



# MATERIALS BULLETIN

**Colorado Department of Transportation**  
Project Development Branch  
(for Materials & Geotechnical Branch)

2010 Number 1, Page 1 of 1  
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## **CP 59, Contractor Non-Standard Asphalt Mix Approval**

**Note:** This is a result of the efforts from Task Force 2009-08. The intent of this Materials Bulletin is to publish CP 59 prior to the 2012 CDOT Field Materials Manual (FMM) being available on July 1, 2011. Two minor revisions to the current CP 11 from the 2011 FMM is necessary and is also attached.

The latest Standard Special Provision Worksheet, Revision of Section 403 – HMA, must be used to include the allowance for NSM on projects as determined by the CDOT Region Materials Engineer (RME). Spec weblink is attached.

[http://www.coloradodot.info/business/designsupport/construction-specifications/2005-construction-specs/work-sheets/403hma.doc/at\\_download/file](http://www.coloradodot.info/business/designsupport/construction-specifications/2005-construction-specs/work-sheets/403hma.doc/at_download/file)

## Colorado Procedure 59-12

*Standard Practice for*

### Contractor Non-Standard Asphalt Mix Approval

#### 1. SCOPE

- 1.1 This practice describes the procedures for submitting Non-Standard Asphalt Mix (NSM) technologies.

#### 2. REFERENCED DOCUMENTS

- 2.1 *CDOT Procedural Directives:*  
PD 1401.1 Product Evaluation and Experimental Features
- 2.2 *Colorado Procedures:*  
CP 52 Contractor Asphalt Mix Design Approval Procedures
- 2.3 AASHTO Procedure: Appendix to AASHTO R35 – *Special Mixture Design Considerations and Methods for Warm Mix Asphalt (WMA)*

#### 3. APPROVAL OF NSM TECHNOLOGIES

3.1 NSM technologies shall be in conformance with CP 52, CDOT Specifications and other specified Colorado, AASHTO, and ASTM procedures. Significant variances from these specifications will require an Experimental Feature submittal in accordance with PD 1401.1.

3.2 For Warm Mix Asphalt (WMA) mixtures using proposed aggregate blends with total absorption equal to or less than 1.3% mix designs shall be conducted without additives for approval and setting of production targets. For WMA mixtures using proposed aggregate blends with total absorption greater than 1.3% the mix designs shall be conducted in accordance with the Appendix to R35 referenced in Subsection 2.3 above. Regardless of mix design method, all WMA mixture and binder acceptance testing will be conducted according to existing CDOT HMA procedures, including established mixing and compaction temperatures. Proposed modifications to production properties and handling processes

for WMA mixtures shall be detailed. Binder grade selection shall be in accordance with existing CDOT Superpave criteria. WMA shall not be produced at plant temperatures more than 100°F below existing HMA Superpave mixing temperatures.

3.3 For WMA mixtures with more than 20% RAP, the plant production temperature shall be in excess of the documented grade of the “as recovered” RAP binder.

3.4 NSM approval is required for each NSM Technology and/or each Contractor intending to use an NSM mixture. If the NSM Technology is already approved for use by CDOT each Contractor must receive approval for supply of an NSM mixture based on their submittal.

3.5 Changes in NSM properties or formulations that result in changes to mixture properties will require new NSM submittal and approval

3.6 Only approved NSM technologies will be allowed on CDOT Projects.

#### 4. NSM SUBMITTAL REQUIREMENTS

4.1 All NSM submittals shall be submitted electronically to CDOT's Asphalt Program Manager. Acceptable formats include pdf, MS Excel, MS Word, PowerPoint, jpg and other compatible formats. Submittal shall be submitted in the order listed below. NSM must conform to the current CDOT HMA acceptance criteria. CDOT will determine if NSM Approval must be acquired for both the NSM Technology and the Contractor intending to supply the NSM.

4.2.1 NSM Technology Supplier - Submittals shall include:

- (1) A summary of the NSM Technology
  - A. Process controls
  - B. A detailed list of additive types and quantities

- C. Description of additives' influence on NSM
  - D. Benefits of the NSM
  - E. Equipment and plant requirements
  - F. MSDS on additive
- (2) Performance History:
- A. Product history
  - B. Other projects, including those within Colorado, which utilized the NSM. Include site conditions, traffic, performance data and lab data on historical projects.
  - C. Research data on the NSM
  - D. Sample specifications from other projects.
  - E. Approvals from other agencies.
- (3) Design Considerations:
- A. Lab design practices with NSM technology.
  - B. Conformities and deviations from CDOT design and acceptance criteria. See CP-52, and Specifications for Road and Bridge Construction.
- (4) Production Considerations:
- A. For WMA mixtures, provide a summary of anticipated differences in volumetric mix properties between the mix design values and the production target values.
  - B. For other NSM Mixtures provide field acceptance properties. Differences from current CDOT HMA requirements may trigger experimental feature process according to PD1401.1.
  - C. Sampling and testing requirements, including temperatures, laboratory handling, and variances from standard CDOT testing procedures. Detailed design, production and testing requirements for use of the NSM shall be provided.
  - D. Acceptance criteria and justification if different than CDOT SuperPave requirements. Significant deviation from these criteria will require an experimental feature submittal in accordance with PD 1401.1.
- (5) Contacts:
- A. NSM product manufacturer representative name, e-mail, and phone number
  - B. Name, e-mail, and phone number of NSM product manufacturer representative who will be available during construction
- 4.2.2 NSM Contractor Submittals shall include:
- (1) Summary of Contractor's NSM Experience, if any. Contact names shall be included for owners of past projects.
- (2) Design Considerations:
- A. Lab design practices with NSM technology.
  - B. Conformities and deviations from CDOT design and acceptance criteria. See CP-52, and Specifications for Road and Bridge Construction.
- (3) Production Considerations:
- A. For WMA mixtures, provide a summary of anticipated differences in volumetric mix properties between the mix design values and the production target values. Mixture volumetric targets may be adjusted as approved by the RME. The contractor shall provide necessary data to support field volumetrics targets that are different from the HMA mix design values. At a minimum, three full volumetric samples will be produced at optimum AC (as determined from mix design without additive) with WMA additive to document impact on field volumetrics.
  - B. For other NSM Mixtures provide field acceptance properties. Differences from current CDOT HMA requirements may trigger experimental feature process according to PD1401.1.
  - C. Sampling and testing requirements, including temperatures, laboratory handling, and proposed variances from standard CDOT testing procedures. Detailed design, production and testing requirements for use of the NSM shall be provided and approved prior to issue of the Form #43. Mixtures shall be tested for acceptance in accordance with established CDOT procedures.
  - D. Acceptance criteria and justification if different than CDOT SuperPave requirements. Significant deviation

- from these criteria will require an experimental feature in accordance with PD 1401.1.
- E. If the NSM produced on a project fails mixture verification, goes in to condition red, or if the asphalt plant fails to satisfy the NSM production controls outlined in the submittal for NSM approval, then NSM production shall cease, written explanation shall be provided for the failures, and production may be required to revert to conventional HMA.

(5) Contacts:

- A. Contractor representative name, e-mail, and phone number
- B. NSM product manufacturer representative name, e-mail, and phone number
- C. Name, e-mail, and phone number of NSM product manufacturer representative who will be available during construction
- D. Mix Designer name, e-mail, and phone number

## 5. Preliminary CDOT Review Process

- 5.1 Preliminary review of Contractor's NSM proposal will be performed by the CDOT Asphalt Program, in conjunction with Region Material Engineers as needed.
- 5.2 CDOT may request additional information from Contractor.
- 5.3 Incomplete submittals may be rejected as unacceptable.
- 5.4 CDOT Asphalt Program will notify the Material Advisory Committee (MAC) of all NSM submittals being processed.
- 5.5 If submittal package is not rejected during preliminary review, and when submittal package is deemed complete by the CDOT Asphalt Program, the NSM submittal will be sent to the MAC for formal review.
- 5.6 Preliminary review is estimated to take two weeks, depending upon completeness of initial NSM submittal.

## 6. CDOT Review Process

- 6.1 Formal review of NSM submittals will be performed by the MAC. Review may take place at a regularly scheduled MAC meeting (MAC meetings are scheduled once every-other month) or at a separate formal meeting, depending upon schedule.
- 6.2 The MAC, via the CDOT Asphalt Program, may request additional information from the Contractor.
- 6.3 Submittal may be rejected by the MAC as unacceptable under NSM procedures.
- 6.4 The MAC will determine if the NSM falls under the jurisdiction of PD 1401.1. If so, the MAC will approve the NSM with recommendations for the experimental feature process. If the NSM is not under the jurisdiction of PD 1401.1, then NSM will be approved with a recommendation on the scope of allowed project use.
- 6.5 The MAC will recommend whether the NSM is to be paid for under the existing HMA bid items or under a new NSM-specific bid item. For WMA mixtures, existing HMA bid items will be used.

- 6.6 The MAC will itemize any limitations to the use of the NSM on CDOT projects.
- 6.7 MAC review is estimated to take six weeks upon receipt of a complete NSM submittal.

## 7. SCHEDULE

- 7.1 Notification of NSM approval/rejection from CDOT may take a minimum of 8 weeks. This time frame may be significantly increased if additional information is requested from the Contractor, or if submittal is delivered during peak construction / production season.

## 8. RECORD

- 8.1 All requests for NSM information shall be made under the Colorado Open Records Act and shall follow CDOT Procedural Directives 25.2, 51.2, and 51.3.

The Colorado Department of Transportation is subject to the provisions of the Colorado Open Records Act (C.R.S. 24-72-201, et seq.). Unless

specifically excluded by the language of the act, all documents provided to or maintained by CDOT are considered to be a matter of public record.

Contractors submitting an NSM proposal to CDOT must identify the proposal as "Confidential" or "Available for Release". If, at any future date, a CORA request is made for any proposal identified as "Confidential", CDOT will notify the entity or individual making the request that the information is not available.

By identifying a proposal as "Confidential", the Contractor agrees to indemnify and hold harmless the Department and its employees from any legal action resulting from this decision to deny the documents, and to provide any necessary legal defense.

The NSM submittals shall include the following signed and checked statement:

Available for Release

Confidential

*With the following signature / statement:*

I \_\_\_\_\_ (Name) with  
\_\_\_\_\_ (Business Name)  
agrees to indemnify and hold harmless the Colorado Department of Transportation and its employees from any legal action which may result from its decision to withhold this document in response to requests made under the Colorado Open Records Act, and to provide any legal defense necessary if this decision is appealed.

8.2 All approved NSM technologies will be posted on the CDOT APL website.

8.3 All approved contractor users of an approved NSM technology will be posted on the CDOT APL website.

## CP 59, NSM Technology Supplier Submittal Checklist

Supplier Name: \_\_\_\_\_

Date: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Phone Number: \_\_\_\_\_

Contact Email: \_\_\_\_\_

NSM Name: \_\_\_\_\_

NSM Type: \_\_\_\_\_

<u>Subsection</u>	<u>Yes/ No</u>
4.1 All material submitted electronically.....	_____
4.2.1 (1) Summary of the NSM technology.....	_____
Process controls.....	_____
Detailed list of additive types and quantities.....	_____
Description of additives influence.....	_____
NSM benefits.....	_____
Equipment and plant requirements.....	_____
MSDS sheets for additives.....	_____
4.2.1 (2) Performance history.....	_____
Product history.....	_____
Other projects utilizing NSM (includes site conditions and performance data).....	_____
Research data.....	_____
Specifications used on other projects.....	_____
Approvals from other agencies.....	_____
4.2.1 (3) Design considerations.....	_____
Lab design practices.....	_____
Conformities and deviations from CDOT criteria.....	_____
4.2.1 (4) Production considerations.....	_____
Summary of anticipated differences between mix design values and production targets.....	_____
Field acceptance properties, including differences from CDOT HMA requirements.....	_____
Sampling and testing requirements.....	_____
Acceptance criteria and justification.....	_____
4.2.1 (5) Contacts.....	_____
Manufacturer representative name, email, and phone number.....	_____
On-site manufacturer representative name, email, and phone number.....	_____
8.1 Confidentiality statement.....	_____

## CP 59, NSM Contractor Submittal Checklist

Contractor Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Contact Name: \_\_\_\_\_ Contact Phone Number: \_\_\_\_\_  
 Contact Email: \_\_\_\_\_  
 NSM Name: \_\_\_\_\_ NSM Type: \_\_\_\_\_

<u>Subsection</u>	<u>Yes/ No</u>
4.1 All material submitted electronically.....	_____
4.2.2 (1) Summary of contractor's experience with this technology .....	_____
4.2.2 (2) Design considerations .....	_____
Lab design practices .....	_____
Conformities and deviations from CDOT criteria .....	_____
4.2.2 (3) Production considerations .....	_____
Summary of anticipated differences between mix design values and production targets .....	_____
Field acceptance properties, including differences from CDOT HMA requirements .....	_____
Sampling and testing requirements, including design and production methods .....	_____
Acceptance criteria and justification.....	_____
Contingency plan if NSM fails during production .....	_____
4.2.2 (5) Contacts.....	_____
Contractor representative name, email, and phone number .....	_____
NSM manufacturer representative name, email, and phone number .....	_____
On-site NSM manufacturer representative name, email, and phone number .....	_____
Mix designer name, email, and phone number.....	_____
8.1 Confidentiality statement.....	_____

Part I, Sub-Part 1:

## **Asphalt Binder Certifying Suppliers and Contractors - 12**

**Note: Subsections 7.6 and 9.2 (4) are specific revisions to be added to the existing 2011 FMM.**

### **7. SUPPLIER QUALITY CONTROL PLAN (MINIMUM REQUIREMENTS)**

7.5 The Supplier's quality control plan shall provide an outline of the procedure to be followed for checking transport vehicles before loading to prevent contamination of shipments. The outline shall include a statement that the Transport Vehicle Inspection Report, signed by the designated inspector, shall be maintained in the Supplier's records and will be made available to CDOT on request.

7.6 If the supplier's facility has the capability of introducing any additives to the binder at the point of load-out, then the QC plan shall outline the procedures to control, monitor, and report on the exact amount of additive. Only CDOT approved additives shall be allowed at load-out.

7.7 If the Supplier's facility has acid, alkaline, or recycled engine oil bottom modification equipment in place for producing acid, alkaline, or recycled engine oil bottom modified binders for sale in non-CDOT markets, the Supplier's Quality Control Plan shall include a description of the precautions that will be taken to prevent acid, alkaline, or recycled engine oil bottom modified binders from being inadvertently shipped to CDOT.

### **9. REQUIREMENTS FOR SHIPPING PG BINDER BY AN APPROVED SUPPLIER**

9.1 The Supplier's Quality Control Plan as approved by CDOT (Section 8) shall be implemented.

9.2 Each shipment shall be accompanied by two copies of the bill of lading, which shall include:

- (1) The name and location of the Supplier,
- (2) The performance grade of material,
- (3) The quantity of material shipped,

- (4) The type and quantity of any approved additive introduced at load-out
- (5) The date of shipment,
- (6) A statement certifying the material...