

# CONSTRUCTION INSPECTOR CERTIFICATION PROGRAM

## COLORADO DEPARTMENT OF TRANSPORTATION

COURSE CATALOG 2011  
October 27, 2010

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## **CHIEF ENGINEERS POLICY MEMO #25**

Date: March 4, 2005  
To: Region Transportation Directors, Professional Engineer IIIs, and Resident Engineers  
From: Craig Siracusa, Chief Engineer  
Subject: Construction Inspector Qualification Program Policy Memo 25

As a follow up to the memo issued on October 25, 2004, I would like to communicate progress in the implementation of the CDOT Inspector Qualification Program. The Inspector Qualification Board of Directors has developed the following policies in regard to prerequisites, certification requirements and program implementation.

### Required Prerequisite Classes:

- Technical Series (EPS Assistant I thru EPS Technician III)
  - Basic Highway Math
  - Basic Highway Surveying
  - Basic Highway Plan Reading
  - Erosion Control Supervisor
  
- Professional Series (EIT I thru EIT III)
  - Basic Highway Surveying
  - Basic Highway Plan Reading
  - Erosion Control Supervisor

The specialty certifications, such as CAPA Asphalt Inspection, WAQTC, and Major Structures, will only be required when an inspector is working on a project where those items of work are performed. For example, a person working on an asphalt overlay would need the pre-requisites plus the CAPA asphalt inspection; a person working on an embankment would need the pre-requisites plus the WAQTC soils; etc. The specialty training requirements apply to the full range of both the technical and professional series listed above.

Supervisors will be required to anticipate and incorporate the required specialty training needs into training plans as required by project assignments Resident Engineers are also encouraged to look at the background of their Project Engineers (both licensed and not licensed). Resident Engineers should include the categories that they believe are appropriate in the Project Engineers' training plans as well.

### Program Implementation:

- The above requirements will be mandatory on CDOT projects after March 1, 2006.
- The scopes of work in future consultant contracts must include the certification requirements for inspectors effective March 1, 2006.

The qualification program products can be accessed both internally and externally at:  
<http://www.dot.state.co.us/CHRMEmpCorner/empdev.cfm>

I encourage you to begin to work with your employees to structure a plan that addresses the specific needs.

## CERTIFICATION: BASIC HIGHWAY MATH

**BRIEF DESCRIPTION:** There is a great deal of mathematics used in the construction field. Each day the construction inspector must use arithmetic, algebraic, and geometric skills in their work. This basic math exam covers all of these areas. The Basic Highway Math Self Study Manual is available for review on the CDOT website

[\(http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/\)](http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/)

### EXAMS OFFERED IN DENVER:

January 12, 2015	May 18, 2015	September 14, 2015
February – no testing	June 22, 2015	October 19, 2015
March 16, 2015	July 20, 2015	November 16, 2015
April 13, 2015	August 17, 2015	December 7, 2015

**LOCATION:** Colorado Department of Transportation  
Materials Training Center  
4670 Holly Street  
Denver, CO 80216

**TIME:** 9:00 AM (90-minute exam)

**CONTACT:** Allison Wilson  
303.757.9298  
Fax: 303.757.9868  
[allison.wilson@dot.state.co.us](mailto:allison.wilson@dot.state.co.us)

**NOTE:** **CALCULATORS MAY BE USED FOR THIS EXAM. EXAM IS CLOSED-BOOK**

**FEE:** \$25.00 money order or check payable at time of exam.  
Make money order or check payable to CDOT or  
CDOT employees must bring cost center number.  
Cash or credit cards not accepted.

## **CERTIFICATION: BASIC CONSTRUCTION SURVEYING**

**BRIEF DESCRIPTION:** It is important for a construction inspector to understand construction staking and layout. Even if the inspector is not performing the duties of the surveyor, understanding the background is important to be competent at the job. The Basic Construction Surveying Self Study Manual is available for review on the CDOT website

[\(http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/\)](http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/).

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March 16, 2015	July 20, 2015	November 16, 2015
April 13, 2015	August 17, 2015	December 7, 2015

**LOCATION:** Colorado Department of Transportation  
Materials Training Center  
4670 Holly Street  
Denver, CO 80216

**TIME:** 10:30 AM (90-minute exam)

**CONTACT:** Allison Wilson  
303.757.9298  
Fax: 303.757.9868  
[allison.wilson@dot.state.co.us](mailto:allison.wilson@dot.state.co.us)

**NOTE:** **CALCULATORS MAY BE USED FOR THIS EXAM. EXAM IS CLOSED-BOOK**

**FEE:** \$25.00 money order or check payable at time of exam.  
Make money order or check payable to CDOT or  
CDOT employees must bring cost center number.  
Cash or credit cards not accepted.

## CERTIFICATION: BASIC HIGHWAY PLAN READING

**BRIEF DESCRIPTION:** The Plan Reading Course presents a step-by-step procedure on how to read, interpret, and relate to a standard set of roadway plans; to help identify and interpret symbols used in a standard set of plans; and to help develop the necessary skills to interpret a set of plans in non-technical terms. Along with the Manual you will use plan sheets and standards that specifically relate to it. The plan sheets/standards included have been reduced to half their original size so they can be handled more easily. The intent is to provide well rounded exposure to highway construction plans. The Basic Highway Plan Reading Manual is available for review on the CDOT website

[\(http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/\)](http://www.coloradodot.info/programs/tetp/construction-inspector-qualification/).

### EXAMS OFFERED IN DENVER:

January 12, 2015	May 18, 2015	September 14, 2015
February – no testing	June 22, 2015	October 19, 2015
March 16, 2015	July 20, 2015	November 16, 2015
April 13, 2015	August 17, 2015	December 7, 2015

**LOCATION:** Colorado Department of Transportation  
Materials Training Center  
4670 Holly Street  
Denver, CO 80216

**TIME:** 12:00 A.M. (90-minute exam)

**CONTACT:** Allison Wilson  
303.757.9298  
Fax: 303.757.9868  
[allison.wilson@dot.state.co.us](mailto:allison.wilson@dot.state.co.us)

**NOTE:** **CALCULATORS AND RULERS MAY BE USED FOR THIS EXAM. . EXAM IS CLOSED-BOOK**

**FEE:** \$25.00 money order or check payable at time of exam.  
Make money order or check payable to CDOT or  
CDOT employees must bring cost center number.  
Cash or credit cards not accepted.

## **CERTIFICATION: BASIC MATERIALS**

**BRIEF DESCRIPTION:** The Basic Materials Certification is comprised of the LabCAT Certification Inspector Program-Level A and the American Concrete Institute Field Testing Technician Grade I. The LabCAT certification is administered by the Rocky Mountain Asphalt Education Center (RMAEC) and the American Concrete Institute Field Testing Technician Grade I is administered by the Colorado Ready Mix Concrete Association (CRMCA). LabCAT classes are given at the Rocky Mountain Asphalt Education Center (RMAEC).

A prerequisite for the Asphalt Paving Inspector Certification is LabCAT Level A.  
A prerequisite for the Concrete Transportation Inspector Certification is ACI Field Testing Technician Grade I.

Level A-Laydown: Material testers working at the laydown operation and responsible for sampling and conducting compaction tests and inspectors inspecting paving operations on CDOT projects are required to pass this certification. Hot mix asphalt aggregate sampling proficiency must be demonstrated from various locations as well as compaction measurements using nuclear density gauge readings and correlation determinations from core samples.

ACI Concrete Field Testing Technician Grade I: A one-day course required for personnel performing tests and inspections on concrete. Some of the topics covered will be Sampling Fresh Concrete, Slump of Concrete, Unit Weight & Yield, Making & Curing Specimens, Temperature of Freshly Mixed Concrete, and Air Content of Concrete.

**CERTIFICATIONS OFFERED:** LabCAT Level A, B, C, E. Standard Certifications and Streamline Re-Certifications. See website: <http://www.co-asphalt.com/> dates

### ACI Concrete Field Testing Technician Grade I

See website: <http://www.crmca.org/> for locations, times and dates

### **LOCATION:**

LabCAT Level A, B, C, E  
Rocky Mountain Asphalt Education Center  
6880 S. Yosemite Court  
Suite 110  
Centennial, CO 80112

ACI Field Testing Technician Grade I  
CDOT  
4670 N. Holly St.  
Denver, CO. 80216

**TIME:**

LabCAT Level A, B, C, E  
7:30 a.m. – 8:00 a.m. check-in,  
Session begins at 8:00 a.m.

ACI Field Test Tech Grade I ,  
see above

<b>CONTACT:</b> LabCAT Level A	ACI Field Test Tech. Grade I
Diane Hammond	Jen Lord
303.741.6148 ext. 154	303.290.0303
Fax: 303.741.6146	Fax: 303.290.8008
	Jen@crmca.org

**FEE:**

	Member	Non-Member	Retest
LabCAT Level	\$200	\$420	No charge - \$200 - \$420 may apply
ACI Field Test	\$325	\$600	\$150-\$275

**RMAEC CANCELLATION POLICY:** The following RMAEC Participant Cancellation Policy applies to the LabCAT class as well as other RMAEC education programs:

- Cancellations or reschedules made less than 30 days, and up to 12:00 noon on the Wednesday prior to the session start date, will be assessed a \$50 administrative fee.
- Cancellations or reschedules made 12:00 noon on the Wednesday prior to the session start date will be assessed a cancellation/reschedule fee which will be 50% of the registration fee, but no less than \$100.
- Registrants who do not attend a scheduled session and have not scheduled a qualified substitute, (see program requirements for LabCAT certification) are subject to the full registration fee.
- Please notify RMAEC to make schedule changes by phone (303.741.6148) or e-mail [rmaec@co-asphalt.com](mailto:rmaec@co-asphalt.com).

CRMCA cancellation policy:

**Cancellations:** Must be received in writing one-week prior to receive a 50% refund. No refund will be issued within 7 days of the date of class. **No Exceptions.**

**WEBSITE:**

[www.co-asphalt.com](http://www.co-asphalt.com)  
[www.crmca.org](http://www.crmca.org)

Please check these websites as dates and fees are subject to change.

**CERTIFICATION: Western Alliance Quality Transportation Construction (WAQTC)**

**BRIEF DESCRIPTION:** The purpose of this class and exam is to assure that individuals responsible for the QA/QC aspects of highway transportation projects are qualified to perform soils tests in accordance with applicable procedures. The Self Study Manual is available for review at the below website. There will be a written exam for the soils testing and a proficiency demonstration on soil tests.

**CERTIFICATION: Excavation & Embankment (Soils Inspector)**

**BRIEF DESCRIPTION:** The purpose of the Excavation & Embankment Course (soils inspector) is to provide both inspectors and testers with the knowledge and information they need to interpret soils test results. This course uses CDOT methods and practices as found in the CDOT Field Materials Manual and in the Standard Specifications for Road & Bridge Construction. The Self Study Manual is available to download for free at the below referenced website. An open book, written exam will be administered. There is no practical for this certification.

**REQUIREMENTS:** Those participants taking the WAQTC **will be required** to take and pass the Soils Inspection certification as well. Those participants seeking **only** the Soils Inspection certification **do not** need to take WAQTC.

**CLASSES OFFERED:** Both WAQTC & Soils Inspector Course are offered on the same day. Registration, exam dates, class time, schedules, and free manuals to download are available at: [groundeng.com/waqtc](http://groundeng.com/waqtc).

**LOCATION:** Colorado Department of Transportation

Testing Certification Center  
4670 Holly St.  
Denver, CO 80216

**TIME:** 7:30 a.m. (8-hour course)

**CONTACT:** Ground Engineering Consultants

Phone: 303.289.1989  
Fax: 303.289.6742

**FEE:** \$150-If you wish to register for this class, your registration form should can be completed on line at [groundeng.com/waqtc](http://groundeng.com/waqtc) at least 3 weeks prior to the desired test date. The exam is limited to a minimum of 10 participants and registered on a first come basis. Classes may be cancelled due to the amount of participants. If there are no-shows with no response there will be a fee of \$150 charged to your company. For reschedules 48 hours prior to the exam, there will be a charge of \$25, for cancellations 48 hours prior to the exam there will be a \$50 charge. If the participant should not pass the written exam, he/she may retake the written exam the same day at no additional charge (first time retest only). If the participant fails and reschedules, he/she needs to return to a future scheduled class at full charge.

**WEBSITE:** [groundeng.com/waqtc](http://groundeng.com/waqtc)



**CERTIFICATION: ASPHALT PAVING INSPECTION**  
**(LabCat Level I - Inspector)**

**BRIEF DESCRIPTION:** This class and exam is designed to help agency and consultant inspectors and industry work toward a common goal during HMA construction. These sessions will touch on all aspects of HMA pavement construction from subgrade preparation through laydown, compaction, and the finished HMA product.

The prerequisite for this class is LabCAT Level A.

**CLASSES OFFERED:** LabCAT Level I. Standard Certifications and Streamline Re-Certifications. See website: <http://www.co-asphalt.com/> dates

**LOCATION:** Rocky Mountain Asphalt Education Center  
6880 S. Yosemite Court  
Suite 110  
Centennial, CO 80112

**TIME:** 7:30 – 8:00 a.m. check-in  
Session begins at 8:00 a.m.

**CONTACT:** Diane Hammond  
303.741.6148 ext 154  
Fax: 303.741.6146  
[rmaec@co-asphalt.com](mailto:rmaec@co-asphalt.com)

**FEE:** CAPA Member and CDOT (you may need to check) - \$250  
Non CAPA member \$400

**WEBSITE:** [www.co-asphalt.com](http://www.co-asphalt.com)  
Please check this website as dates and fees are subject to change.

## **CERTIFICATION: CONCRETE TRANSPORTATION CONSTRUCTION INSPECTION**

**BRIEF DESCRIPTION:** The Concrete Transportation Construction Inspector courses are administered by the Colorado Ready Mix Concrete Association (CRMCA).

Note: CDOT is currently partnering with ACPA and CRMCA to develop a CDOT 1-day certification that can be used. More to come.

The ACI Concrete Field Testing Technician Grade I is a prerequisite for this course.

Concrete Transportation Construction Certification Inspector: This certification consists of a 3.5 day course which covers such areas as concrete construction, plan reading, soil-cement, piling installations, formwork installation and removal, reinforcements, embedments, sampling and testing freshly mixed concrete, conveying, placing, consolidation, finishing, jointing, curing and protection. Participants take the 3 day course and one week later take a three hour open book concrete exam and a one hour (non open book) plan reading exam.

The technical resource materials used in this program include the following ACI publications:

SP-2	Manual of Concrete Inspection
116R	Cement and Concrete Terminology
117	Tolerances for Concrete Concrete Construction & Materials
301	Specifications for Structural Concrete
304R	Measuring, Mixing, Transporting and Placing Concrete
304R.2	Placing Concrete by Pumping Methods
304.5R	Batching, Mixing and Job Control of Lightweight Concrete
305R	Hot Weather Concreting
306R	Cold Weather Concreting
308	Curling Concrete
309R	Consolidation of Concrete
318	Building Code Requirements for Reinforced Concrete
325.9R	Construction of Pavements and Bases
325.10R	Roller Compacted Concrete Pavements
336.3R	Construction of Drilled Piers
345R	Highway Bridge Deck Construction
347R	Formwork for Concrete
543R	Design, Manufacture and Installation of Concrete Piles

### ASTM Publications

C 29	Unit Weight and Voids in Aggregates
C 94	Specification for Ready Mixed Concrete
E 329	Evaluation of Testing & Inspection Agencies

**CERTIFICATION REQUIREMENTS:** ACI will grant certification only to those applicants who: Hold current certification as an ACI Concrete Field Testing Technician Grade 1; Obtain a passing grade on the written inspection examination; Obtain a passing grade on the written plans reading examination; and possess at least one of the following qualifications: A minimum of two years of college or technical school earning at least 60 credit hours, plus two years of satisfactory work experience OR a high school diploma, or equivalent, plus a minimum of three years of satisfactory work experience OR five years of satisfactory work experience. The work experience must include:

1. Decision making authority & responsibility
2. Verification of compliance with plans, specifications and codes
3. Evaluation of concrete construction in the field
4. Documentation and reporting of inspection results
5. Proficiency in appropriate areas of concrete construction inspection

A Concrete Transportation Construction Inspector-in-Training is a person who is knowledgeable about inspection procedures for concrete transportation construction projects, but does not have the experience required to qualify as an ACI Concrete Transportation Construction Inspector.

The three hour written inspection examination is “open book” and consists of approximately 80 multiple choice questions. The one hour (non open book) plans reading examination consists of approximately 20 questions and is designed to test the examinee’s ability to read and understand engineering drawings. The minimum passing grade for each examination is 70%.

**CLASSES OFFERED:**

Concrete Transportation Construction Inspector will be offered on demand:

- To be determined - based upon demand. Lunch is provided
- To be determined - Retesting or Student may take written three-hour (open book) and one-hour plan reading/drawing (non open book) exam.
- To be determined (7:30 – noon) Written three-hour (open book) and one-hour plan reading/drawing (non-open book) exam
- Most ACI classes are offered based on demand. Please call CRMCA at 303.290.0303 to be placed on a waiting list for the class you want.

**LOCATION:** Concrete Transportation Construction Inspector  
CRMCA Office  
6855 S. Havana St. Suite 540  
Centennial, CO 80112

**TIME:** Concrete Transportation Construction Inspector  
7:30 a.m. – 4:30 p.m. and 7:30 – 11:30 (1/2 day)

Registration deadline: To be determined  
Class size is limited to 25  
Please register early

**FEE: To Be Determined**

	Member	Non Member	Retest
Concrete Transportation			
Construction Insp.			

CDOT employees and other CRPA/CRMCA members may be billed.  
Prepayment is required. Make check payable to CRMCA.  
No exceptions.

**WEBSITE:** [www.crmca.org](http://www.crmca.org)  
Please check this website as dates and fees are subject to change.

## **CERTIFICATION: CDOT/CRMCA CONCRETE PAVING INSPECTION**

**CLASS OBJECTIVE:** The primary objective of this class is to provide training and materials that will help participants understand the basic of concrete pavement inspection. Successful completion of this course will certify a person to inspect concrete pavement on CDOT projects. This class is intended for persons with little or no past experience in this area. Participants will need to bring their own calculator. Class and exam require algebra level mathematics for successful completion.

**CLASS DESCRIPTION:** The certification course will include the following topics:

- History of Concrete
- What makes Concrete Concrete?
- Mix Design, What is Required?
- Field Testing
- Concrete Batch Plants
- Concrete Batch Tickets
- Concrete Pavement Design
- Pavement Sub-Grade
- Paving Equipment
- Pavement Finishing
- Pavement Joints
- Shouldering and Striping
- Repairs and Replacement
- Method of Payment

**TARGET AUDIENCE:** This class is designed for entry level engineers and technicians that are or will be inspecting, testing or managing projects with concrete pavements.

**IDEAL SIZE:** The class is designed for 30 to 40 participants.

**LOCATION:** CDOT's Certification Center  
4670 Holly Street  
Denver, Colorado 80216

**FEE:** This class is offered by ACI and can be registered for by contacting Jen Lord at 303.290.0303. The cost of the class is \$150.00 which includes books, study material, lunch, and snacks.

**WEBSITE:** [www.crmca.org](http://www.crmca.org)

**NOTE:** Construction inspection certification is required by CDOT. For concrete paving, either the ACI "Concrete Transportation Construction Inspector" or the "Concrete Paving Inspection" course will be accepted.

## TRAINING: CONSTRUCTION INSPECTION REFRESHER MATERIALS

### Training Material Available:

Pavement Guide, October 2003	Interactive CD ROM
Asphalt Paving & Inspection	Video
Hot Mix Asphalt Paving	Manual
Concrete Paving Inspection	Video
Major Structures Inspection	Video
Field Inspection of Reinforcing Bars	Video
Field Handling Techniques for Epoxy-Coated Rebar at the Job Site	Video / Manual

### Entire Course Catalog Available:

<http://www.dot.state.co.us/CHRMEmpCorner/empdev.cfm>

## Training Material Descriptions:

### Pavement Guide, October 2003

Washington State DOT interactive CD-ROM covers all aspects of pavements including types, materials, design considerations, mix design, structural design, construction, QA and specifications, evaluation, maintenance and rehabilitation and pavement management. Particular areas of focus for CDOT's construction inspection program are asphalt and concrete pavement construction information.

*To purchase:* Pavement Guide, October 2003 – [www.wsdot.wa.gov](http://www.wsdot.wa.gov) click on “agency publications,” then on “on-line technical manual library \$15.00 + shipping & handling

### Asphalt Paving & Inspection - 1996

FHWA video (60 minutes) provides information needed to conduct construction inspection of asphalt paving operations effectively.

*To purchase:* Asphalt Paving & Inspection 1996 – CDOT library at (303) 757-9972

### Hot Mix Asphalt Paving

AASHTO manual (219 pages) presents state-of-the-art information on plant operations, transportation of materials, surface preparation, laydown, and compaction.

*To purchase:* Hot Mix Asphalt Paving – [aashto.org](http://aashto.org) click on “bookstore”  
\$24.00 + shipping & handling

### Concrete Paving Inspection

International Road Federation (IRF) video (20 minutes) consists of inspection of the alignment and grade control, the sub-grade preparation, the setting of forms, the preparation on concrete,

the lean concrete base; inspecting the placement and curing of concrete and paving with a slip form paver; construction inspection of joints, testing and accepting the finish pavement.

*To purchase:* Concrete Paving Inspection – Contact CDOT Materials & Geotechnical Branch at (303) 757-9249 \$199.00

### **Major Structures Inspection**

International Road Federation (IRF) video (56 minutes) covers inspection procedures for bridge foundation including pile and drift shaft piling; inspection of piers and abutments; inspection procedures for bridge superstructures including steel girders, precast concrete I-beams, cast-in-place box girders; inspection of bridge deck construction.

*To purchase:* Major Structures Inspection – Contact CDOT Materials & Geotechnical Branch at (303) 757-9249 \$199.00

### **Field Inspection of Reinforcing Bars**

Concrete Reinforcing Steel Institute (CRSI) video (25 minutes) presents an overview of the placing of reinforcing bars, including the criteria and code governing construction, bar sizes and grade markings, mill test reports, fabrication, placing and concrete cover tolerances, and splicing.

*To purchase:* Field Inspection of Reinforcing Bars – [www.crsi.org](http://www.crsi.org) click on “store” \$30.00 + shipping & handling

### **Field Handling Techniques for Epoxy-Coated Rebar at the Job Site**

Concrete Reinforcing Steel Institute (CRSI) video (8 minutes) and 12-page guide provides information about the receipt of material, inspection, truck unloading, job-site handling and storage; placing of rebar; final inspection and repairing damaged epoxy coating.

*To purchase:* Field Handling Techniques for Epoxy-Coated Rebar at the Job Site – [www.crsi.org](http://www.crsi.org) click on “store” \$30.00 + shipping & handling.