

# **FHWA Requirements:** ***What States are required and/or allowed to include in their Technical Programs***

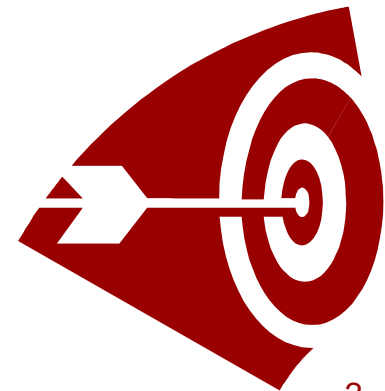
**Dennis Dvorak  
FHWA Resource Center  
Pavement and Materials TST  
August 27, 2009**

# Agenda

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- Refresher on 23 CFR 637 Requirements and Guidance
- National FHWA Focus on Quality Assurance
- Next Steps

<http://www.fhwa.dot.gov/pavement/qa>



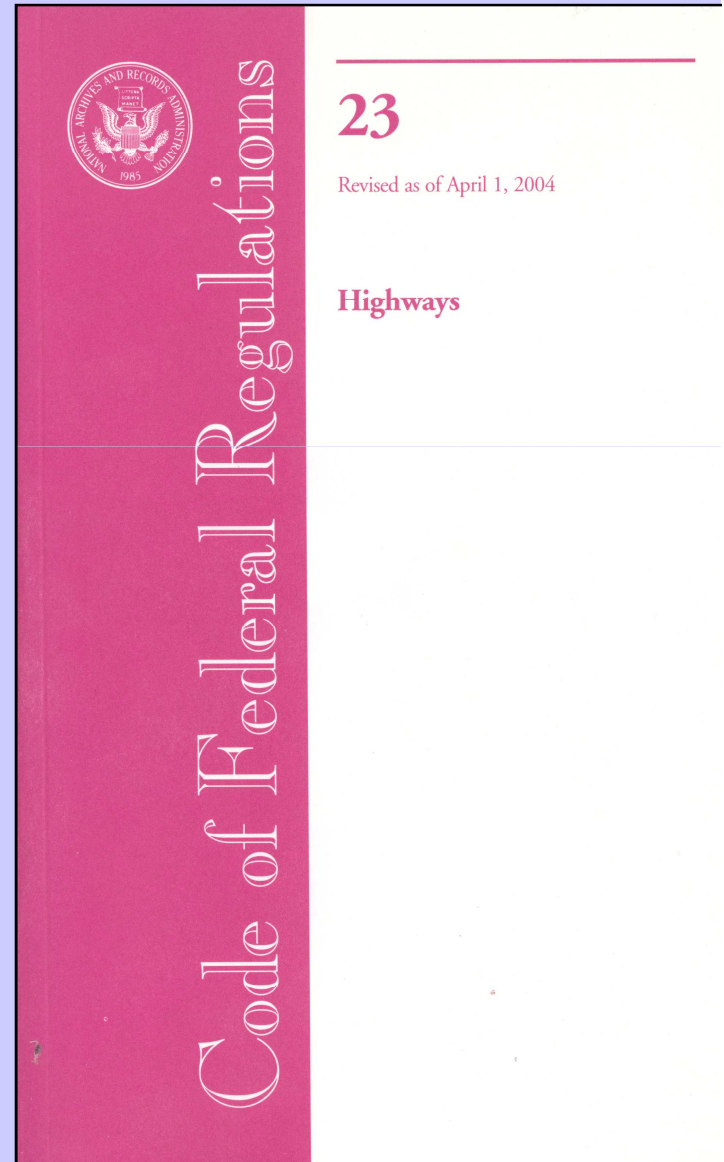
# 23 CFR 637 Requirements

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## Title 23 Code of Federal Regulations Part 637

(23 CFR 637)

June 29, 1995



## 23 CFR 637 Requirements

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- All sampling and testing of highway materials for Federal-aid projects on the National Highway System (NHS) shall be performed by qualified personnel.
- Deadline - June 29, 2000.

# 23 CFR 637 Guidance

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FHWA Memorandum on Technician Qualification

(July 17, 1998)

Currently in Non-Regulatory Supplement for 23 CFR 637

(July 19, 2006)

Suggested following elements for technician certification program:

1. Formal training of personnel
2. Written test
3. Proficiency test
4. Requalification at 2 to 3 year intervals (presently many States use a 5 year interval)
5. Period of on-the-job training
6. Documented process for removing personnel
7. No grandfathering of PE's



## **National Focus on Quality Assurance**

# Driving Factors

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- 2006 National Review Program: Quality Assurance in Materials & Construction (Division Office Assessment of Risk)
- OIG and GAO Findings
  - Increased number of cases of fraud and abuse
- Quality Assurance Stewardship Reviews
  - State Agency Compliance with CFR
- 2008 Quality Assurance Assessment



# National Review Observations

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- Agency emphasis and dedication of resources needs to be commensurate with the level of investment and risk.
- Division offices have a lack of understanding as to how to evaluate, approve and monitor a State's QA program.
- Division offices could not assess the effectiveness of a State's QA program.
- Seven Division Offices were included in review



# Recognition of Need to Address QA

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- USDOT OIG Report to Congress - 2008
  - “*We continue to find weaknesses throughout DOT, and our investigations continue to identify fraud, abuse, and other ethical issues involving DOT officials and contractors... enhancing oversight on Federal-aid construction projects to prevent abuse in contractor quality control programs.*”
  - Lack of Oversight of Specification Requirements
  - Insufficient Inspection of Materials/Placement
  - Placement of Substandard Materials
  - Data Manipulation
  - Adjusting/Replacing Samples

# Recognition of Need to Address QA

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- GAO Report – Increased Reliance on Contractors
  - Increased use of consultants/contractors for inspection activities due to lack of in-house staff
  - Loss of qualified, experienced staff resources
  - Need for state employees to make final acceptance decision
  - Found examples where quality assurance procedures were not adequately followed.
  - *“State auditors in 10 of 11 states that responded to our inquiry found numerous weakness in state DOTs’ contracting and oversight practices.”*

# QA Stewardship Review

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying <http://www.fhwa.dot.gov/pavement/materials/stewardreview2007.cfm>. The page header includes the U.S. Department of Transportation Federal Highway Administration logo and a search/feedback link. The main navigation bar features tabs for Research, Design, Construction, Preservation, Maintenance, Management, and Rehabilitation. The breadcrumb trail reads: FHWA > Engineering > Pavements > Materials > Quality Assurance Stewardship Review - Summary Report for Fiscal Years 2003 Through 2006.

**Quality Assurance Stewardship Review - Summary Report for Fiscal Years 2003 Through 2006**

**Background**

A revision of FHWA's sampling and testing regulations titled, "Quality Assurance Procedures for Construction," was published on June 29, 1995, as Title 23, Code of Federal Regulations, Part 637 (23 CFR 637). The regulations require each State agency to have in place an approved Quality Assurance (QA) Program for materials used in Federal-aid highway construction projects. Provided certain checks and balances are in place, the regulations provide flexibility in sampling and testing by allowing the use of contractor test results in the overall Agency acceptance decision. In addition, consultants may be used in performing Dispute Resolution or Independent Assurance (IA) if the laboratories have been AASHTO accredited. The States may also use a system approach to IA instead of establishing frequencies based on individual project quantities.

The regulations also include several additional requirements: (1) the State agency's central laboratory was required to become accredited by the AASHTO Accreditation Program by June 30, 1997, and (2) all testing personnel and laboratories must be qualified using State procedures by June 29, 2000.

During fiscal year (FY) 2006 a National Program Review (NPR) on Quality Assurance was also conducted by the Office of Professional and Corporate Development. The NPR covered the actions taken by the Division Office in approving and reviewing State's QA Programs. This report will not discuss the results from the NPR and only summarizes the results of the reviews that have been conducted by the Office of Infrastructure.

**Scope**

**Events**

- [View all Upcoming Pavements Events](#)

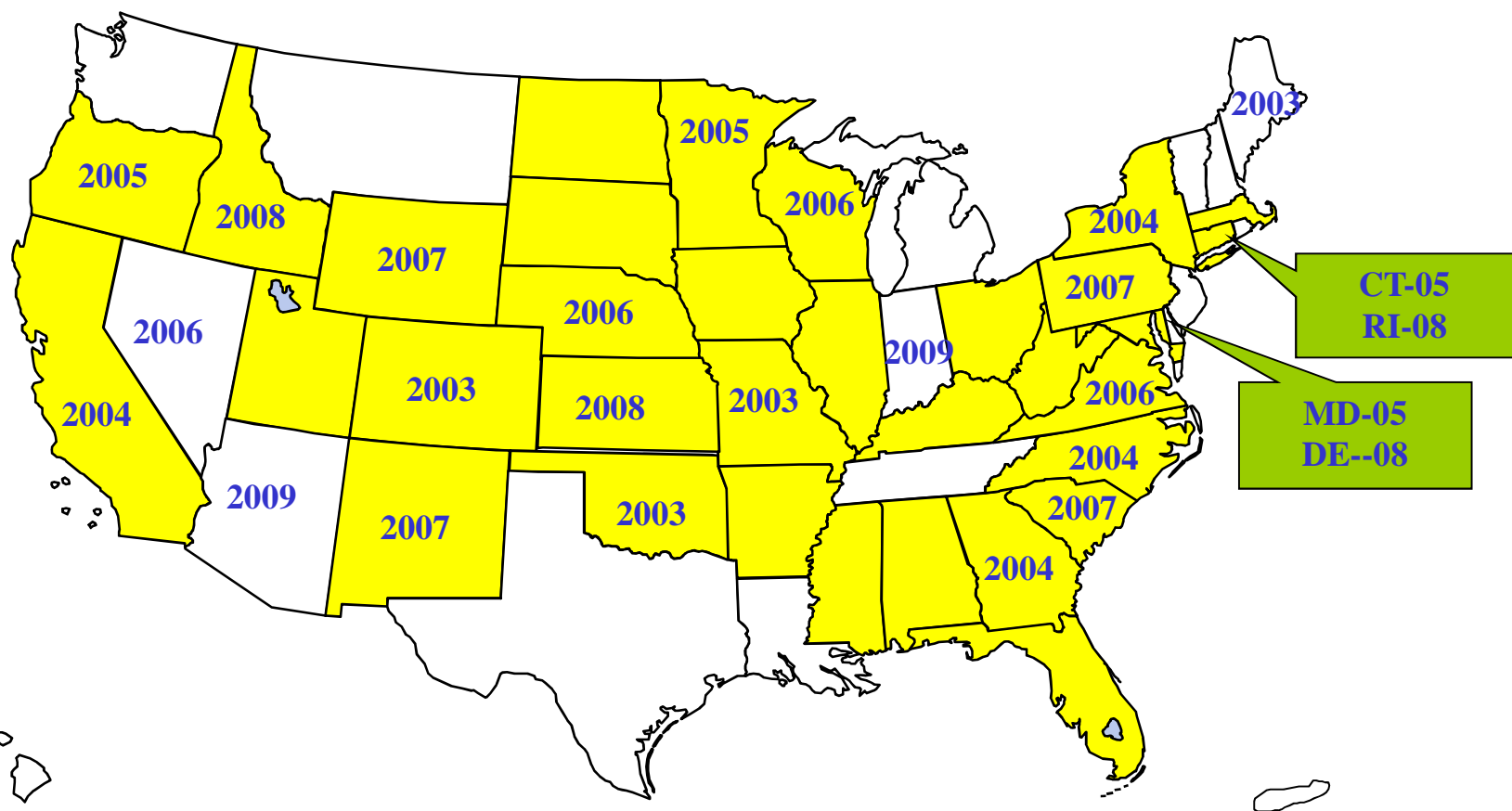
**Contact**

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**Left Sidebar Navigation:**

- Pavement Design and Analysis
- Materials and Construction Technology
- Pavement Management and Preservation
- Pavement Surface Characteristics
- Construction and Materials Quality Assurance
- Environmental Stewardship

# 27 States reviewed through FY 2009



# QA Stewardship Review

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- **Use of Contractor Test Results.**
  - Not using independent samples for State verification samples,
  - No statistical comparison of contractor and State data,
  - States are not controlling the sampling location and timing,
  - States are allowing biased dispute resolution (retesting) provisions
  - Lack of security for samples,
  - Random sampling



# 2008 Quality Assurance Assessment

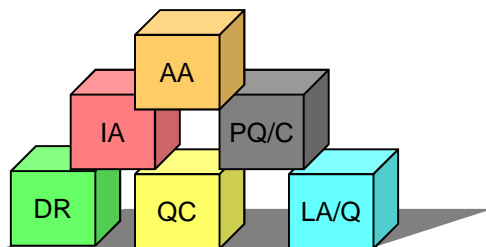
# What it is **NOT** and what it **IS**...

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- The Assessment is NOT...
  - A “Gotcha”
  - A way to compare States
  - A indication of pavement performance
  - Perfect
  
- The Assessment is...
  - A tool to identify potential areas of RISK
  - A tool to identify “successful practices”
  - A tool to prioritize training
  - A tool to guide specification refinement

# Division Office Interview Assessment of RISK (QA System)

- 18 Questions...
  - Risk of Contractor Fraud and Appropriate Payment
  - Not tied to Regulatory Compliance
  - Covers the Six Building Blocks
  - Questions Weighted
  - 1, 2, 3, 5, & 7
- Frequency
  - 52 in FY 2008



Question #	Question	Weight	State 1	State 2	State 3	State 4	State 5	State 6	State 7	State 8	State 9	State 10
1	Does the State use a materials management system, which includes all test results (State and/or Contractor), that is used in the acceptance process?	5	Y	N	Y	N	Y	Y	N	Y	Y	N
2	Does the State have a documented process for controlling the location of random sampling?	7	Y	N	Y	Y	N	Y	N	N	N	N
3	Does the State control of the locations for verification testing and takes immediate possession of the samples?	7	N	N	Y	N	N	Y	Y	N	N	N
4	Which of the following does the State use for Hot Mix Asphalt (HMA) pavement acceptance? (Total weight 3)	3	Y	N	Y	Y	Y	N	N	Y	N	N
	Asphalt Binder Content, Pb	0.6	Y	N	Y	Y	Y	N	N	Y	N	N
	Voids in Total Mix, Va	0.6	Y	Y	Y	Y	Y	N	N	Y	Y	Y
	Voids in Mineral Aggregate, VMA	0.4	Y	N	Y	Y	N	N	N	N	Y	N
	In-place density	0.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Smoothness (ex. IR)	0.6	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
5	Which of the following does the State use for Concrete pavement acceptance? (Total weight 3)	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Strength (either compressive or flexural)	0.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Pavement Thickness	0.6	Y	N	Y	Y	Y	N	N	N	Y	Y
	Entrained Air Content	0.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Permeability	0.6	Y	N	N	N	N	N	N	N	N	Y
	Smoothness (ex. IR)	0.6	Y	Y	Y	Y	Y	N	N	N	Y	Y
6	Which of the following does the State use for Concrete Bridge Deck acceptance? (Total weight 3)	3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Strength (either compressive or flexural)	0.75	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Entrained Air Content	0.75	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Permeability	0.75	Y	N	N	N	N	N	N	N	N	N
	Smoothness (ex. IR)	0.75	Y	N	N	N	N	N	N	N	N	N
7	Are the payment lot sizes between 7 and 20 tests?	3	N	N	N	Y	N	N	N	N	N	N
8	Does the State use PVL/ PD type specifications?	5	N	Y	Y	Y	Y	N	N	N	N	N
9	Does State include contractors tests in acceptance decision? (Total weight 2 - if applicable) If the State uses contractor tests in the acceptance decision does the State verify the contractor test results with F& t tests using a minimum of five (5) State results to 5 -20	2	N	Y	Y	Y	Y	N	N	Y	Y	Y



# Assessment Elements

## Higher Risk Factors

**Personnel Qualification**

**Dispute Resolution**

**Sample Location**

**Validation Process**

**Project Field Labs**

**Independent Assurance**

## Lower Risk Factors

**Visual Acceptance**

**Acceptance/Pay Approach**

**Materials Management**

**Quality Characteristics**

**Performance Warranties**

**Qualified Product Lists**

**Risk Analysis**

**Sample/Test Frequency**

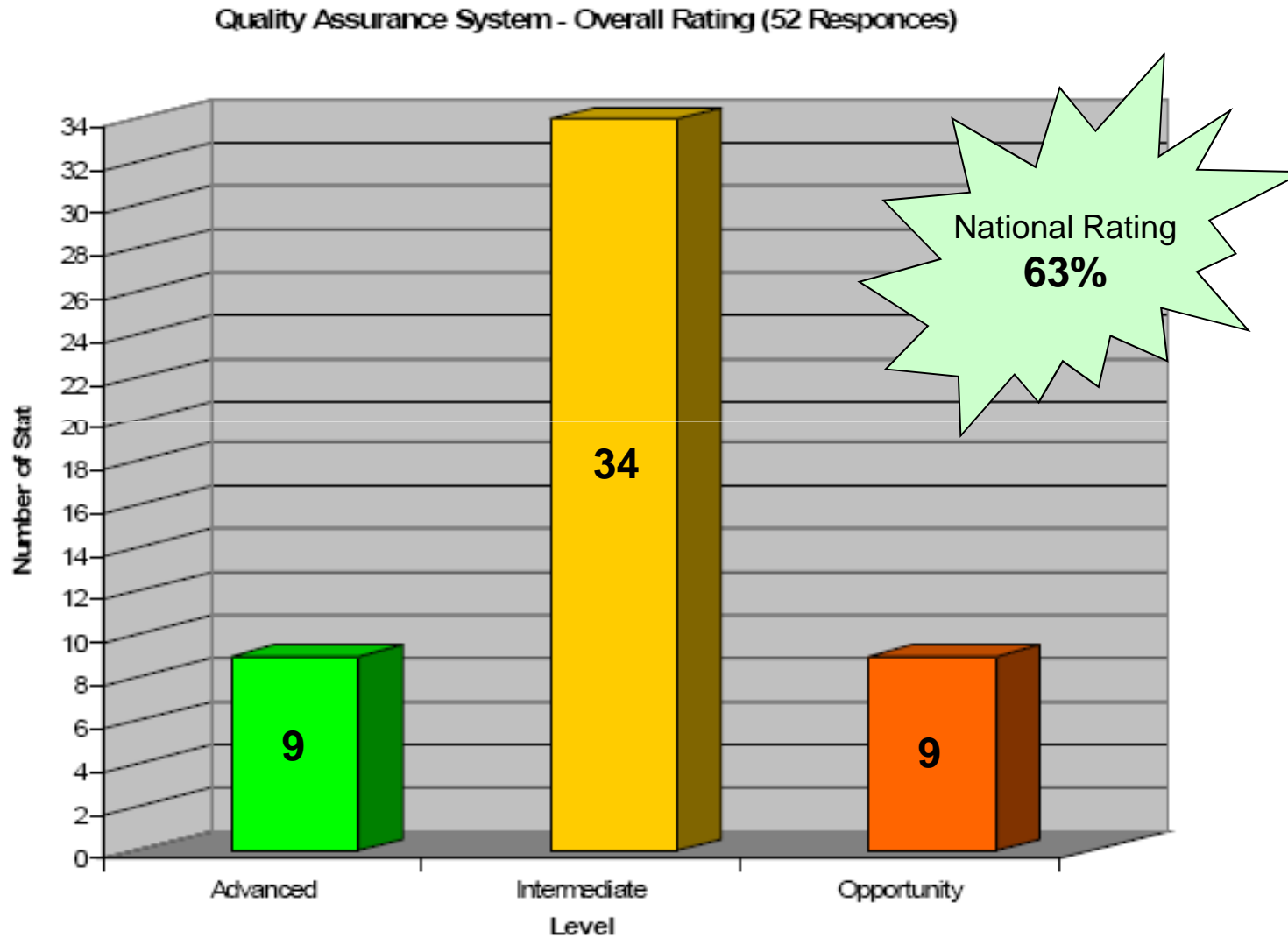
# Assessment Rating

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- Series of “Yes/No” Questions
- Many had sub elements
- Use of contractor test results factored
- Considered different materials
- Total potential score = 100%
- Response verified with Division

# NPM – A low rating is not a compliance issue with 23 CFR 637.

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# NHI Training

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- 131023 – Highway Materials Engineering Academy
- 131032 – TCCC Hot-Mix Asphalt Construction
- 131044 – TCCC Hot-Mix Asphalt Production Facilities
- 131045 – TCCC Hot-Mix Asphalt Materials, Characteristics, and Control
- 134037A – TCCC Managing Highway Contract Claims: Analysis and Avoidance

# NHI Training

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- 134042 – Materials Control and Acceptance
  - 2 day and 4 day
- 134049 – TCCC Use of Critical Path Method (CPM) for Estimating, Scheduling and Timely Completion
- 134055 – TCCC Construction Inspection, Workmanship, and Quality
- 134058 – Alternative Contracting
- 134059 – Quality Assurance Specification Development and Validation
  - Under development – Available Spring 2010

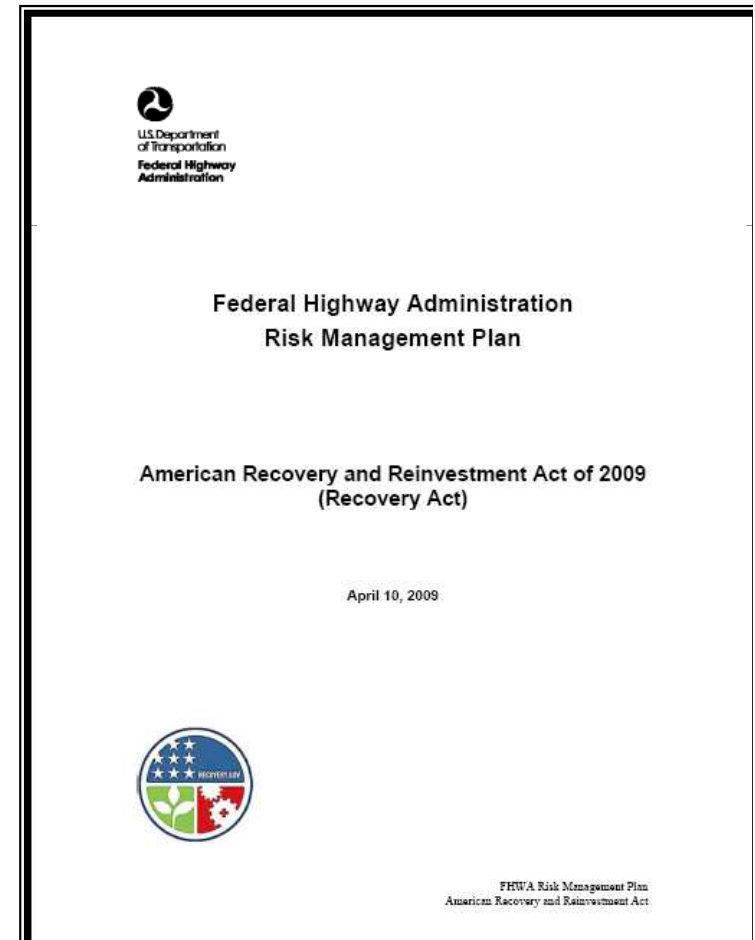
# NHI Training

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- 134060 – Partnering: A Key Tool for Improving Project Delivery in the Field
- 134064 – Transportation Construction Quality Assurance
  - 1.5 day and 3 day
- 134069 – TCCC Ethics Awareness for the Transportation Industry
- 134070 – Percent Within Limits – A Risk Analysis Approach
  - Web Base Training
- 134071 – TCCC Basic Construction and Maintenance Documentation - Improving the Daily Diary



# ARRA National Review



# NRT Review Schedule

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- “Boots on the Ground” Early
- Risk-based Approach
  - Quality Assurance
  - Contract Administration
  - Local Public Authority (LPA)
  - PSE
  - Eligibility
  - DBE





## Next Steps

# FY10 FHWA Strategic Implementation Plan

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- National Performance Objective:

SP-8.Improve the effectiveness of materials quality assurance processes nationwide.

- National Performance Measure:

Number of states taking action to address deficiencies in high-priority Materials Quality Assurance areas.

- National Initiatives:

Address deficiencies related to Data Verification and Dispute Resolution that were identified during the FY 2008 baseline assessment.

# Possible Modifications to 23 CFR 637

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- Internal FHWA team (2010) will evaluate how to proceed with possible changes to regulation

# Construction Program Evaluation

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- First 4 State Reviews - 2010
- Should build support for making needed changes to 23 CFR 637 such as requiring inspection qualification

# *“They Build What We Accept,”* Brother Jim



Questions?