



Concrete Plant & Field Certification Study Guide



**Virginia Department of Transportation
Concrete Field Certification
2016**

First Day

7:30 am - 8:00 am	Registration	
8:00 am - 10:30 am	Chapter 1 - Components of Concrete	Don French
10:30 am – 12:15 pm	Chapter 2 - Protection and Repair of Concrete Structures	Michael Sprinkel
12:15 pm - 1:15 pm	Lunch	
1:15 pm - 2:00 pm	Chapter 3 - Responsibilities of Contractor's Technician and VDOT Inspector	Bill Collins CQIP Personnel
2:00 pm – 4:00 pm	Chapter 4 - Field Inspection and Control of Concrete	Bill Collins CQIP Personnel

Second Day

8:00 am - 9:00 am	Chapter 5 - Automated Data Processing	Bill Collins Farrah Pinckney-Semere
9:00 am - 9:15 am	Break	
9:15 am - 11:15 am	Test	VDOT Proctor

Test: Open Book: 35 multiple choice, TL-13 and TL-28A

Grading: Must score 70% or better to pass

Exam Results: Can be found on VDOTU at <https://virtualcampus.vdot.virginia.gov/external> . If you do not know your login and password, DO NOT create a new account, call (804)328-3158 for login information.

To be certified: Students must pass the written exam and obtain ACI Field Level I certification by December 31, 2016. ACI website: www.vrmca.com Contact number: (434)977-3716.

Proof of ACI certification should be sent to MaterialsCertification@vdot.virginia.gov Attn: MCS Training or mailed to the VDOT Materials Certification Schools, 1401 E. Broad Street, Richmond, VA 23219. If you have any questions call (804)328-3158.

**Virginia Department of Transportation
Concrete Plant Certification
2016**

First Day

7:30 am - 8:00 am	Registration	
8:00 am - 10:00 am	Chapter 1 – Components of Concrete	
10:00 am – 11:30 am	Chapter 2 - Sieve Analysis, Fineness Modulus	Hayden Hill Larry Lundy
11:30 am - 12:30 pm	Lunch	
12:30 pm - 5:00 pm	Chapter 3 - ACI Concrete Mix Design Allowable Field Adjustments	Hayden Hill Larry Lundy

Second Day

8:00 am - 9:00 am	Chapter 4 - Moisture Content and Batch Weight Calculations	Hayden Hill Larry Lundy
9:00 am – 9:30 am	Chapter 5 – Inspection of Plant and Equipment	Tone Sanchez Jeff Haddon
9:30 am – 10:00 am	Chapter 6 - Responsibilities of Producer and VDOT Materials Technician	Tone Sanchez Jeff Haddon
10:00 am - 11:30 am	Chapter 7 - Automated Data Processing	Jeff Haddon
11:30 am – 12:30 pm	Lunch	
12:30 pm - 3:30 pm	Exam	VDOT proctor

***** **Test:** Open Book: 25 multiple choice

Proficiency: 6 Math problems - given on same day as test

Grading: Must score a 70% or better on test and proficiency to pass

Exam Results: Exam results can be found on VDOTU. Non-VDOT personnel can find their results at the following website: <https://virtualcampus.vdot.virginia.gov/external> . If you do not know your login and password, DO NOT create a new account, call (804)328-3158 for login information and any questions.

CONCRETE PLANT AND FIELD

STUDY GUIDE

2016

Prepared by: The Virginia Department of Transportation, Materials Division

This manual has been prepared as a practical guide for VDOT Technicians, Inspectors and Contractors in the program area. The information included in this manual is generally compatible with current VDOT Specifications and instructions; **however it should not be considered a source book for specifications.** For Specifications, consult the current or applicable VDOT Road and Bridge Specification Book. This manual should be used as a guide and a reference to supplement the Specification and the reader's knowledge.

ACKNOWLEDGMENTS

The writers would like to express their appreciation to the Portland Cement Association for their permission to use quotations, graphs and illustrations from the current edition of "Design and Control of Concrete Mixtures". The writers are also grateful to the following companies and organizations for permission to use their illustrations and information:

American Concrete Institute

American Concrete Pavement Association

Construction Machinery Company Custom

Concrete Company

English Construction Company

Jaeger Machine Company Massey

Construction Company Master

Builders Company

Rex Chainbelt, Inc.

Virginia Ready Mix Association

The writers express their gratitude to all personnel of the Department who assisted in the preparation of this manual.

**CONCRETE PLANT AND FIELD
CERTIFICATION STUDY GUIDE TABLE
OF CONTENTS**

Acknowledgments i

Table of Contents ii

Concrete Plant manual

Chapter	1	Components of Concrete.....	1-1 - 1-17
Chapter	2	Sieve Analysis & Fineness Modulus.....	2-1 - 2-19
Chapter	3	ACI Concrete Mix Design	3-1 - 3-52
Chapter	4	Moisture Content and Batch Weight Adjustments	4-1 - 4-10
Chapter	5	Inspection of Plant and Equipment	5-1 - 5-11
Chapter	6	Responsibilities of Producer Technician and VDOT Materials Technician	6-1 - 6-5
Chapter	7	Automated Data Processing of Concrete	7-1 - 7-19

Concrete Field Manual

Chapter	1	Components of Concrete.....	1-1 - 1-17
Chapter	2	Protection and Repair of Concrete Structures	2-1 - 2-40
Chapter	3	Responsibilities of Contractor and Inspector	3-1 - 3-5
Chapter	4	Field Inspection and Control of Concrete	4-1 - 4-10
Chapter	5	Automated Data Processing of Concrete	5-1 - 5-19

Appendices

Appendix	A	Definitions and English Conversion Factors	A-1 - A-3
Appendix	B	Abbreviations, Symbols and Conversion Factors.....	B-1 - B-7
Appendix	C	Concrete Specifications	C-1 - C-93
Appendix	D	Answers to Study Questions and Problems	D-1 - D-39



APPLICATION FOR VDOT MATERIALS TECHNICIAN CERTIFICATION

This is to affirm that _____ (Technician's Name), hereinafter "Technician," desires to be certified by the VDOT as an **Concrete Field Technician**. By making this Application, Technician acknowledges and agrees that Certification carries inherent rights and responsibilities. The rights include being exclusively sanctioned, along with others so certified by VDOT, to perform sampling, testing, and reporting of test results for quality acceptance, quality control and assurance programs. The responsibilities include performing and reporting tests with the accuracy and precision expected of the Technician in accordance with the required test procedures.

By signing this Application, Technician agrees to strive to maintain compliance with all rules, regulations, specifications, industry standards, procedures and policies, applicable to any work performed under the Certification. A violation of the above as determined by the VDOT Technician Certification Review Board may result in a suspension or revocation of the rights and responsibilities conferred on the Technician. Revocation or suspension of one Certification may be considered a revocation or suspension of all Certifications held by the Technician. Further, any suspension or revocation of Technician's Certification in any other jurisdiction may result in the VDOT Technician Certification Review Board taking the same or other action, against Technician's Certification in Virginia.

By signing below, Technician also affirms that he/she is aware that both State and Federal laws may govern construction projects in Virginia, including Title 18, United States Code, Section 1020, that states, in pertinent part, that anyone making falsifications on Federal-aid projects,

"Shall be fined not more than \$10,000 or imprisoned not more than five years, or both."

I, _____ (Print Name), affirm that I have read and fully understand the foregoing "APPLICATION FOR VDOT TECHNICIAN CERTIFICATION," and I agree to be bound by these terms.

Technician's Signature

Date

