

# **Multi-Regional Training and Certification M-TRAC**

## **Annual Meeting Report**



**August 24-25, 2005  
Concourse Hotel  
Columbus, Ohio**



**M-TRAC ANNUAL MEETING AGENDA**  
**August 23 – 25, 2005**  
**Concourse Hotel – Columbus, Ohio**

**Tuesday, August 23<sup>rd</sup>**

6:00 P.M. – 8:00 P.M. Reception

**Wednesday, August 24<sup>th</sup>**

7:15 – 8:00 Cont. Breakfast

8:00 – 8:15 Welcome by Ohio

8:15 – 9:15 State Updates – States Reporting

9:15 – 9:30 Break

9:30 – 10:15 Transportation Curriculum Coordination Council Update – Douglas Townes, FHWA

10:15 – 10:30 23 CFR 637 Revisited – Douglas Townes, FHWA

10:30 – 11:15 National Institute for Certification in Engineering Technologies Update – Bud Darby, NICET

11:15 – 11:45 American Concrete Institute Update – John Nehasil, ACI

11:45 – 12:00 Concrete Testing CD's – Susan Schemmel, eTEC

12:00 – 1:00 Lunch

1:00 – 2:00 State Updates – States Reporting

2:00 – 2:15 Break

2:15 – 4:30 Update on M-TRAC Materials – Task Group Leaders

**Thursday, August 25<sup>th</sup>**

7:15 – 8:00 Cont. Breakfast

8:00 – 9:00 Online Learning - Transferring Paper Training Documents to eLearning Format – Susan McDonald Osborn, National Highway Institute

9:00 – 9:45 Reciprocity – How are States Processing Out-of-state Requests? – M-TRAC Panel

10:00 – 10:15 Break

10:15 – 11:15 Decertification/QC/QA Issues – Falsifying Records/Fraud – M-TRAC Panel

11:15 – 12:00 Problems & Concerns – This is a time for states to discuss with the group any problems they are having with their programs, questions on how states handle various portions of their programs, etc. – State Discussion

12:00 – 1:00 Lunch

1:00 – 2:00 Continue Problems & Concerns, State Sharing if not enough time previously, and plan next meeting.



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**Multi-Regional Training and Certification (M-TRAC)  
Annual Meeting – August 24 – 25, 2005  
Concourse Hotel – Columbus, Ohio**

The Multi-Regional Training and Certification (M-TRAC) group held their annual meeting in Columbus, Ohio August 24-25, 2005. The Ohio Aggregates and Industrial Minerals Association (OAIMA) hosted the meeting. Many of the presentations from the meeting are included in this package, along with participant's information.

The meeting was kicked off by a reception on Tuesday evening, August 23<sup>rd</sup>.

The meeting officially started on Wednesday morning with a welcome by Pat Jacomet of OAIMA. The group thanked Pat and Maralynn Loos for all the work they had done to host the meeting. A thank you was also extended to the planning committee: Lora Kowach, Kansas DOT; Ron Walker, Indiana DOT; Will Stalcup, Missouri DOT; Rick Kreider, Kansas DOT; Cathy Betts, Minnesota DOT; and Chris Anderson, Iowa DOT.

State updates were held throughout the meeting with the following states reporting:

- Michigan
- Indiana
- Missouri
- New Mexico
- Wisconsin
- Kansas
- Arkansas
- Ohio
- Virginia
- Iowa
- Minnesota

Douglas Townes updated the group on the work of the Transportation Curriculum Coordination Council (TCCC). M-TRAC's representatives to the council are Chris Anderson, Iowa DOT and Cathy Betts, Minnesota DOT. TCCC committee members from M-TRAC are Rick Kreider, Kansas DOT; Will Stalcup, Missouri DOT; Ray Spellman, University of Wisconsin; and Duane Smith, Iowa LTAP. Douglas discussed the matrix and courses that have been developed by the TCCC. Douglas spoke on the clarification of the Code of Federal Regulations in the area of qualification of inspectors.

Douglas Townes gave the National Institute for Certification in Engineering Technologies (NICET) presentation for Bud Darby, who was unable to attend.

John Nehasil updated the group on the activities of the American Concrete Institute (ACI).

Susan Schemmel discussed the work that she and her husband John were doing with material development for technician testing. Their company eTEC has developed a number of videos and other materials for technician testing instruction.

M-TRAC task groups had developed instruction materials for Aggregate, Soils, and Hot Mix Asphalt. This work had been completed approximately 5 years ago and needs updated. The work on PCC materials development was never completed. The group spent some time reviewing the needed updates and discussing the development of a PCC Manual. The group leaders are going to revise the materials already developed and submit to Chris Anderson for formatting. The new materials will be placed on M-TRAC's website. The materials are to be delivered to Chris by the end of September and hopefully the updated manuals will be available by the end of December. The group decided to use the PCC materials developed by the Western Alliance for Quality Transportation Construction (WAQTC) with the exception of the revised PCC Sampling Specification. The M-TRAC group will use the AASHTO method for sampling concrete. The group also decided to add some test methods that were not included in the WAQTC. These include T-22 - Compressive Strength of Cylinders; T-231 - Capping Cylinders, T-177 – Center Point Testing of Beams. The HMA group decided to take M-323 and R-35 out of the HMA manual, since these weren't actually tests. The following are the groups working on the manuals. Anyone that would be interested in helping with this effort should let the group leader know.

Soils – Jeff Huffman, Missouri DOT

Aggregate – Cathy Betts, Minnesota DOT

HMA – John Hinrichsen, Iowa DOT – volunteering to assist were Ron Walker, Indiana DOT and Jeff Huffman, Missouri DOT

PCC – Chris Anderson, Iowa DOT

Susan McDonald Osborn with the National Highway Institute gave an excellent presentation titled "Extreme Makeover", remaking classroom materials for delivery on line. The presentation covered converting instructor led training to eLearning. Susan discussed when the conversion would be applicable, cost comparisons, delivery options, etc. Susan's presentation is included in the presentation package.

The group had a joint discussion on reciprocity and decertification.

Many states offer some form of reciprocity, normally by allowing the individual to test out if they are certified in another state. Some states do still require the technician to go through their training, as well as, take the written and proficiency exams. New Mexico suggested having the test methods included in the certifications put on the certification cards. Missouri, Kansas, Nebraska, and Iowa developed a table that shows their areas and levels of certification and what test methods are instructed in each area/level. The group felt something like this with all states wanting to participate would be an asset. Douglas Townes has a similar form from the Southeast states. He will send Chris Anderson the form they use and this will be sent to all states. Each state that would like



to have their information included can return this to Chris, who will summarize and the information will be posted on the website.

Most states have formal decertification procedures. Many have experienced decertifications in their state. Many states have a review person or group that checks on the accusations before the decertification is issued. There are some that have a board issue the decertification. Lora Kowach brought up the problem of contacting states of decertifications. If a state allows reciprocity, they need to be aware that an individual was decertified in another state. A suggestion was made to always check on an individual with the state they were certified in before allowing reciprocity. Some states already perform this check.

There was a question and answer segment. The group ran out of time and felt we need to give more time to this segment at future meetings. A number of questions never got asked, so this might be something to have earlier on the agenda at future meetings.

#### Questions/Answers

1. Q. Cathy Betts/MNDOT – Does anyone require updates between certification and recertification?  
A. Only Iowa DOT from this group.
2. Q. Cathy Betts/MNDOT – Is anyone having problems with testing frequencies being followed on Design/Build projects?  
A. Joe Kinnikin/NM – Had a similar problem and went to FHWA and they enforced the need for testing and certification.  
A. Ron Walker/IN – Indiana rated the contractor on what they did.
3. Q. Ray Spellman/Univ. of Wisconsin – What are the lengths of the programs.  
A. Florida, Kansas, Iowa, Minnesota are 5 years, Oklahoma, Indiana are 3 years.
4. Q. How much does everyone pay for course development?  
A. Varies
5. Joe Kinnikin/NM – Why can't we reproduce AASHTO standards since they are government groups?  
A. Good question

The group felt it was important to continue to have the M-TRAC meeting an annual event. Susan Schemmel was to meet with representatives of the South Dakota DOT and ask them about hosting the 2006 meeting. Kansas volunteered to be a back up if South Dakota isn't interested. Ray Spellman, University of Wisconsin, Platteville volunteered to host the meeting in 2007.



Transportation Curriculum Coordination Council

# TCCC

What has happened in 2004/2005?

By: FHWA  
Resource Center

First, a

# TCCC Refresher

## Why was the TCCC formed?

- Changes to 23 CFR 637
- States began to independently develop a training/qualification program

## What is the mission of TCCC?

Provide leadership at the national level, develop and maintain a national curriculum for various transportation disciplines, identify existing training and certification programs, and coordinate/facilitate training efforts, both development as well as delivery

After the first two meetings, the TCCC decided a "Core Curriculum" was needed

- Employee Development
- Materials
- Construction
- Maintenance
- Safety/Work Zones

## Curriculum Matrix

- Contains over 2,000 competencies
- Broken down into 4 skill levels
- A dynamic document that will be continually updated

Completed  
January, 2005

DISCIPLINES	COMPETENCIES BY SKILL LEVELS			
	Level I	Level II	Level III	Level IV
Surface Preparation	Assists in performing surface inspections	Inspects surface for proper preparation in accordance with contract documents	Recommends acceptance or corrective action based on inspection results	Determines contract decisions related to surface preparation acceptance and payment
			Documents and follows up on corrective actions	Recommends disciplinary action when corrective measures are not taken in a reasonable time frame
Concrete Delivery	Assists in inspections of delivery vehicles to make sure they are in good working condition	Inspects trucks to assure that all gauges, meters, etc. are in working order	Recommends acceptance or corrective action based on inspection results	Determines contract decisions related to concrete delivery acceptance and payment
			Documents and follows up on corrective actions	Recommends disciplinary action when corrective measures are not taken in a reasonable time frame
		Checks for worn parts that could affect mix quality	Documents and follows up on corrective actions	Recommends disciplinary action when corrective measures are not taken in a reasonable time frame
		Collects load tickets		
Verifies correct mix was shipped				

### What are some examples of TCCC courses developed to date?

**Completed**

- Instructor Development Course
  - Piloted September 7, 2004
  - November, 2004

**Completed**

- Quality Assurance Technologist
  - Pilot Course Delivered, Nov 2002, August 2004
  - November, 2004

### What are some examples of TCCC courses developed to date?

(continued)

- Driven Pile Foundation Inspection
- Drilled Shaft Foundation Inspection

*Over 15 classes were given in 2004/2005*

### What about Surveying for Construction?

- The AASHTO Subcommittee asked for a course on surveying for Construction Inspectors.
- Virginia DOT course was used as a base, then updated and modified

**8 States are now using this course or a form of this course**

### Future TCCC courses under development:

- 130088 – Bridge Construction Inspection
- 134055 – Managing Construction Workmanship
- ????
- ????

### Pooled Fund Update

- Pooled fund project TPF-5(406) was approved for use in December 2001.
- 24 States have committed to date

## What are the planned uses of the “pooled fund”?

- Develop curriculum & core training materials
- Facilitate organization of TCCC at the national level

**Business Plan will govern how funds are used**

## Business Plan and Bylaws

- First draft was distributed: July, 2005
  - Specifies organization of TCCC
  - Specifies committees and subcommittees
  - Lists performance measures
  - Specifies how funds will be spent and accounted for
  - Documents accountability

## Clarification of 23 CFR 637

- Title of 23 CFR 637 is:
  - Construction Inspection and Approval
- **The Purpose of 23 CFR 637 is:**
  - To prescribe policies, procedures, and guidelines to assure the quality of materials and construction in all Federal aid highway projects on the National Highway System.

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## “assure the quality of materials”

- Lab Qualification
  - State
  - Regional
  - Private
- Materials Testers Qualification
  - Requalification
  - Independent Assurance (IA)

## “assure the quality of construction”

- Inspection of materials placement
  - Some States require inspectors to attend materials placement inspection training
  - 23 States require some form of qualification for inspectors
  - Some States require contractor inspection personnel to attend materials placement training

## Where does TCCC go from here?

- Complete and adopt the By-laws/Business Plan
- Develop the Sub-committees
- Continue Course Development
- Continue support for the Pooled Fund

## Where do I find more information about TCCC?

[www.nhi.fhwa.dot/tccc](http://www.nhi.fhwa.dot/tccc)

## QUESTIONS?

This Power Point presentation was prepared by the FHWA Resource Center, Construction Team. Please feel free to use these slides to promote the understanding of and interest in the TCCC.

## NICET CERTIFICATION PROGRAMS UPDATE

### 2005 M-TRAC Annual Meeting

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## So What is NICET?

- ◆ A not-for-profit certification organization established in **1981 based on a NCHRP Research Study request initiated by the AASHTO SCOC**
- ◆ A semi-autonomous division of the National Society of Professional Engineers
- ◆ Policy direction by eight-person Board of Governors

## NICET's Mission:

- ◆ To provide universally recognized certification programs based on an **independent evaluation** of the technical knowledge and experience of individuals in engineering technology and related disciplines
- ◆ Define and support **career paths** for engineering technicians, technologists and related disciplines

## NICET certifies ...

- ◆ **Individuals with appropriate engineering technician or engineering technologist education or work experience**
- ◆ **Partial credit given for relevant work experience as craftsman, scientist, engineer, etc.**
- ◆ **Residents of the United States and territories and certain others living abroad**
- ◆ **Reciprocity with Canada in some programs**

## Licensure/Certification/Certificate

- ◆ **LICENSURE:** a legal credential conferred by federal, state or local government authorities
- ◆ **CERTIFICATION/QUALIFICATION:** an independent performance based credential based on proof of demonstrated competency through a hands-on performance test and/or repeatable and reliable written testing
- ◆ **TRAINING CERTIFICATE:** a **Diploma** conferred by an educational institution or a training entity that verifies course attendance or completion

## NATIONAL CERTIFICATION STANDARDS MAKERS

- National Association for Competency Assurance (NOCA)
- Council of Engineering and Related Scientific Programs (CESB)
- Council on Licensure, Enforcement and Regulation (CLEAR)
- International Standards Organization (ISO)
- American National Standards Institute (ANSI)
- ASTM Designation E329-98 Standard Specification of Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

## Typical National Certification Requirements

- ❖ Examination activities must be totally separated from the Training activities (Not merely a certificate of accomplishment based on the completion of a specific training class (with or without completion test) during a specific period of time.)
- ❖ Non-governmental, independent, third-party Governing Body which includes consumers, public, employers and regulators
- ❖ A periodic Recertification program

## Major National/Professional Certification Programs

- Nationally Certified Engineering Technicians (**NICET**)
- Certified Construction Managers (**CCM's**)
- Certified Professional Constructors (**CPC's**)
- Certified Professional in Erosion and Sediment Control (**CPESC**)
- Professional Traffic Operations Engineer(**PTOE**)

## Levels of NICET Certification...

- ◆ **Level I – Technician Trainee/Engineering Aide (2-6 Months Experience)**
- ◆ **Level II –Associate Engineering Technician ( 2 Years Experience)**
- ◆ **Level III – Engineering Technician (5 Years)**
- ◆ **Level IV – Senior Engineering Technician (10)**

## NICET CERTIFICATION MODEL

- Emphasis is on the **"hands-on"**, technician level work.
- Developed by **professionals** from a cross-section of the industry.
- Alliances with **trade associations**.
- Sensitive and **responsive** to the needs of the **industry**.

## NICET EVALUATES TECHNICAL COMPETENCY THROUGH:

- ◆ WRITTEN EXAMINATION
- ◆ DOCUMENTED WORK HISTORY
- ◆ PROFICIENCY/PERFORMANCE VERIFICATION
- ◆ PROFESSIONAL CODE OF CONDUCT
- ◆ CHARACTER REFERENCE

## NICET CODE OF CONDUCT

NICET-certified technicians recognize that the services they render have a significant impact on the quality of life for everyone. As they perform their duties and responsibilities on behalf of the public, their employers, and clients they shall demonstrate personal integrity and competence.



## Re-CERTIFICATION PROGRAM

- Certificants must maintain **professional activity** and continued professional development in the field of certification.
- Activity is represented through the accumulation of 90 **Continued Professional Development (CPD)** Points.
- These points are accumulated over **three** year certification/recertification cycles.

## Repeatable/Reliable Written Exam

- Exams are **open-book** and questions are based on nationally recognized codes, standards, and practices.
- Program Detail Manuals provide **descriptions** of work elements.
- Various associations and organizations offer preparatory materials – **NICET does not.**

## Value of NATIONAL Certification for the Technician and the Employer

- ◆ **Linkage between the standards of the profession and individual practice**
- ◆ **Assurance of technician competency upon which QA & QC programs depend**
- ◆ **Commitment to the maintenance and improvement of individual and company/agency professional capabilities and ethical standards**
- ◆ **Recognition of individuals and firms who demonstrate high levels of competency**
- ◆ **Assessment of Training Programs**

## Transportation Engineering Technology

- ◆ **Highway Construction**
- ◆ **Highway Design**
- ◆ **Highway Traffic Operations**
- ◆ **Highway Surveys**
- ◆ **Bridge Safety Inspection**
- ◆ **Highway Materials**
- ◆ **Highway Maintenance**
- ◆ **Erosion & Sediment Control**

## Construction Materials Testing

- ◆ **Asphalt**
- ◆ **Concrete**
- ◆ **Soils**

## 44 years of service to the industry ...

- ❖ **Over 33 national certification programs.**
- ❖ **Over 113,000 technicians certified to date.**
- ❖ **A database of over 37,000 active certificants.**
- ❖ **Over 13,000 written exams administered annually.**
- ❖ **An expanding network of 170 test centers.**

## NICET in 2005 .... continues to

- ❖ Focus on customer service.
- ❖ Build stakeholder relationships.
- ❖ Update existing programs to suit industry needs.
- ❖ Develop new programs.

## AASHTO SCOC Environment & Human Resources Qualification/Certification Questionnaire

- ❖ National Questionnaire submitted on November 22, 2004 to 56 AASHTO Construction Member Organizations
- ❖ 33 Respondents, including Ontario Province and PA Turnpike Commission
- ❖ Three Questions
- ❖ Objective: Determine the Status of Qualification/Certification Requirements being used by the AASHTO Member Organizations

### AASHTO SCOC E&HR Questionnaire Question 1

Other than materials testing, what qualifications/certifications do states require or use for their field inspection technicians?

Qualification/ Certification Subject Area	States or Entities	Qualification/ Certification
Traffic Control/Work Zone	4	State-sponsored programs, Rutgers University
Erosion Control/Storm Water	6	State-sponsored programs, South Carolina/Clemson University
Bridge Safety Inspections	4	State-sponsored programs, NACE, NICET (3)
Highway/Transportation Construction Inspection	12	State-sponsored programs, NICET (5)

### AASHTO SCOC E&HR Questionnaire Question 2

What regional (NETTCP, WAQTC, SETFTTQ, M-TRAC, etc.), National (NICET), or other state qualification/certification programs for field inspection do states accept or use as an equivalent, if any?

Qualification/ Certification	States or Entities	Qualification/ Certification Subject Area
NACE	1	Bridge painting inspection
Other state-sponsored programs	1	Bridge safety inspection, Highway/bridge construction
NICET	7	Bridge safety inspection, Highway/transportation construction inspection, Highway traffic operations

### AASHTO SCOC E&HR Questionnaire Question 3

Do states require or encourage private firm (CEI) field inspection technician personnel to be qualified/certified?

Qualification/ Certification Subject Area	States or Entities	Qualification/ Certification
Traffic Control/Work Zone	3	State-sponsored program
Erosion Control/Storm Water	6	State-sponsored program, South Carolina/Clemson University
Bridge Safety Inspections	4	State-sponsored program, NACE, NICET (3)
Highway/Transportation Construction Inspection	14	State-sponsored program, NICET (7)

## NICET National Construction Certification Program Purpose

- ❖ To provide an **independent evaluation** of the technical knowledge and experience required to be a competent roads/streets construction inspector
- ❖ To define and support a **focused career path** for roads/streets inspectors and engineering technicians

## Nationwide Construction Inspection Steering Committee

- ❖ FHWA/ Office of Asset Management
- ❖ FHWA/ National Highway Institute
- ❖ FHWA/ Resource Center
- ❖ Virginia DOT
- ❖ Nebraska DOT
- ❖ Pennsylvania DOT
- ❖ Oregon DOT
- ❖ Pennsylvania Turnpike Commission
- ❖ Mississippi DOT
- ❖ Kentucky Transportation Cabinet
- ❖ North Carolina DOT
- ❖ (FAA)/Airport Engineering Division
- ❖ American Public Works Association (APWA)
- ❖ Construction Management Association of America (CMAA)
- ❖ National Association of County Engineers (NACE)
- ❖ Wilbur Smith Associates
- ❖ PBSJ
- ❖ Urban Engineers
- ❖ JUMP/ Vollmer Associates
- ❖ The Port Authority of New York and New Jersey
- ❖ Hampton Roads Public Works Academy
- ❖ Granite Construction
- ❖ Associated General Contractors of America (AGC)

## Construction Inspection Steering Committee Meeting June 17, 2005

### Established New Transportation and Public Works Construction Inspection Program Framework with:

- ❖ Highway, Airfield, Transit, and Public Works tracks with the ability to crosswalk between tracks
- ❖ Five levels of certification. First 2 levels common for all tracks

## Program Development Track

- ◆ STEERING Committee Met June 17, 2005
- ◆ DEVELOPMENT Committee Meetings – 1 to 2 day meetings Fall 2005 and Winter 2006
- ◆ Reviewed and Refined by Subject Matter Experts from AASHTO SCOC Members - Coordinated with FHWA- TCCC Training Matrix
- ◆ Validated by Construction Industry Stakeholders form ACEC, APWA, NACE, ARTBA, AGC, ASA, etc
- ◆ Existing Test Questions to be Reviewed & Revised, New Test Questions to be Written

## Highway Construction Inspection Development Committee

- ◆ FHWA
- ◆ AASHTO SCOC
- ◆ Turnpikes
- ◆ ARTBA
- ◆ Contractors
- ◆ CMAA
- ◆ ACEC
- ◆ AGC/AIC
- ◆ APWA/HRPWA
- ◆ NACE

## NICET HIGHWAY CONSTRUCTION PROGRAM UPDATE PROPOSED DEVELOPMENT COMMITTEE AS OF 07/31/2005

- ◆ \*Ken Jacoby/Chris Newman FHWA Office of Asset Management
- ◆ \*Douglas Townes FHWA Resource Ctr. Contract Admin. Engineer
- ◆ Eduardo Calderon FHWA Eastern Federal Lands Construction Engineer
- ◆ \* Dan Liston Virginia DOT -State Construction Mgt. Engineer
- ◆ \*Steve Bartkos NEDOT-Mgr. Asst. State Construction Engineer
- ◆ \*Jim Tyman New York DOT-State Construction Engineer
- ◆ \*James Gower Oregon DOT State Construction Engineer
- ◆ \*Chris Riley PENNDOT-Mgr. Construction Inspection Program
- ◆ \*James Twedt Mississippi DOT District Engineer
- ◆ \*Michael Phillips PA Turnpike Authority Program Manager
- ◆ \*John Epps Granite Construction/ NAPA Representative
- ◆ \*Todd Lynn APAC, Inc

## NICET HIGHWAY CONSTRUCTION PROGRAM UPDATE PROPOSED DEVELOPMENT COMMITTEE AS OF 07/29/2005

- \*Ken Freyer Wilbur Smith Assoc. Midwest CEI Services Mgr
- \*Doug Buchek Urban Engineers Vice President, PA/CMAA
- \*Robert Samson Vollmer Associates Partner, NY JUMP Co-Chair
- John Price Parsons Brinkerhoff, Inc. SC Senior Inspector
- Hampton Roads Academy/APWA
- Maricopa County, AZ/NACE
- ARTBA

### NICET Program Update Activity ...

- ❖ Construction Materials Testing
- ❖ Highway Construction Inspection
- ❖ Highway Maintenance
- ❖ Highway & Roadway Design
- ❖ Stormwater & Wastewater Systems Construction Inspection
- ❖ Stormwater & Wastewater Collection System Performance

ThankYou!

Questions?

[www.nicet.org](http://www.nicet.org)



## 14 Certification Programs

- Concrete Field Testing Technician
- CSA Concrete Field Testing Technician
- Concrete Lab Testing Technician 1
- Concrete Lab Testing Technician 2
- Concrete Strength Testing Technician
- Aggregate Field Testing Technician\*
- Aggregate Lab Testing Technician\*
- Concrete Construction Special Inspector
- CSA Concrete Construction Inspector
- Transportation Construction Inspector
- Flatwork Finisher & Technician
- Tilt-Up Supervisor & Technician
- Shotcrete Nozzleman Wet-mix Process
- Shotcrete Nozzleman Dry-mix Process

**\*AASHTO-based**

## Structure

- **8 Certification Committees**
- **100 plus Local Sponsoring Groups**
- **20,000 plus exams administered annually**
- **72,000 plus current certifications**
- **44 countries represented by residence**
- **Local/regional industry administrative participation**

## Process

- **ACI Certification Committees** develop and maintain program policies, exams, and study materials - committee participation is open
- **ACI-Approved Local Sponsoring Groups** administer exams following ACI policies and guidelines, return exam materials to ACI HQ - participation in LSGs is open
- **ACI Headquarters** grades exams, evaluates work experience, issues reports and/or wallet cards and certificates, retains examination records, continually monitors statistical performance of programs, updates website rosters

## ACI Hallmarks

- Fair and valid written and performance exams, and a local/regional system through which to administer them
- Issuance of Reports, Certification Cards & Certificates within 10 business days of receipt of the exams
- Training materials keyed to current exams and revised regularly to keep pace with latest standards
- First-pass verification of certification credentials through the ACI Certified Personnel Directory anytime [www.ACICertification.com](http://www.ACICertification.com)
- Mechanism to deliver specific rider exams
- Infrastructure to deliver exams in Spanish
- Partnership with local/regional industry

## New Programs Under Consideration

Pervious Concrete Installer (NRMCA)  
 Roller Compacted Concrete Testing Tech  
 Self-Compacting Concrete Testing Tech  
 Masonry Testing Tech  
 Base Materials Testing Tech (Soils)  
 Spec. Comm./Indust. Conc. Floor Finisher  
 Conc. Trans. Inspector - Level I  
 Certified Quality Technical Manager (P2P)  
 High Performance Conc. Finisher  
 Decorative Conc. Craftsman



**American Concrete Institute®**

*Advancing concrete knowledge*

**[www.ACICertification.com](http://www.ACICertification.com)**



## Support for Technician Training Programs

Susan Schemmel

M-TRAC August 2005 eTEC LLC

## Background

- Located in Brandon, SD
- Formally incorporated in SD in 2003
- eTEC creates training and educational products focused on construction materials testing
- Have begun our expansion to include aggregates, asphalt, concrete, and soils tests

M-TRAC August 2005 eTEC LLC

## Our Goals

- To provide high quality products that support technician training and certification programs
- To meet the needs of varied learning styles
- To offer products that are based on AASHTO, ASTM, and State DOT standards
- To be consistent with current test standards
- To offer products in Spanish

M-TRAC August 2005 eTEC LLC

## A Typical Training Module



M-TRAC August 2005 eTEC LLC

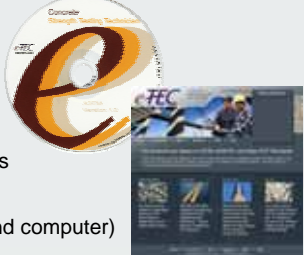
## A Tailored Training Module



M-TRAC August 2005 eTEC LLC

## Varied Delivery Modes

- Currently
  - ✓ Compact Disk
- January '06
  - ✓ Networked (SCORM)
  - ✓ On-line subscriptions
- In development
  - ✓ DVD (for your TV and computer)



M-TRAC August 2005 eTEC LLC



## Available in Fall 2005

- Concrete Field Testing Technician
  - ✓ Separate ASTM and AASHTO versions
  - ✓ ASTM with, or without, pdf copies of the standards
  - ✓ Spanish edition (NEW)
  - ✓ Two modules on basic concrete technology (NEW)
  - ✓ Video demonstrations for sampling and equipment calibration (NEW)
  - ✓ Instructor CDs (higher resolution video)

M-TRAC August 2005

eTEC LLC

## New for January 2006

- Concrete Strength Testing Technician
  - ✓ Combined ASTM and AASHTO standards
- Proctor Test
  - ✓ Combined ASTM and AASHTO standards
  - ✓ Sample preparation
- Nuclear gauge
  - ✓ Safety and use training

M-TRAC August 2005

eTEC LLC

## Available Fall 2006

- Aggregate Testing Technician
  - ✓ laboratory and field
- We will be working with the AASHTO Materials Reference Laboratory (AMRL), and others, to identify vital training needs

M-TRAC August 2005

eTEC LLC

## Some Subtle Benefits

- Can reduce in-house printing efforts
  - ✓ participant notebooks can be included in an eTEC product
- Participants better prepared for live training
  - ✓ especially helpful when cross-training
- From training aid to reference document
  - ✓ content has value beyond the training program

M-TRAC August 2005

eTEC LLC

## Costs

- Products start at \$40 per user
- Significant discounts are available for volume sales, on-line subscriptions, and site licenses
- Most of the expense (if there is any) to tailor a product can be built into the per CD cost or site license.

M-TRAC August 2005

eTEC LLC

## Summary

- Content is always current with the standards
- A choice of delivery modes
  - ✓ CD, network, on-line subscription
- Products tailored to a specific training need
- Value added content
  - ✓ educational modules, equipment calibration

M-TRAC August 2005

eTEC LLC



# Questions ?

M-TRAC August 2005

©TEC LLC



## M-TRAC HMA UPDATES

John Hinrichsen  
Iowa D.O.T.

## M-TRAC HMA MATERIALS

- Created in 1998
- No formal updates since
- Individual States modified/updated

## M-TRAC HMA MATERIALS

- General updates to all AASHTO standards
- Updated titles
- Included additional text about individual state requirements.

## M-TRAC HMA MATERIALS

- AASHTO T 40 Sampling Bituminous Materials
- Terminology “asphalt cement” to “asphalt binder”
- Additional emphasis on safety
- Clarification of waste requirement

## M-TRAC HMA MATERIALS

- AASHTO T 168 Sampling Bituminous Paving Mixtures
- Added reference to automated truck samplers
- Added sampling from HMA plant

## M-TRAC HMA MATERIALS

- AASHTO T 312 Standard Method for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor
- Added reference to internal angle
- Removed N table and Nmax requirements

### **M-TRAC HMA MATERIALS**

- AASHTO T 166 Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens
- Clarified that the text covers only method A

### **M-TRAC HMA MATERIALS**

- AASHTO T 209 Theoretical Maximum Specific Gravity and Density of Hot-Mix Asphalt Paving Mixtures
- Clarified that the text covers only the flask method
- Added 50 mm and 37.5 mm sample sizes
- Added NIST traceable gauge
- Updated test method to 2005 standard

### **M-TRAC HMA MATERIALS**

- AASHTO T283 Resistance of Compacted Bituminous Mixture to Moisture-Induced Damage
- Updated test method to 2005 standard
- Removed optional use of loading strips and freeze cycle conditioning

### **M-TRAC HMA MATERIALS**

- AASHTO T 308 Determining the Asphalt Binder Content of Hot-Mix Asphalt (HMA) by the Ignition Method
- No significant changes

### **M-TRAC HMA MATERIALS**

- AASHTO R 30 Mixture Conditioning of Hot Mix Asphalt (HMA)
- Added reference to aging plant produced mixtures for absorptive aggregates
- Clarified thickness of loose mixture
- Clarified time of aging depending on purpose of tests to be performed

### **M-TRAC HMA MATERIALS**

- AASHTO M 323 & R35 Superpave Volumetric Mix Design
- Previously 3 provisional standards
- Not updated – Is there a need?
- Other Standards Needed?
- Quiz questions?

## M-TRAC PCC MANUAL

M-TRAC Meeting 2005  
Columbus, Ohio

## PREVIOUS WORK

- Started working on PCC after other manuals completed
- FHWA reorganized and M-TRAC work halted
- Materials originally developed are not organized, outdated
- Mostly pictures

## WAQTC PCC MANUAL

- Western Alliance Quality Transportation Construction
- Developed a PCC testing manual similar to M-TRAC's manuals
- We can use for credit
- Updated October, 2005

## DIFFERENCES

- M-TRAC
  - Format
  - Common Test Errors
  - Typical Test Results
  - Glossary Each Test Method
  - More detailed for instruction
- WAQTC
  - Include AASHTO Test Method

## TEST METHODS in WAQTC

- T 141 (WAQTC TM2) Sampling Concrete
- T 309 Temperature of Concrete
- T 119 Slump
- T 121 Mass per Cubic Foot, Yield, and Air Content
- T 152 Air Content by the Pressure Method
- T 23 Making and Curing Test Specimens

## T 141 SAMPLING

- WAQTC different from AASHTO T 141
- Tried to get AASHTO to change
- AASHTO
  - Mixer trucks – sample in increments from middle of load
- WAQTC
  - Mixer trucks – take sample after  $\frac{1}{2}$  yard<sup>3</sup> has been discharged



## WAQTC vs DEVELOPMENT

- Use WAQTC as is
- Use WAQTC without AASHTO specs
- Use WAQTC formatted similar to other M-TRAC manuals
- Use WAQTC adding other test methods
- Develop M-TRAC manual from scratch




## ADD OTHER TEST METHODS?

- T 22 Compressive Strength of Cylindrical Concrete Specimens
- T 97 Flexural Strength of Concrete (Third Point Loading)
- T 177 Flexural Strength of Concrete (Third Point Loading)
- T 231 Capping Cylindrical Concrete Specimens
- T 325 Maturity Testing



## WHAT DO YOU THINK?

- Will you use?
- Thoughts, suggestions, questions???????



# Extreme Makeover

Re-making Classroom Materials for Delivery On Line

August 2005

2

## Your Host

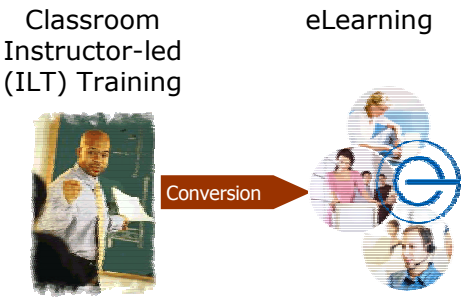
- Susan McDonald Osborn
- Human Performance Technology and Instructional Systems Design
- MA, Marymount University
- Corporate, Non-profit, Government Clients
- Classroom, eLearning & Blended Solutions
- Currently @ FHWA OPCD, Knowledge Application Team

3

## Today's Challenge

Classroom Instructor-led (ILT) Training

eLearning




4

## Today's Topics

- The Right Dumb Questions
- How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- Resource Requirements ≥
- Collaborative Process ≥
- Best Practices ≥
- Wrap-Up ≥

5

## The Right Dumb Questions



### Why?

- What benefits will you reap?
- What if you don't change?

Back to Table of Contents

6

## Why convert ILT?

### "Traditional" Reasons


- Lack of qualified instructors
- Lack of calendar time
- Lack of travel dollars
- Easy access to content at time of need

### Additional Reasons

- Learners with pre-requisite knowledge move thru training more quickly
- Facilitator has one-on-one time with learners who (1) need help or (2) need challenge

7

## The Right Dumb Questions



### What?

- What content will you convert?
- What content will not be converted?

8

## What content to convert?

**Excellent Candidate**

- Foundational knowledge
- Facts, concepts, principles, procedures

**Good Candidate**

- Any content that is "black & white"
- Interpersonal skills

**Poor Candidate**

- Content that is controversial and may cause emotional reaction in learners
- Content that requires equipment (lab)

9

## What content to convert?

**Can be practiced & tested online**

- Foundational knowledge
- Facts, concepts, principles, procedures


**More difficult to practice & test online**

- Interpersonal Skills

Hint: Use a blended approach...  
Teach online; encourage online chats; then practice/test in "classroom"

10

## The Right Dumb Questions



### Who?

- Which learners will accept change?
- Which learners will not?

11

## Who?


**Excellent Candidates**

Those who...

- Use computers as part of their work
- Motivated to increase their job KSAs
- Want to manage their own learning
- Have limited travel dollars
- Wish to minimize time away from their jobs
- Have taken an online class(es)
- Need accommodations

12

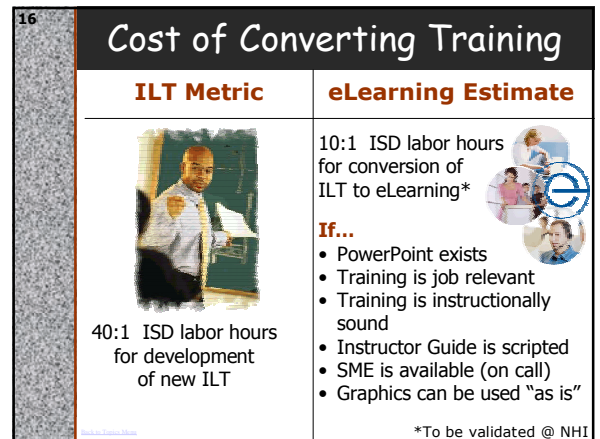
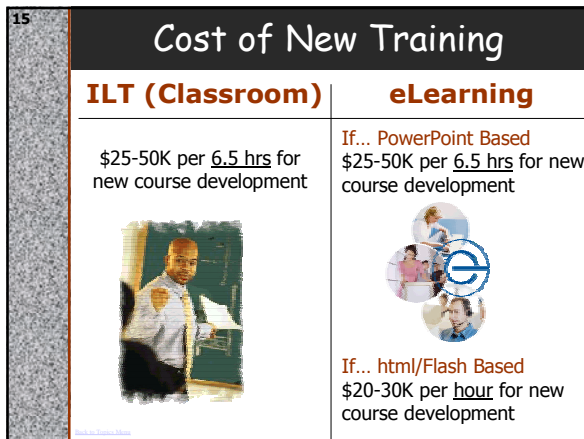
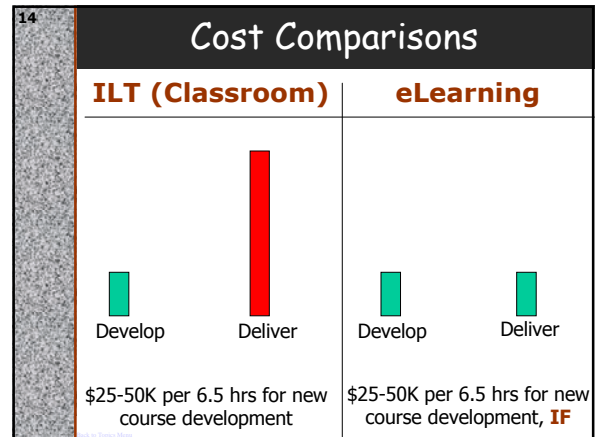
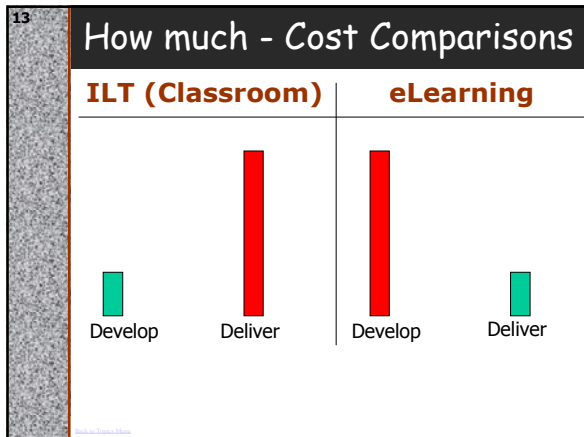
## The Right Dumb Questions



### How much?

- How do ILT costs compare to eLearning costs?
- How much budget is needed to convert ILT to eLearning?





17 **The Right Dumb Questions**

**How?**

- How will you select best online delivery option?
- What resources will you need?
- What process will you use?

18 **Online Delivery Options**

Let's talk about 3 eOptions...

- Resource Web Sites
- Web Conference Training
- Web-based Training

19

## Online Delivery Options

**First, two considerations for selecting the best online delivery option**

1. Need to Know vs. Nice to Know
2. Must Remember vs. Can Look Up

20

## Online Delivery Options

Nice to Know ?

Y

Extreme Makeover

ILT Materials

N

Need to Know

Extreme Makeover

eLearning

Online Reference

21

## Online Delivery Options

Can Look Up While Working?

Y

Extreme Makeover

ILT Materials

N

Need to Remember

Extreme Makeover

eLearning

Online Reference

22

## Online Delivery Options

**Goal is to Slim Down Training!**

**Before:**  
too much content  
Training & travel dollars wasted  
Learners frustrated, then forget

**After:**  
just enough content  
Training budgets wisely used  
Time away from job minimized  
Learners can immediately apply on the job

23

## Online Delivery Options

**Goal is to Slim Down Training!**

Train only on content that learner:

- Needs to Know
  - Content used on the job
- Must Remember (recall)
  - Content can't be looked up, on the job

Provide all other content as online reference material.

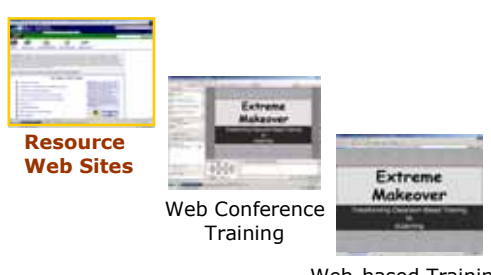
24

## Today's Topics

- ✓ The Right Dumb Questions ≥
- How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- Resource Requirements ≥
- Collaborative Process ≥
- Best Practices ≥
- Wrap-Up

25 **Online Delivery Options**

Let's talk about 3 eOptions...



**Resource Web Sites**


Web Conference Training

Web-based Training

26 **Online Docs - How at FHWA?**

Transform ILT Content to Online Reference


1. Online Hypertext Document
2. Community of Practice Web Site



27 **Online Docs - How at FHWA?**

Transform ILT Content to Online Reference


Online Hypertext Document



28 **Online Docs - How at FHWA?**


Transform ILT Content to Online Reference

Community of Practice Web Site



29 **Online Docs - How at FHWA?**

Community of Practice Web Site



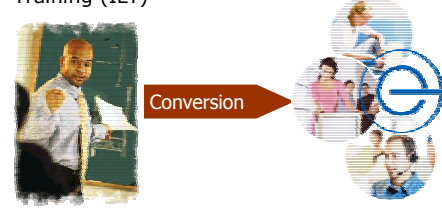
Reference Documents

30 **eLearning - How at FHWA?**

Transform ILT Content to eLearning

Classroom Instructor-led Training (ILT)

eLearning



Conversion

31 eLearning - How at FHWA?

Assuming PowerPoint slides are available...

ILT Materials PowerPoint Slides → Conversion → Web-based Materials

32 eLearning - How at FHWA?

Macromedia Breeze\*

ILT PowerPoint Slide Decks → Conversion → Web-based Materials

\*Effective October 1, 2005; today we use LiveMeeting

33 eLearning - How at FHWA?

ILT PowerPoint Slide Decks → Breeze Meeting → Web Conference Training (WCT)

ILT PowerPoint Slide Decks → Breeze Presenter → Web-based Training (WBT)

34 eLearning - How at FHWA?

1 Classroom ILT      2 Web Conference Training (WCT)      3 Web-based Training (WBT)

Same content, delivered three ways!

35 eLearning - How at FHWA?




In-person Instructor	Remote Instructor	No Instructor
Classroom ILT	Web Conference Training (WCT)	Web-based Training (WBT)

36 eLearning - How at FHWA?

In-person Instructor	Remote Instructor	No Instructor
Classroom ILT	Web Conference Training (WCT)	Web-based Training (WBT)
Synchronous	Synchronous	Asynchronous




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## eLearning - How at FHWA?

In-person Instructor	Remote Instructor	No Instructor
		
Classroom ILT	Web Conference Training (WCT)	Web-based Training (WBT)
Synchronous	Synchronous	Asynchronous
Travel	No Travel	No Travel

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## eLearning - How at FHWA?

In-person Instructor	Remote Instructor	No Instructor
		
Classroom ILT	Web Conference Training (WCT)	Web-based Training (WBT)
Synchronous	Synchronous	Asynchronous
Travel	No Travel	No Travel

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## WBT - How at FHWA?

### Web-based Training (WBT)




Extreme Makeover  
Transforming Classroom-Based Training to eLearning

40

## WBT - How at FHWA?

### Five-step Conversion Process



.ppt file

- Review PowerPoint slides for instructional integrity: job relevancy, accuracy, flow and opportunities for individual, online exercises


- Maximize learner engagement
- Take out the nice to know
- Streamline text
- Use visuals
- Look for practice opportunities
- Develop testing strategy

41

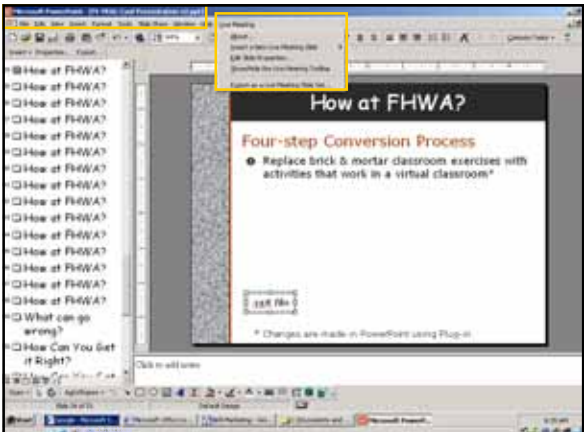
## WBT - How at FHWA?

### Five-step Conversion Process

- Replace brick & mortar classroom exercises with activities that work in self-paced, online learning



.ppt file



How at FHWA?

### Four-step Conversion Process

- Replace brick & mortar classroom exercises with activities that work in a virtual classroom

\* Changes are made in PowerPoint using Flip-it!




43

## WBT - How at FHWA?

### Five-step Conversion Process

**2** Continued



.ppt file

Replace brick & mortar classroom exercises with activities that work in a self-paced, online mode

- Multiple Choice Questions
- True/False
- Scenario-based Questions


44

## WBT - How at FHWA?

### Five-step Conversion Process

**3** Create media:

- Script for recorded audio narration



.ppt file


- Custom illustrations, royalty-free photos and graphics

45

## WBT - How at FHWA?

### Five-step Conversion Process

**4** Record audio narration




46

## WBT - How at FHWA?

### Five-step Conversion Process

**5** Upload PowerPoint file to Web conferencing tool and test




47

## WBT - How at FHWA?




Finalize:

- Beta test
- Revise
- Pilot test
- Revise
- Re-test
- Post on server
- Provide access via LMS



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## eLearning - How at FHWA?

In-person Instructor	Remote Instructor	No Instructor
		
Classroom ILT	<b>Web Conference Training (WCT)</b>	Web-based Training (WBT)
Synchronous	Synchronous	Asynchronous
Travel	No Travel	No Travel

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## WCT - How at FHWA?

### Web Conference Training (WCT)




Microsoft LiveMeeting Interface

50

## WCT - How at FHWA?

### Four-step Conversion Process



.ppt file

- Review PowerPoint slides for instructional integrity, job relevancy, accuracy and opportunities for online interactivity


- Maximize learner engagement
- Take out the nice to know
- Minimize lecture
- Use visuals
- Look for practice opportunities

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## WCT - How at FHWA?

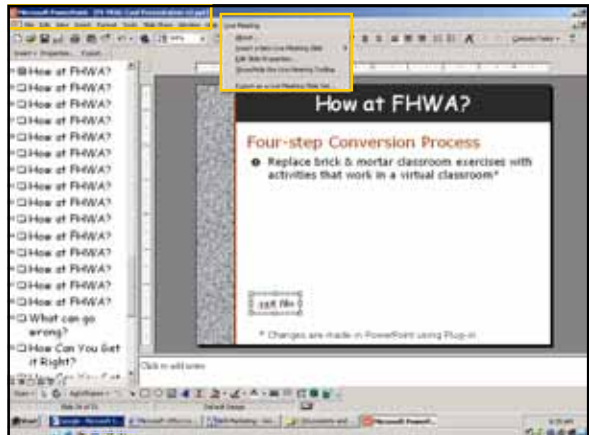
### Four-step Conversion Process

- Replace brick & mortar classroom exercises with activities that work in a virtual classroom\*



Changes are made in PowerPoint using LiveMeeting Plug-in


.ppt file



53

## WCT - How at FHWA?

### Four-step Conversion Process



.ppt file

- Replace brick & mortar classroom exercises with activities that work in a virtual classroom\*

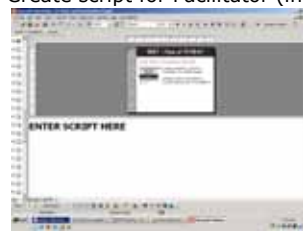
- Opinion Questions
- Multiple Choice Questions
  - Verbal (phone)
  - Written (text entry)
  - Indicate w/ checkmark
- Discussion Questions
  - Verbal
  - Written

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## WCT - How at FHWA?

### Four-step Conversion Process

- Create script for Facilitator (in Notes Pages)



.ppt file

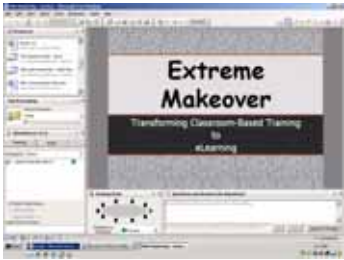
- Embed custom illustrations, royalty-free photos and graphics

55

## WCT - How at FHWA?

**Four-step Conversion Process**

- 1. Upload PowerPoint file to Web conferencing tool and test




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## WCT - How at FHWA?

As with any training:

- Pilot test
- Revise
- Re-test
- Launch



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## Today's Topics

- ✓ The Right Dumb Questions ≥
- ✓ How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- Resource Requirements ≥
- Collaborative Process ≥
- Best Practices ≥
- Wrap-Up


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## Resources

**Resource Selection is Key!**



Repurpose Existing PowerPoint (ILT Materials)




Dynamic Duo:  
Instructional Systems Designer **AND** Subject Matter Expert

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## Resources

**Resource Selection is Key!**




	Role
Instructional Systems Designer	
Subject Matter Expert	

60

## Resources

**Resource Selection is Key!**



	Role
Instructional Systems Designer	Validate Objectives
	Validate Audience
Subject Matter Expert	Recommend delivery media
	Chunk/Sequence Content
	Select Teaching Strategy
	Edit Technical Writing
Subject Matter Expert	Conduct QC/QA
	Provide Technical Content
	Revise Technical Language
Subject Matter Expert	Represent Learners
	Review visuals



61

## Resources

### Other Must-Have Team Members

	Role	
	Graphic Designer	Create overall "look and feel" Develop custom graphics Treat royalty-free photos
	Audio Talent	Record audio narration
Reviewers		Review and provide technical feedback
Pilot Learners		Complete eLearning modules and provide feedback

62

## Today's Topics

- ✓ The Right Dumb Questions ≥
- ✓ How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- ✓ Resource Requirements ≥
  - Collaborative Process ≥
  - Best Practices ≥
  - Wrap-Up ≥

63

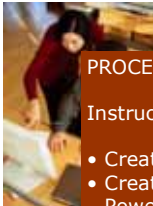
## Collaborative Process

### Process is Key!

**PROCESS**

Instructional Systems Designer (ISD):

- Creates "look and feel" PowerPoint
- Creates skeletal design of training in PowerPoint
- Passes off skeletal design to Subject Matter Expert




64

## Collaborative Process

**PROCESS**

Subject Matter Expert (SME):

- Fills in the blanks in skeletal design with technical content
  - Verbatim Script
  - Slide Text
- Passes back draft PowerPoint to ISD




65

## Collaborative Process

**PROCESS**

Instructional Systems Designer (ISD):

- Reviews SME's work and smooths out the writing, where needed
- Adds interactivity (practice exercises and quizzes)




66

## Collaborative Process


**PROCESS**

Graphic Artist, ISD, and SME:

- Work together to add graphics to PowerPoint



67 Collaborative Process




PROCESS

ISD and SME:

- Review final draft
- Submit final draft to reviewers for feedback

68 Collaborative Process



PROCESS


ISD and SME:

- Review comments submitted by reviewers
- Determines which are valid
- Finalize PowerPoint file
  - Text on slide
  - Script in Notes Pages
  - All graphics

69 Collaborative Process

Final PowerPoint File (.ppt file)

Web Conference Training



Conversion

PROCESS


ISD:

- Uploads .ppt file to server
- Tests (quality checks)
- Helps prepare Facilitator
- Attends pilot session

70 Collaborative Process

Final PowerPoint File (.ppt file)

Web-based Training



Conversion

ISD:


- Adds audio narration
- Uploads .ppt file to server
- Tests (quality checks)
- Monitors pilot

71 Today's Topics

- ✓ The Right Dumb Questions ≥
- ✓ How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- ✓ Resource Requirements ≥
- ✓ Collaborative Process ≥
  - Best Practices ≥
  - Wrap-Up ≥

72 What can go wrong?

Garbage In Conversion Garbage Out



Poor Quality, Low-Impact Classroom Materials

Conversion

Poor Quality, Low-Impact eLearning

73

## What can go wrong?



Spread training out over time to avoid information overload!

74

## How Can You Get it Right?

### Best Practices for Conversion

- Start with PowerPoint
- Adhere to Adult Learning Principles
  - Include only job relevant content
  - Provide just enough content (streamline)
- Convert "extra" content to online resources
- Use pictures instead of words where possible
- Allow plenty of calendar time to complete WBT
- **Don't confuse two key roles:**
  - Rely on an Instructional Systems Designer to create overall design of training and identify teaching strategies
  - Rely on a Subject Matter Expert to supply the technical content (script)

75

## Today's Topics

- ✓ The Right Dumb Questions
- ✓ How FHWA Converts ILT to eLearning
  1. Online Documents ≥
  2. Web-based Training (no instructor) ≥
  3. Web Conference Training (instructor) ≥
- ✓ Resource Requirements ≥
- ✓ Collaborative Process ≥
- ✓ Best Practices ≥
- Wrap-Up

76

## Wrap-Up

What one new idea did you get from this session?

Act on it!

Share it!



77

## Curious about?



78

## Contact Me



Susan McDonald Osborn  
FHWA OPCD  
Knowledge Application Team  
(703) 235-0541  
susan.mcdonald.osborn@fhwa.dot.gov

Brought to you by 



## A Summary of the Technician Certification Program



Frances T. Griffith

University of Arkansas

Department of Civil Engineering



## The Agreement

28 training sessions (minimum) per year

### AHTD

- defines training/certification needs
- provides guidelines and oversight (Annual Review)
- subsidizes program costs
- selects AHTD participants

### CTTP

- develops/maintains curricula
- schedules classes
- conducts training/certification testing
- maintains qualification/certification records
- selects non-AHTD participants

## The Program

Basic Aggregates



Soils/Aggregate Technician

Portland Cement Concrete Technician

Hot-Mix Asphalt Concrete Technician

## Basic Aggregates

- Sampling AASHTO T2
- Sample Reduction AASHTO T248
- Moisture Content AASHTO T255
- Deleterious Matter AHTD 302
- Crushed Particles AHTD 304
- Gradation Analysis AASHTO T11, T27
- Specific Gravity AASHTO T84, T85

## Soils/Aggregate Field Technician

- Sampling Soils AHTD 30
- Dry Prep of Soils AASHTO T87, AHTD 351
- Wet Prep of Soils AASHTO T146
- Moisture Content of Soils AASHTO T265, AHTD 348
- Moisture Content - Speedy AASHTO T217, AHTD 347
- Sieve Analysis Selected Materials AHTD 352
- Particle Size Analysis AASHTO T88
- Liquid Limit AASHTO T89, AHTD 353

(continued)

## Soils/Aggregate Field Technician

- Plastic Limit AASHTO T90, AHTD 354
- Standard Proctor AASHTO T99, AHTD 350
- Modified Proctor AASHTO T180
- Zero Air Void Curve AHTD 356
- Coarse Aggregate Correction AASHTO T224, AHTD 344
- Family of Curves AASHTO T272, AHTD 355
- In Place Density - Nuclear AASHTO T310, AHTD 330



## Portland Cement Concrete Field Technician

- Sampling ASTM C172, AASHTO T141
- Temperature ASTM C1064, AASHTO T309
- Slump ASTM C143, AASHTO T119
- Density ASTM C138, AASHTO T121
- Air Content - Pressure Method ASTM C231, AASHTO T152
- Air Content - Volumetric ASTM C173, AASHTO T196
- Concrete Test Specimens ASTM C31, AASHTO T23

## Hot-Mix Asphalt Concrete Field Technician

- Random Number AHTD 465
- Sampling Bituminous Mixes AASHTO T168
- Density by SGC AASHTO T312
- Bulk Specific Gravity AASHTO T166
- Maximum Specific Gravity AASHTO T209
- Percent Air Voids AASHTO T269
- AC Content - Nuclear AASHTO T287, AHTD 449
- AC Content - Ignition Oven AASHTO T308

(continued)

## Hot-Mix Asphalt Concrete Field Technician

- In Place Density - Nuclear ASTM D2950, AHTD 461
- Superpave Volumetric Mix Design AASHTO M323
- Mixture Conditioning AASHTO R30
- Superpave Volumetric Design AASHTO R35

## Classroom and Laboratory Training



- 2 ½ day format
- Classroom instruction
- Homework
- Written Exam
- Laboratory Demonstration
- Laboratory Hands on
- Performance Testing

## Certification Testing

### Written



- primarily multiple-choice format
- minimum passing score: 70%

### Performance



- hands on testing
- pass/fail
- two attempts at each area

## Technician Training/Certification

- Certification Issued (2004): 409
  - 144 Recertifications
  - 265 New Certifications
- Certifications Issued (to date):
  - AHTD - 2186
  - Contractor - 2054

## Reciprocity

---

- Case by Case Basis
  - Comparison of Class Contents
  - Review Testing

## Dan Flowers Education and Training Facility

---



## The Future

---

- PCC Pavement Repair
- Roadway Construction Control
- Lightweight Profilometer

[WWW.CTPP.ORG](http://WWW.CTPP.ORG)

---





## TECHNICAL TRAINING AND CERTIFICATION PROGRAM

Chris Anderson  
TTCP Coordinator

- WEBSITE
  - <http://www.dot.state.ia.us/materials/training.htm>
- Information contained
  - Registration & Class Information
  - Certified Technicians
  - Program Specifications
  - Training Manuals
  - Contacts

- Construction Industry Funds
  - \$500,000 per year
  - Used for training by any one that supplies materials or performs construction on DOT projects

- Developing and Transferring some trainings to CBT and/or WBT
- Plan to use for short, specific training/updates
- Don't see using for any of the certification training/testing

- Continue to work with DMACC
- New lab facility on Campus this year
- Excellent arrangement
  - DMACC arranges training
  - DOT continues to develop materials and administer the certification program
  - DMACC assists DOT with training equipment, instructor courses, etc.

- Highway Division Training Academy
- Basic Training
  - New employees
  - Safety, Maintenance, Materials/Construction
- Matrices
- Lead Worker Training

- Although old program continue to tweak each year.
- Currently looking at:
  - Testing Procedures
  - What is required to accommodate special needs, i.e., disabilities, foreign languages, etc.

- Instructor Development for Technicians Course
  - Not required but highly recommended
  - Offering three times this fall
  - Hiring an instructor (Nancy Rosenshine)
  - Could easily be put on by state if instructor available

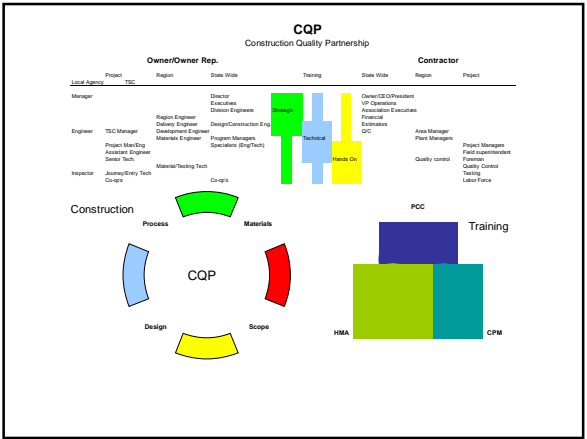
- Questions ?????????????????????????????????

# MICHIGAN'S TECHNICAL TRAINING AND CERTIFICATION PROGRAM



- ## TECHNICIAN SKILLS PLAN
- New Skills Plan for Construction Technicians rolled out in April 2005
  - Industry certifications needed for promotion:
    - ✓ Two industry certifications needed for top level construction techs: Concrete, Density, Bituminous QA/QC, or Aggregate
    - ✓ Senior techs must also have the Environmental Permits: Soil Erosion & Sedimentation Control and Storm Water Operator
- 

- ## CONSTRUCTION QUALITY PARTNERSHIP (CQP)
- Partnering with industry.
  - Determining training needs for both industry and MDOT.
  - Goal is to create statewide inspection certifications within all entities. Certifications will be part of the pre-qualification process to work for MDOT
- 








## New Mexico Technician Training and Certification Program (TTCP)

**M-TRAC Annual Meeting  
2005  
Columbus, Ohio**

### TTCP Board of Directors



- State Materials Engineer
- State Construction Engineer
- Two Contractor Representatives

### New Mexico TTCP Training/Certification Facility



**Training Lab #1:**

- Asphalt/Superpave
- Inertial Profiler
- Eight Work Stations



**Training Lab #2:**

- Aggregate
- Soil
- Concrete
- Nuclear Densometer
- 16 Work Stations

### New Mexico TTCP - Training and Certification Modules

Modules:	Days:	Cost:	Class Size:
• Aggregate Training	- 5	- Free	- 16
• Aggregate Certification	- 3	- \$350	- 12
• Soil Training	- 2	- Free	- 16
• Soil Certification	- 2	- \$300	- 16
• Asphalt/Superpave Training	- 4	- Free	- 10
• Asphalt/Superpave Certification	- 3	- \$350	- 10
• Concrete Field Technician Training	- 1	- Free	- 20
• Concrete Field Technician Cert.	- 1	- \$300	- 20
• Concrete Laboratory Train. & Cert.	- 1	- \$100	- 20
• Nuclear Densometer Training	- 2	- Free	- 20
• Nuclear Densometer Certification	- 2	- \$300	- 20
• Inertial Profiler Inspector Training	- 1	- \$100	- 30
• Inertial Profiler Operator Cert.	- 1	- \$100	- 10
• Superpave Mix Design Training	- 4	- Free	- 8
• TTCP Overview for Decision-Makers	- 3	- Free	- 16


### How Does The Cooperative Effort Work?



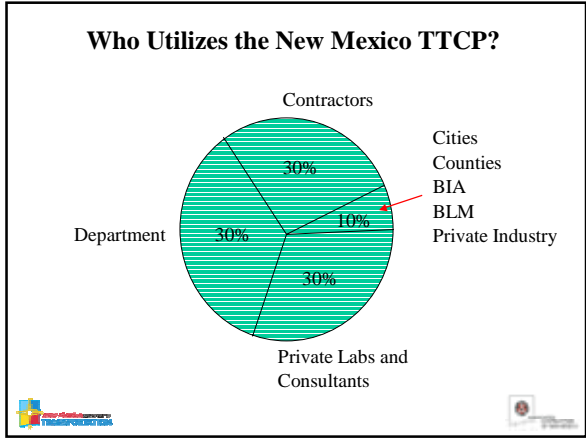
- Two Full-Time Trainers
- Testing Equipment
- Lease ACNM Facility

- Provide Facility
- Maintain Database
- Provide Billing/Collection
- Input From Industry
- Hire Proctors

### Schedule of TTCP Classes



- Classes Provided Year-round
- Schedule is Six Months Out
- Classes Offered Per Demand
- Schedule Updated Every Two Weeks to Show Availability
- All Classes Offered at the TTCP Facility in Albuquerque



- ### New Items for New Mexico 2004-2005
- **Inertial Profiler Inspector Training**
  - **Inertial Profiler Operator Certification**
  - **Inertial Profiler Machine Certification**



### TTCP Administrators

<p><b>Brian Legan</b> NMDOT (505) 344-2072, ext.18 brian.legan@nmshtd.state.nm.us</p>	<p><b>Joe Kinnikin</b> ACNM (505) 344-2072, ext. 12 joek@aconm.org</p>
---	--

QUESTIONS?

Visit our Web Site at [aconm.org](http://aconm.org)



## Ohio Aggregate Technician Training

**Ohio Level I, Level II & Level III**



Pat Jacomet OAIMA

### Brief History of Training for Aggregate Technicians

- 1998 ODOT and Ohio Aggregate Assn. formed committee and developed what we called at the time “Aggregate Sampling and Testing Technician”
- May 1999 we conducted the first training session including 225 ODOT and supplier personnel

### Driving Forces:

- Federal Regulations
- Warranties
- Design/Build Contracting
- ODOT & Industries Desire to Improve It’s Products, Quality and Image




### Code of Federal Regulations 23 Part 637 Calls For:

- Qualified Technicians
- Acceptance Program
- Independent Assurance Program

### A Cooperative Effort

**Ohio Department of Transportation**



Federal Highway Administration

**FHWA**

Ohio Aggregates and Industrial Minerals Association



### New training was needed to meet FHWA/ODOT and suppliers needs

- Level 1 Ohio Aggregate Technician
- Person who obtains this certificate will be trained in stockpile management processes, load out procedures and how to take a sample properly. Must pass written test.

## Level I Format

- Classroom Setting (Portable Program)



## Level I

- Visual Training
- Video
- Slides
- Live Segregation Model

- Written Manual



- Written Test

## Level I Aggregate Technician

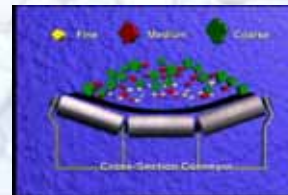
Focus On Stockpile Management & Material Recovery

*\*Stresses Safety\**



## Level I Topics

- Segregation of Aggregates - The Separation of Coarse and Fine Particles



FHWA Stockpile Video

## Level I (cont.)

### Stockpiles

- Types
- Influencing Factors
- Corrective Actions
- Load-Out - Sampling
- Safety Concerns
- Consequences



## Proper Material Load-Out & Sampling





### Real-Life Segregation Models



### Proper Sampling Techniques



### Level I-Hands-On Learning



### Review of Safety Procedures and Equipment

- On-Site Notification-Chaperone – MSHA Required
- Steel-Toe Boots
- Hard-Hat
- Safety Glasses
- Safe Sampling Locations
- Lock-Out/Tag-Out



**CAUTION**  
BE SAFE  
LOCK IT OUT

### Work Smart

**DANGER**  
KEEP GUARDS  
IN PLACE

**WRONG  
WAY**



### Discourage Unsafe Practices- "The Safe Way is the Right Way"



**Stress Consequences of Poor Techniques  
Load-Out & Sampling**

- Shut Down
  - Time
- New Mix Design
  - Downtime
- Lane Closures
  - Penalties
  - Litigation



**LEVEL II OHIO AGGREGATE  
TECHNICIAN**

- Level 1 is a prerequisite
- Person who obtains this certificate will be trained in basic Aggregate tests Gradation, Decant, Unit Weight and % Fractured in gravels. Must pass written test and then show physical proficiency in each test.

**Level II Topics**



All AASHTO Based -ODOT Modified  
FHWA-M-TRAC Training Materials

Review of Sampling - Sample Reduction

- Minus No. 200 (Decant)
- Sieve Analysis
- Unit Weights
- Fractured Particles
- Visual Deleterious



**ODNR-Geological Survey,  
Alum Creek**



**James A. Rhodes College**



**Level II Format**

Day 1

- Classroom Setting  
& Written Testing



Day 2

- Hands-On Examination
- Monitored by Qualified, Experienced Trainers.



**ODOT/OAIMA Level 3 Aggregate Technician**

- ODOT/OAIMA committee is developing a Level III Technician Course that will be a voluntary Technician series for ODOT personnel and aggregate producer/suppliers
- Prerequisites – Level I & Level II

- Covers basic quality control tests including Sodium Sulfate Soundness, L.A. Abrasion, Deleterious, Specific Gravity, Sand Equivalent, Fine Aggregate Angularity & Micro Deval
- 2 Day Classroom Training with written test.
- Individual Proficiency testing for quality tests chosen by the technician.



**Results So Far**

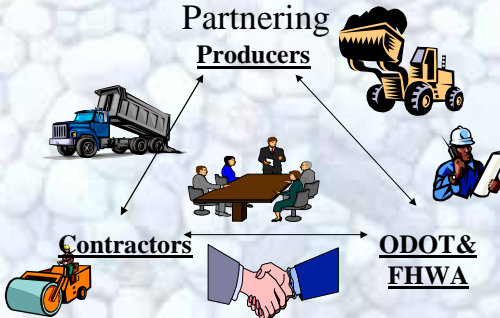
A True Win:Win



**Progress Report:**  
**Intangibles**

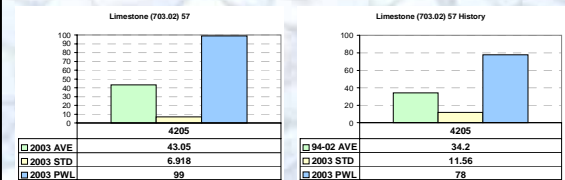
- Increased Quality Awareness**
- Co-operation between Agency, Contractors & Industry**
- Partnering in Developing QC/QA Program**

***Improved Communication & Partnering***  
**Producers**



**Progress Report:**

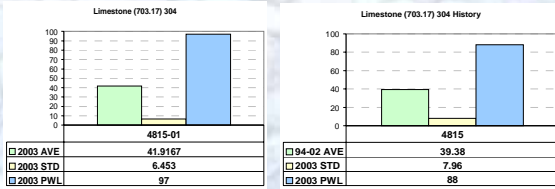
**Measurable Results**  
**ODOT 57 [703.02] Comparison**



Lower Standard Deviation – Raised Average



### [703.17] 304 Comparison



Lower Standard Deviation and Raised Average

## Training So Far:

### Level 1

3028 ODOT & Industry Personnel Trained &

Active

### Level 2

1009 Trained & Active

**Consistency+Reproducibility+Safety=  
Improved Quality**



**More Attention to Detail**



More Information at:

**WWW.OAIMA.ORG**



**1-800 OH ROCKS**



## Why was the Highway Technician Series Created?

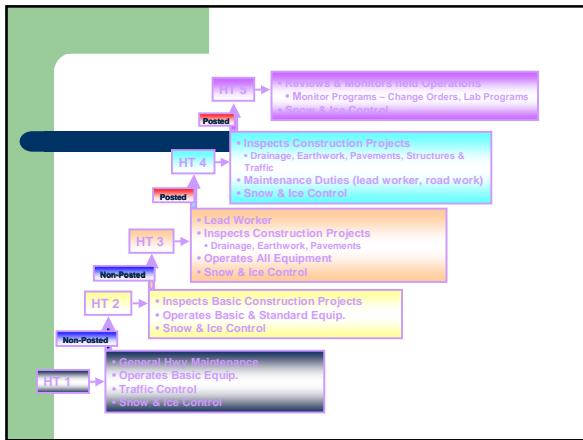
- Provide a more flexible workforce
  - Contract Administration (Project Inspection)
  - Highway Maintenance
- Well trained & certified workforce
- Provide a career ladder for employees

## Memorandum of Understanding (MOU) ODOT & OCSEA

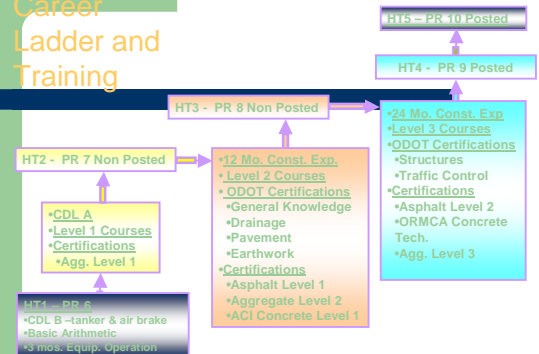
- Ratified November 26, 2003
- Initial 3 year implementation period
- Requirements
  - Training
  - Testing
  - Certifications
  - Construction Experience

## Implementation

- New Classification Series/Class Specs
  - Project Inspectors
  - Material Controllers
  - Highway Maintenance Workers
  - Bridge Workers
  - Routemarkers



## Career Ladder and Training



CDL B		12 Mo. Const. Insp. Exp.	24 Mo. Total Const. Insp. Exp.
Level 1 Courses		Level 2 Courses	Level 3 Courses
Certifications		ODOT Certifications	ODOT Certifications
•Aggregate Level		•General Knowledge	•Structures
		•Drainage	•Traffic Control
		•Pavement	
		•Earthwork	
		Certifications	Certifications
		•Asphalt Level 1	•Asphalt Level 2
		•Aggregate Level 2	•ORMCA Concrete Tech.
		•ACI Concrete Field Tech. Level	•Aggregate Level 3
Title	PR	#	
HMW 1	5	108	108
RM 1	5	6	6
HMW 2	6	1368	1368
HMW 3	7	334	334
BW 1	7	13	13
MC 1	8	4	4
MC 2	7	34	34
HMW 4	8	320	320
RM 2	8	38	38
BW 2	8	17	17
PI 1 (H)	6	6	6
MC 3	9	33	33
PI 2 (H)	9	72	72
PI 2	10	220	220
		2573	413
			331

## Training Commitments

- HMW 1, 2, 3; RM 1; BW 1; will be provided training opportunities for Level 1 courses.
- HMW 4; RM2; BW 2; MC 1 & 2; will be provided training opportunities for Level 1 & 2 courses.
- PI 1, 2; MC 3; will be provided training opportunities for Level 1, 2, & 3 courses.

## HT Level 1 Courses (16)

- Maintenance Operations Overview
- Personal Safety Awareness
- Fraud & Ethics Awareness
- Truck & Loader School
- Snow & Ice Control
- Basic Technical Math
- Basic Business Grammar & Writing
- Work Zone Maintenance of Traffic
- Basic Highway Surveying

## HT Level 1 Courses (con't)

- Basic Structures
- Basic Earthwork
- Drainage
- HAZWOPER
- Flexible Pavements (Manual of Procedures)
- Highway Roadside
- Sediment & Erosion Control

## HT Level 2 Courses (10)

- Construction Operations Overview
- Basic Highway Plan Reading
- Advanced Highway Surveying
- Advanced Maintenance of Traffic
- General Concrete

## HT Level 2 Courses (con't)

- Rigid Pavement
- Advanced Structures
- Traffic Control Devices
- Quality Control & Quality Assurance
- Advanced Earthwork

### HT Level 3 Courses (4)

- Advanced Highway Plan Reading
- Bridge Painting Inspection
- Nuclear Safety
- Nuclear Safety Update

### HT Level 4 Courses (6)

- Contract Administration
- Partnering Concepts
- Basic Project Scheduling
- Critical Path Method Scheduling
- Environmental Policy Overview
- Construction Projects from a Contractor's Perspective/Risk Management

### Testing

- Pre &/or Post Testing
- Passing Scores
  - Pre-Test - 80%
  - Post-Test - 75% (excluding Truck & Loader 80%)
  - Internal Certifications – 70%

### Certifications/Approvals

- Level 1 Certifications:
  - Aggregate Level 1

### Certifications/Approvals (con't)

- Level 2 Certifications/Approvals
  - Aggregate Level 2
  - ACI Concrete Field Testing Technician Level 1
  - Asphalt Level 1
  - General Knowledge
  - Drainage
  - Earthwork
  - Pavements

### Certifications/Approvals (con't)

- Level 3 Certifications/Approvals:
  - Asphalt Level 2 (Test Lab Only)
  - Asphalt Level 3 (Test Lab Only)
  - Aggregate Level 3 ( Test Lab Only)
  - ORMCA Concrete Technician (Test Lab Only)
  - Structures (Field Employees Only)
  - Traffic Control Devices (Field Employees Only)

## Certifications (con't)

- Level 4 Certifications:
  - Contract Administration

## Construction Experience

- Commitment:
  - HMW 4; RM 2; BW 2 will be provided opportunities for 12 months of construction experience within 3 years.
  - HT 2's have 5 years to obtain 12 months construction experience.

## Summary

- ODOT has until November 26, 2006 to create & deploy 44 courses/certifications in Levels 1-3.
- ODOT has to train approximately 2300 employees in 17 - 44 courses/certifications in 3 years (depending on employees classification).
- Approximately 80 Subject Matter Experts are being utilized to develop courses.

## Summary (con't)

- Each course has a Labor/Management Committee review the course for course content and appropriate level.
- Approximately 60 ODOT employees are currently teaching these courses.
- HT Test Review Board reviews all tests.
- HT Dispute & Enforcement Committee hears all employee disputes and resolves issues.

## Success

- 1281 Employees have entered series as HT 1's.
- 285 Employees have entered or advanced into series as HT 2's.
- 457 Employees have submitted applications for college credit to Owens Community College.

## How does the HT Series Impact You?

- Contractors
  - Ensures ODOT employees inspecting projects are well trained & certified
  - Ensures consistency in contract administration
- ODOT
  - Ensures a more flexible workforce
  - Ensures a well trained and certified workforce
  - Provides a career ladder for employees



## Conclusion

- Questions & Answers





**VDOT**

## VDOT Technician Training & Certification Programs

Duane Sayre  
Materials Division  
August 24, 2005

- VDOT** **Overview**
- Construction Inspector Trainee Program
    - Administered by VDOT Learning Center (Bill Beuter)
  - Materials Certification Schools Program
    - Administered by VDOT Materials Division (Duane Sayre)

- VDOT** **Con. Insp. Trainee Program**
- ### Workbook
- Multiple work elements
  - Vendor supplied training
  - VDOT supplied training
  - Program currently being re-evaluated

- VDOT** **Materials Certification Program**
- ### Certification Requirements
- Attend classroom session and pass written exam
  - Pass proficiency examination

- VDOT** **Materials Certification Program**
- ### Certification Areas
- |                         |                                 |
|-------------------------|---------------------------------|
| 1. Aggregate Properties | 6. Concrete Plant               |
| 2. Asphalt Field        | 7. CMA Plant                    |
| 3. Asphalt Plant        | 8. Pavement Marking             |
| 4. Asphalt Mix Design   | 9. Soils & Aggregate Compaction |
| 5. Concrete Field       |                                 |



## Materials Certification Program

### Certification School Facts

- Approximately 15,000 current certifications
- Class cost = \$200 (non-VDOT only)
- School season: Jan. – April
- 5 year certification



## Materials Certification Program

### Current Initiatives

- VDOTU/Virtual Campus
  - Web based Learning Management System
- Recertification Program moving online in 2007
  - Recertification requirements will include online course and proficiency exam



## Contact Information

Duane Sayre  
Materials Division  
Virginia Department of Transportation  
(804) 328-3150  
[rd.sayre@vdot.virginia.gov](mailto:rd.sayre@vdot.virginia.gov)



## Wisconsin

**MULTI-REGIONAL TRAINING AND CERTIFICATION**

**M-TRAC ANNUAL MEETING**

CONCOURSE HOTEL-COLUMBUS, OHIO  
AUGUST 23-25, 2005



## What's new?

1. New course in 2005
2. Surveying Feasibility Study
3. Manuals on Website
4. Personnel Change Over




## What's new?

5. ASTM D-3665, Random numbers, 3 digit to a 4 digit table, calculators?
6. Use of AASHTO manuals in course presentation (Copyright Permissions)
7. FHWA Expectations-Universal Standard-State by State



## What's new?



8. eTEC Products.
9. TCCC Materials Committee
10. Continued Expansion into the WTCS, (Wisconsin Technical College System)
11. ...



## ATTS

**AGGREGATE TESTING FOR TRANSPORTATION SYSTEMS**


- Historically, aggregate quality testing was required every five years per source. WisDOT personnel were responsible for all quality testing.

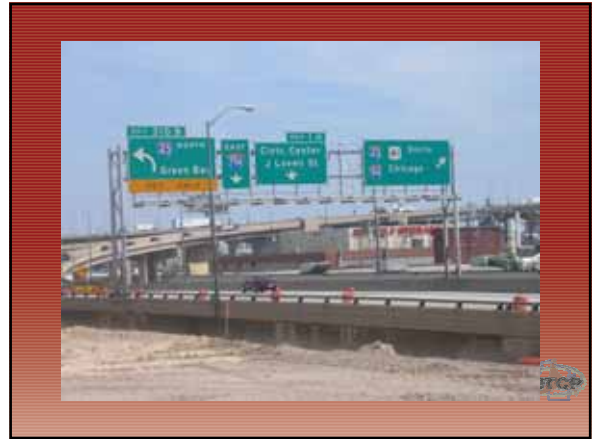


## ATTS

**AGGREGATE TESTING FOR TRANSPORTATION SYSTEMS**

- Why has the process changed?
- Industry control of product
- Verification role
- WisDOT reductions









## Wisconsin-HTCP

In Closing,

1. There is lots to do
2. It is doable.
3. Prioritization will always remain a key element...

