



Development of ARRA Specification Guidelines and Field Inspector Guidelines

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Goals of ARRA Specification/Guidelines

- ◆ ARRA Recommendations for a Successful Project
- ◆ Become the Standard Across North America
- ◆ Satisfy the Vast Majority of ARRA Contractors, Product Suppliers and Equipment Manufactures
- ◆ Raise the Bar
 - Improve the Industry
 - Make Owner Agencies using them comfortable they will get the quality and performance they want

Issues ARRA Faces

- Most Specifications In Use Were Generated By:
 - ◆ Contractors, Material Suppliers, and Equipment Manufacturers
 - ◆ Geared to Their Own Specific Equipment, Materials or Techniques
- There are Few Tests or Performance Parameters on ARRA techniques
- Engineers Like Measures and Metrics. Not “Just Trust Me”



ARRA Four Disciplines

- Cold Planing (CP)
- Hot In-Place Recycling (HIR)
- Cold Recycling (CR)
- Full Depth Reclamation (FDR)



Cold Planing (CP)



- ◆ Standard Cold Planing
- ◆ Fine Milling
- ◆ Micro Milling



Hot In-Place Recycling (HIR)

- ◆ Surface Recycling
- ◆ Remixing Recycling
- ◆ Repaving Recycling

Cold Recycling (CR)

- ◆ Cold In-place Recycling (CIR)
 - Emulsified Asphalt
 - Foamed Asphalt
- ◆ Cold Central Plant Recycling (CCPR)
 - Emulsified Asphalt
 - Foamed Asphalt

Full Depth Reclamation (FDR)

◆ Mechanical

- Pulverization, Corrective Aggregate

◆ Chemical

- Cement and CKD
- Hydrated Lime, Quick Lime and LKD
- Fly Ash

◆ Bituminous

- Emulsified Asphalt
- Foamed Asphalt

Formats

- ◆ **100 Series - Recommended Construction Guidelines**
- ◆ **200 Series –Recommended *Preconstruction Sampling* and Mix Design Guidelines**
- ◆ **300 Series - Recommended Quality Assurance Sampling and Testing Guidelines**
- ◆ **400 Series –Recommended *Agency Preconstruction Sampling Guidelines***

Guideline versus Specification

NOTICE

It is not intended or recommended that these guidelines be used verbatim within a specification. Owner Agencies should use them to help establish their particular project specification. Owner agencies should understand that all geographical areas and pavement rehabilitation/preservation projects are unique and the availability of materials and equipment may vary as well. ARRA assumes no liability for utilization of these guidelines by any Individual or Entity. Contact ARRA for answers to questions and for a list of ARRA member Contractors and Suppliers.



Guideline versus Specification

ARRA Guidelines Provide
Suggested Language for a
Specification

Provides User Notes for More
Information

User Notes

General

A mix design shall be performed with the materials to be encountered during construction of the cold recycling. When the in-place materials change significantly, additional mix designs shall be performed to establish representative mixes for the entire job. Representative samples of the in-place HMA shall be taken from the roadway and delivered to an AASHTO accredited or owner agency approved laboratory experienced in cold recycled mix designs, where the HMA shall be crushed and mixed with the desired bituminous recycling agent and additives, as necessary and then, at a minimum, tested in accordance with **Table 2** (and **Table 4**).

User Notes: The mix design parameters provided in Table 2 are minimum parameters and should be part of all cold recycle mix designs. The optional high temperature validation tests parameters provided in Table 4 are recommended when an owner agency wants a higher level of reliability or when the desired level of risk, traffic and length of the project justify the increased cost.



ARRA Guidelines



- ◆ Cold Planing
- ◆ Cold Recycling
- ◆ Full Depth Reclamation



Cold Planing (CP)

- ◆ CP101 - Recommended Construction Guidelines for Standard Cold Planing (Second Draft in Committee)
- ◆ CP102 - Recommended Construction Guidelines for Micro Milling (Second Draft in Committee)

Cold Recycling (CR)

- ◆ CR101 - Recommended Construction Guidelines for Cold In-place Recycling (CIR) Using Bituminous Recycling Agents (Last Editorial Review)
- ◆ CR102 - Recommended Construction Guidelines for Cold Central Plant Recycling (CCPR) Using Bituminous Recycling Agents (First Draft Needs to Go to Committee)
- ◆ CR201- Recommended *Preconstruction Sampling* and Mix Design Guidelines for Cold Recycling Using Bituminous Recycling Agents (Last Editorial Review)
- ◆ CR301- Recommended Quality Assurance Sampling and Testing Guidelines for Cold Recycling Using Bituminous Recycling Agents (Last Editorial Review)

Full Depth Reclamation (FDR)

- ◆ FDR101 - Recommended Construction Guidelines for Full Depth Reclamation (FDR) Using Bituminous Stabilization (Last Editorial Review)
- ◆ FDR102-Recommended Construction Guidelines for Full Depth Reclamation (FDR) Using Cementitious Stabilization (Last Editorial Review)
- ◆ FDR 103- Recommended Construction Guidelines for Full Depth Reclamation (FDR) Using Lime Stabilization (Last Editorial Review)

Full Depth Reclamation (FDR)

- ◆ FDR201- Recommended *Preconstruction Sampling* and Mix Design Guidelines for Full Depth Reclamation (FDR) (Second Draft in Committee)
- ◆ FDR301- Recommended Quality Assurance Sampling and Testing Guidelines for Full Depth Reclamation (FDR) (First Draft in Preparation)

Timing and Implementation

- Guidelines Will be Posted to ARRA Website as Complete
- ARRA Considering:
 - Posted to ARRA Website for Download as a PDF by anyone.
 - Download as a Useable Word Document by ARRA Members or Owner Agencies

TCCC Web Based Training

- ◆ ARRA is assisting the Transportation Curriculum Coordination Council (TCCC) with the Development of Web Based Construction Inspector Training for:
 - CIR – Available
 - HIR – Planned for FY 2014
 - FDR – Planned for FY 2014

FHWA-NHI-134114

- ◆ *TCCC Inspector Training for Cold In-Place Recycling (CIR) – WEB-BASED*
 - 4 Hour Basic Training Level Class
 - Module 1 Introduction
 - Module 2 Full Production
 - Module 3 Post Production

FHWA-NHI-134114

- ◆ Access: <http://www.tccc.gov>
- ◆ Access:
http://www.nhi.fhwa.dot.gov/training/course_search.aspx?tab=0&key=cold&typ=3&sf=0&course_no=134114

FP2 & ARRA Construction Checklists

- ◆ ARRA/PRRC Developed *Full Depth Reclamation Construction Checklist* (FHWA-HIF-13-036)
- ◆ ARRA has Revised FP2's *Hot In-Place Asphalt Recycling Application Checklist* (FHWA-HIF-13-061)
- ◆ ARRA is Revising FP2's *Cold In-Place Asphalt Recycling Application Checklist*



Thank You



Questions ?

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