

# Materials and Tests Unit

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# Materials and Tests Unit

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# Overview

- **New Project Certification Process**
- **Cement sampling (Single point audit emphasis)**
- **Cement sampling (ASR awareness - High alkali cement for low alkali cement substitutions)**
- **Making and curing concrete test specimens**
- **ABC sampling changes**
- **Welding Manuals**

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# MISSION STATEMENT

The Materials and Tests Unit has the responsibility of establishing acceptance criteria for materials and manufactured products to be incorporated into the North Carolina highway system and insuring that these materials and manufactured products meet these criteria and will function as intended.

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# 23 CFR 637

## Construction Inspection and Approval

- Appendix A to Subpart B requires...
- Letter stating “This is to certify that: The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing were in conformity with the approved plans and specifications.”

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# New Project Certification Process

- Why is it needed?
- Letter from Chief Engineer Goins in 2002
  - Stated that project certification would occur in HiCAMs
  - Transition from old to new was less than smooth
- This and other factors have created a backlog of Projects that need to be certified

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# New Project Certification Process

- The new process will keep current projects on pace for certification within a short time after completion
- Allowing more time for reducing backlog
- Also, keeps focus on conformance with specifications and MSG
- The ultimate goal is to have 100% participating funds on each project

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# New Project Certification Process

- This past year SMS's have been conducting office reviews on contracts
- Purpose was to assist RE's with cleaning up data in preparation for Project Certification and compliance to Minimum Sampling Guide
- Findings indicate issues with substitutable materials, conversion factors, inadequate number of samples and other guidelines

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# New Project Certification Process

- **Effective Immediately**
  - **SMS's will assist in verifying CBOM**
    - Conversion Factors
    - Substitutable materials
    - Generic Items
    - Supplemental Description Items
- **Initially done during contract activation process**
- **Continues monthly for duration of contract**

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# New Project Certification Process

- Process starts with newly let contracts and on contracts where final estimate has been completed in the last 24 months
- Records Section and Central office staff will assist in the process
- SMS's review of CBOM (conversion factors, substitutable materials, etc.) will be documented on a standard form with feedback going to M&T Central, Construction Unit, and Divisions

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# Single Point Audits

- Conducted annually on behalf of FHWA by State Auditors Office
- Past areas of emphasis
  - ABC sampling
  - Guardrail
  - Corrugated metal pipe
- This year's focus
  - Portland Cement used in Concrete Pavement
  - Prestressed Concrete Members
- 2<sup>nd</sup> Year for Portland Cement \*\*
- Initial findings indicate non conformance to MSG

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# Single Point Audit

- Currently considering changes to the Portland Cement Sampling Frequencies
- M&T is evaluating frequencies based on
  - Use (Bridges, Pavement, Stabilization)
  - Risk
    - ASR Issues (Alkali Silica Reactivity)
    - 0.4% Na<sub>2</sub>O Equivalent is determining factor between High and Low alkali cements
    - Miss Identified Samples (Mix design calls for low alkali and high alkali is used can create long term durability issues)

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# Making, Curing and Transporting Concrete Test Specimens

- Updated Policy Letter February 2010  
(See Handouts)
- Cylinder Transportation Crates
- Deliver cylinders to laboratory within 72 hours. (AASHTO T 23 requirement is 48 hours.)
- *“Now, for your viewing pleasure...”*

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HIC

463097

7B-M-STONE-MIX

341523

3

CL-AA-VIO-A.E.

463097

M&T

C-201568



COMPR  
9377  
lo.  
Date Made Date Test  
9/22/05  
10/11/05  
5:

11-2-11



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Soil Sample Form  
Date of Collection: \_\_\_\_\_

Location: Clad 4' level Station: 551/553

Project: \_\_\_\_\_ Date: 15/11/2012

Soil Type: Silt Depth: 1.5m

Soil Color: 10YR 6/6 Moisture: 26

Soil Moisture: \_\_\_\_\_ Soil Temp: 20.5°C

Soil pH: 7 Soil No: 3.06/12

\*Soil is to be preserved in plastic bags or containers.

3



1343  
24



3043



TESTS  
AL

# Aggregate Base Course

- Identified as area of concern during previous Single Point Audits from 2002 to 2006
- We continue to have issues
- ABC will most likely be a single point audit for this year
- Currently exploring ways to simplify sampling and tracking requirements to improve this process

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# Field Welding Procedures

- Currently distributing Manuals to Division Construction Engineers
- Steve Walton (Metals Engineer) will contact each DCE to request to be on the agenda of an upcoming staff meeting
- He plans to discuss the Manual and provide extra copies for AREs and BMEs
- This is intended to be introductory and Steve would like to provide more specific training at the project inspector level

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# QUESTIONS?

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