination.
  - b) Pass the Qualified Sampler Technician proficiency examination.

**OR**

- (2) Have either an Aggregate Testing Technician or Aggregate Base Testing Technician Qualification.

After a trainee has successfully met all of these qualification requirements, the trainee's qualification date will be added to the training database. The expiration date shall be 5 years (60) months from the date the last Qualified Sampler Examination was passed, or the expiration of the ACI certification.

### **2.5.4.1 Qualified Sampler Technician Course**

This course consists of a one day training class with a written examination (1 hour, multiple choice) and proficiency exam. Emphasis will be on presenting techniques to those who have very little sampling experience. Subjects to be covered in this course are included in ***Attachment 2-7***.

Attendance at the training course is encouraged but it is not required for qualification.

#### **2.5.4.1.1 Qualified Sampler Technician Course Prerequisites**

There are no prerequisites for this course.

#### **2.5.4.1.2 Qualified Sampler Technician Written Examination**

A written examination (1 hour) is administered at the end of the course. The examinations are electronically graded by the CTQP. A passing grade for this examination shall be 70%. Two weeks should be allowed for grading and posting of the examination results.

#### **2.5.4.1.3 Qualified Sampler Technician Proficiency Examination**

Each trainee will correctly demonstrate skills in conducting applicable FDOT tests in a proficiency examination (usually 2 hours). . Each trainee will be given two chances to pass each test. Should a trainee fail any one test, two times, this will constitute failure of the proficiency examination.

## **2.5.5 LBR Technician Qualification Requirements**

The objective of this qualification shall be to ensure that personnel responsible for testing or inspecting mineral aggregates and soils are proficient and knowledgeable with Department testing methods.

All trainees seeking LBR qualification must:

- (1) Pass the LBR Technician written examination.
- (2) Pass the proficiency examination.
- (3) Be Aggregate Base Testing Technician qualified at the time of qualification.

After a trainee has successfully met all of these qualification requirements, the trainee's qualification date will be added to the CTQP database. The date of qualification shall be the date the last qualification requirement was satisfied. The CTQP qualification shall expire in 5 years (60) months or the date of expiration of the Aggregate Base Testing Technician Qualification (whichever is earlier).

### **2.5.5.1 LBR Technician Qualification Training Course**

This course shall consist of a one day training class with a written examination (usually 1 hour). A proficiency examination (usually 2 hours) will be given following the written examination. Subjects to be covered in this course are included in the ***LBR Technician Qualification Training Course, Attachment 2-8.***

Although attendance at the training course is encouraged, it is not required for qualification.

#### **2.5.5.1.1 LBR Course Prerequisites**

There are no prerequisites for this course.

#### **2.5.5.1.2 LBR Written Examination**

A written examination (usually 1 hour) is administered at the end of the course. The examinations are electronically graded by the CTQP. A passing grade for this examination shall be 70%. Two weeks should be allowed for grading and posting of the examination results.

### **2.5.5.1.3 LBR Proficiency Examination**

A proficiency examination (usually 4 hours) is administered on the second day of the course. Each trainee will be expected to correctly demonstrate skills in conducting applicable Florida Method of Tests. Each trainee will be allowed two chances to pass each test. Should a trainee fail any one test, two times, this will constitute failure of the proficiency examination.

## **2.6 QUALIFICATION REQUIREMENTS BY JOB FUNCTION**

Job functions for each aggregate qualification are contained in the ***CTQP Qualification by Job Function, Attachment 2-9.***

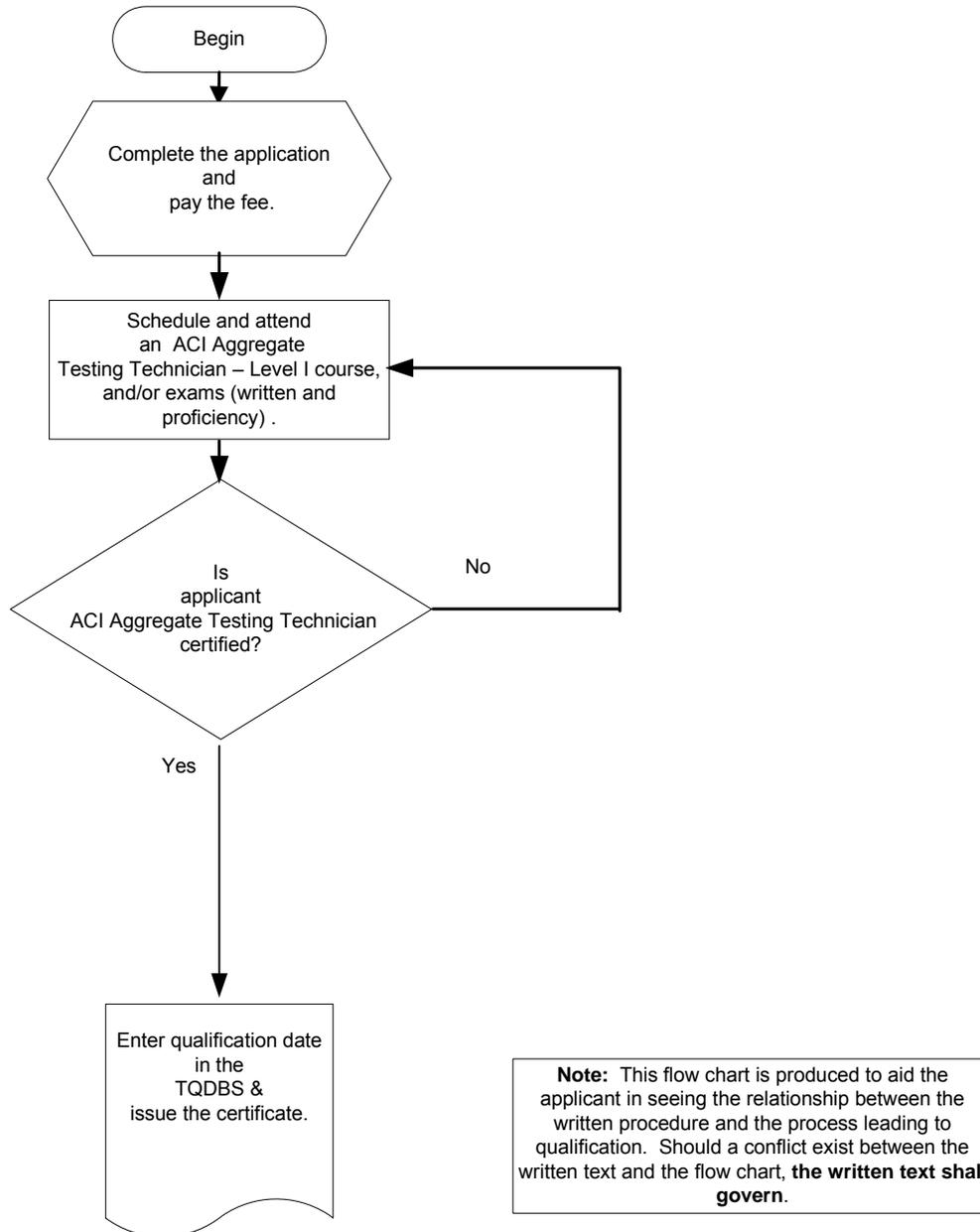
## **2.7 REQUALIFICATION**

In order to maintain qualification, technicians must be requalified. Requalification may require the applicant to pass a written and proficiency examination for each specialized aggregate area. Extensions past the qualification period will not be granted.

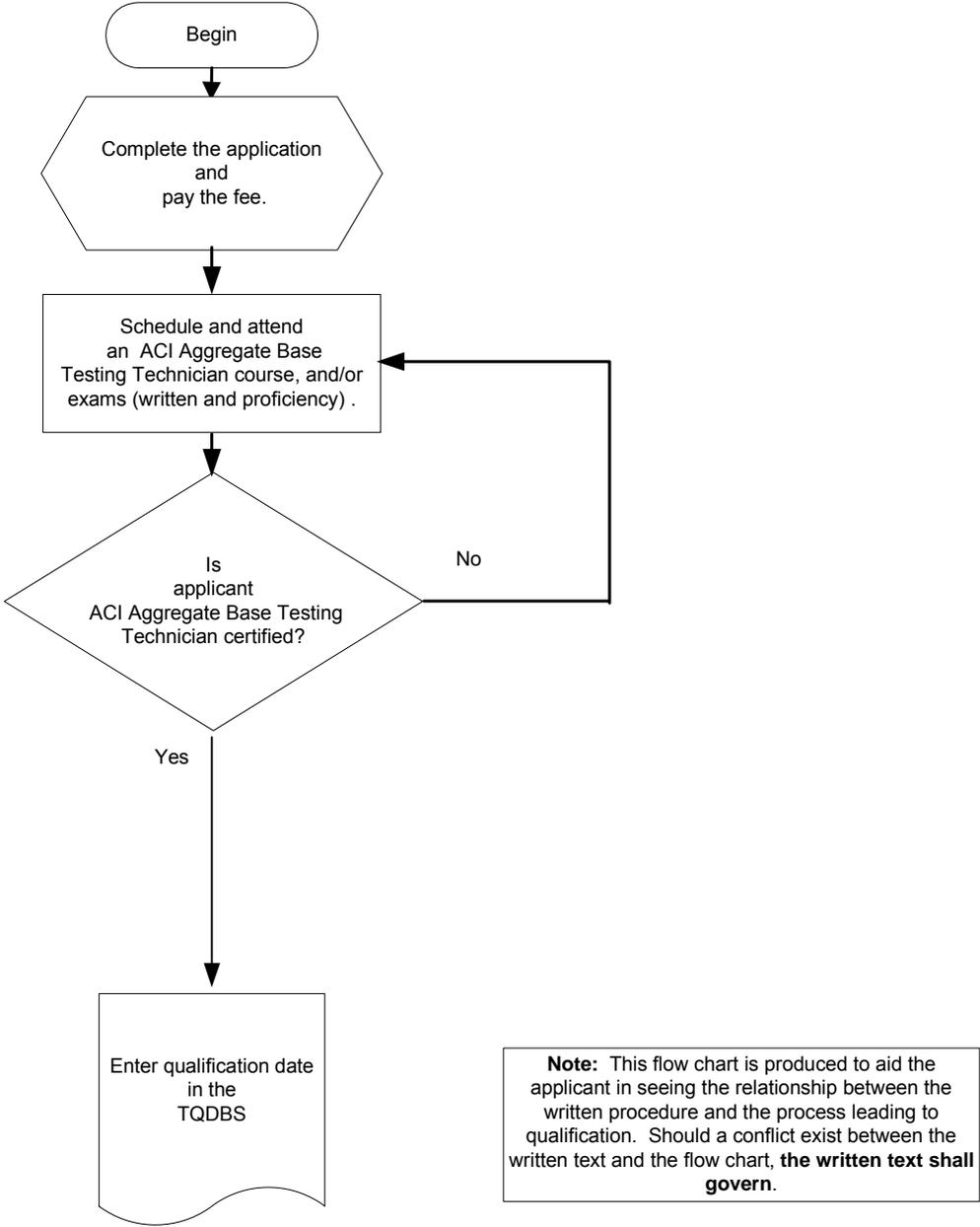
An application for requalification should begin after 54 months. Extensions past the 60 month qualification period will not be granted. Applicants for requalification will be required to pass the course examination and any applicable proficiency demonstration.

Requalification requirements for aggregate qualifications are the same as initial qualification.

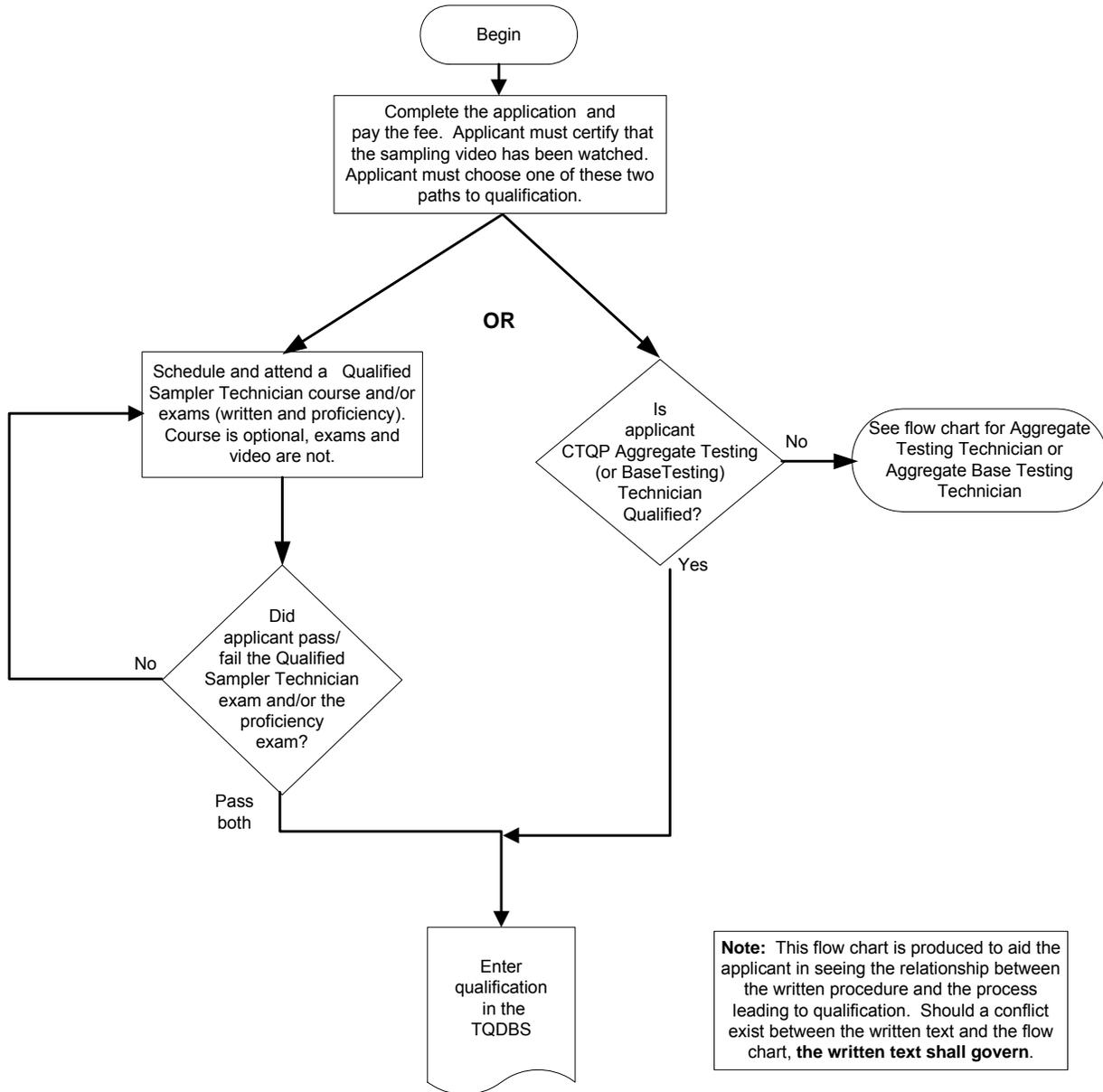
# AGGREGATE TESTING TECHNICIAN QUALIFICATION FLOWCHART



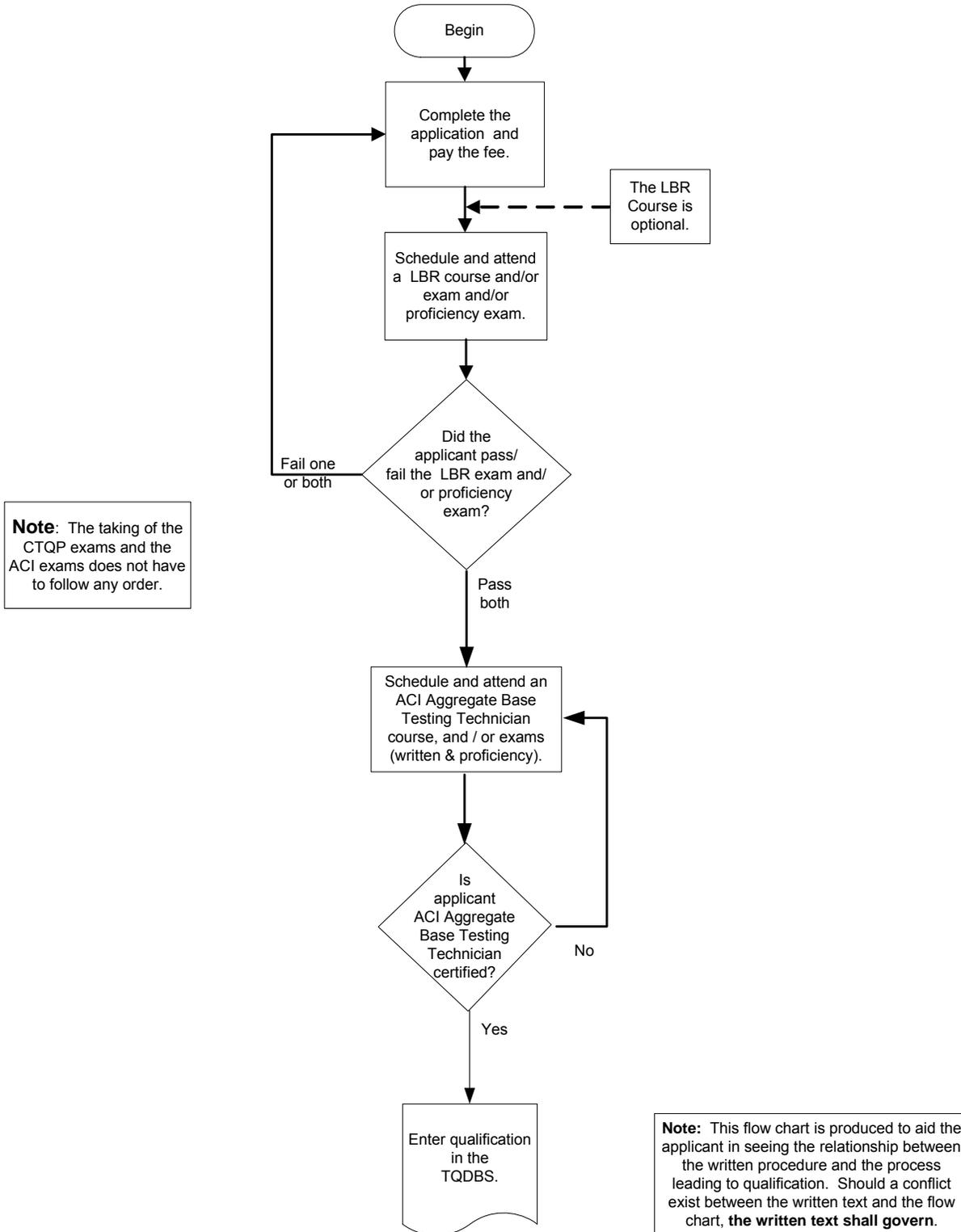
# AGGREGATE BASE TESTING TECHNICIAN QUALIFICATION FLOWCHART



# QUALIFIED SAMPLER TECHNICIAN QUALIFICATION FLOWCHART



# LBR QUALIFICATION FLOWCHART



## Attachment 2-5

### AGGREGATE TESTING TECHNICIAN TRAINING COURSE

**Subjects to be covered in this course include: (AASHTO/ASTM)**

T2 / D75	Sampling of Aggregates
T248 / C702	Reducing Samples of Aggregate to Testing Size
T11 / C117	Materials Finer Than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
T27 / C136	Sieve Analysis of Fine and Coarse Aggregates
T85 / C127	Specific Gravity and Absorption of Coarse Aggregate
T84 / C128	Specific Gravity and Absorption of Fine Aggregate
T255 / C566	Total Evaporable Moisture Content of Aggregate by Drying
T21 / C40	Organic Impurities in Fine Aggregates for Concrete

## Attachment 2-6

### AGGREGATE BASE TESTING TECHNICIAN TRAINING COURSE

**Subjects to be covered in this course include: (AASHTO/ASTM)**

T2 / D75	Sampling of Aggregates
T248 / C702	Reducing Samples of Aggregate to Testing Size
T87 / D421	Dry Preparation of Disturbed Soil and Soil Aggregate Samples for Test
T89 / D4318	Determining the Liquid Limit of Soils
T90 / D4318	Determining the Plastic Limit and Plasticity Index of Soils
T88 / D422	Particle Size Analysis of Soils
T265	Laboratory Determination of the Moisture Content of Soils
T180 / D1557	Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in) Drop
T99 / D698	Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop

## Attachment 2-7

### QUALIFIED SAMPLER QUALIFICATION TRAINING COURSE

**Subjects to be covered in this course include: (AASHTO/ASTM)**

T2 / D75	Sampling of Aggregates
T248 / C702	Reducing Samples of Aggregate to Testing Size

### Attachment 2-8

### LBR TECHNICIAN QUALIFICATION TRAINING COURSE

Subjects to be covered in this course include:

FM 5-515 Limerock Bearing Ratio

## **Attachment 2-9**

### **CTQP Qualification by Job Function**

#### **AGGREGATE TESTING TECHNICIAN**

This is the technician, private lab, or contractor employee who is qualified to perform acceptance tests such as Sampling, Gradation, Minus 200, Specific Gravity and Absorption of Coarse / Fine Aggregates. A technician working in a coarse aggregate, sand plant or Redistribution Terminal needs this qualification. Department employees performing or inspecting these tests should obtain this qualification.

#### **AGGREGATE BASE TESTING TECHNICIAN**

This is the technician, private lab, or contractor employee who is qualified to perform acceptance tests such as Sampling, Preparation of Samples, Atterberg Limits, Sieve Analysis, and Standard and Modified Proctors. . Department employees performing these tests should obtain this qualification.

#### **QUALIFIED SAMPLER**

This is the technician directing the front-end loader operator, plant or mine employee who obtains an acceptance sample for testing. If the front-end loader operator does the sampling solely, that operator must be a qualified sampler.

#### **LBR TECHNICIAN**

This is the technician, private lab, or contractor employee who is qualified to perform acceptance tests for Limerock Bearing Ratio on Base or sub grade. Department employees performing or inspecting the LBR test should obtain this qualification.