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| REVIEW OF NEW SPECIFICATION OR SPECIFICATION CHANGE  | 403-28 |
| **Specification Section No.:** 403 | **Item:** Hot Mix Asphalt (PPA) |
| **Originating Office:** Materials and Geotechnical | **By:** Stanford |
| **Date Sent For Review:** March 9, 2017 | **Date Comments Due: April 6, 2017** |
| Submit response to: STANDARDS AND SPECIFICATIONS UNIT, DIVISION OF PROJECT SUPPORT 4TH FLOOR, CDOT HEADQUARTERS |
| **Vote****/N** | **Concurrent Reviews – Others Commenting** | The attached Draft Specification is submitted for your review and comments. If not returned by Date Comments Due, the draft specification will be considered to be approved unless the Standards and Specifications Unit of the Project Development Branch [(303) 757-9474, (303) 757-9402] is advised otherwise.**REMARKS:** If these proposed changes are approved, our unit will issue these in a new pilot project special provision. |
|  | **Spec Committee Members:** |  **✓** |
|  | Co-Chairman: Lacey |  |
|  | Region 1: Quirk |  |
|  | Region 1: Lucerna |  |
|  | Region 2: Phillips |  |
|  | Region 3: Jean |  |
|  | Region 4: Boespflug |  |
|  | Region 5: Valentinelli |  |
|  | Project Development: Vacant |  |
|  | Specifications: Brinck |  |
|  | Bridge: Hasan |  |
|  | Contracts & Market Analysis: Eddy |  |
|  | Materials: Schiebel |  |
|  | Traffic Engineering: Matthews |  | REVIEWER COMMENTS:( ) Approved ( ) Disapproved ( ) ModifiedIf disapproved or modified, give reason why and show any modifications on the attached draft copy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ Name/Signature Date |
|  | Maintenance: Weldon |  |
|  | FHWA: Larson |  |
|  | Attorney General: Milan |  |
|  |  |  |
|  | **Others:** |  |
|  | Colorado Contractors Assoc.: Moody |  |
|  |  |  |
|  | **Technical Committees:** |  |
|  | PDAC |  |
|  | Drainage Advisory Committee (DAC) |  |
|  | Water Quality Advisory Committee (WQAC) |  |

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| **COLORADO DEPARTMENT OF TRANSPORTATION****SUBMITTAL OF NEW SPECIFICATION OR SPECIFICATION CHANGE** | Log No. (Assigned by Standards and Specifications Unit)403-28 |
| TO: Standards and Specifications Unit, Project Development, Suite 290 | FROM:Michael Stanford, MAC(Region, Branch or Technical Committee) |
| SPECIFICATION SECTION NO.403 | ITEM403 | Priority Routine[x]  Fast[ ]  |
| Reason for this new or changed specification:This 403 Hot Mix Asphalt (PPA) Pilot Project Special Provision is needed to assist the Regions with the necessary Specification Language to construct additional Hot Mix Asphalt Test Sections, utilizing asphalt binder modified with polyphosphoric acid (PPA). PPA is found to be an acceptable means to modify asphalt binder by several DOT's. It was determined that further test sections be developed within Colorado prior to accepting it as a CDOT Standard Special Provision. The Pilot Project Special Provision, 403 Hot Mix Asphalt (PPA) was approved by the Materials Advisory Committee, via E-Vote in February 2017. |
| New or Revised Specification:See Attached |
| Note: See Procedural Directive 513.1 for a description of appropriate specification development procedures. |

 **CDOT Form 1215 10/01**

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REVISION OF SECTION 403

HOT MIX ASPHALT (PPA)

Section 403 of the Standard Specifications is hereby revised for this project to include the following:

**DESCRIPTION**

This work consists of constructing one test section of Hot Mix Asphalt (HMA) using polyphosphoric acid (PPA)-modified binder in accordance with these specifications and in conformity with the lines and details shown on the plans or established.

**MATERIALS**

Hot Mix Asphalt (PPA) shall be HMA produced with PPA-modified binder. Unless otherwise recommended by the supplier of the PPA-modified binder, PPA shall be added to the binder during manufacture at a rate of 0.5 percent of the binder mass. The PPA-modified binder shall satisfy all current CDOT binder specifications as detailed in Section 702, except that 0.5 percent polyphosphoric acid will be allowed in the binder used for the HMA placed in the test section. Binder manufactured without PPA will not be allowed for use in the test section. The binder manufacturer shall be certified to supply binder to CDOT in accordance with CP-11. PPA modified binder used in warm mix asphalt shall be compatible with warm mix asphalt technology.

**CONSTRUCTION REQUIREMENTS**

The PPA-modified binder shall be introduced into the Contractor’s plant in accordance with the binder manufacturer’s recommendations.

One test section shall be placed using the PPA-modified HMA. The test section shall be placed as directed, but shall not be placed until the conventional HMA used on the project has been verified and has been produced in accordance with specifications for at least 5,000 tons. The test section shall consist of approximately 1000 tons of mix or the quantity of mix required to utilize two 6,000-gallon transport trucks of the PPA-modified binder. The mixture comprising the test section shall be the approved HMA mix design, but shall include the prescribed PPA-modified binder rather than the binder approved for use in the approved HMA mix design. The contractor shall prepare and test the PPA-modified HMA at the Form#43 target AC content prior to placement. Unless otherwise approved, the test section mix production targets shall be as prescribed on the current Form#43 at the time of test section construction. Plant mixing temperature and placement temperature shall be in accordance with manufacturer’s recommendations.

The contractor may, at their cost, place and test material off-site prior to placement on the project test section. The Contractor shall verify their current compaction process at the start of the test section in accordance with Section 401. QC density testing shall be conducted at a frequency of one per 250 tons, minimum, during test section placement.

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REVISION OF SECTION 403

HOT MIX ASPHALT (PPA)

Unless otherwise approved, acceptance testing for the test section shall be in accordance with Standard Specifications for HMA acceptance. If approved, the test section may have element pay factors set equal to one and may be excluded as areas for sampling for joint density.

Additional data collection, sampling and testing may be conducted during test section construction. The contractor shall support these activities as directed for the test section.

**METHOD OF MEASUREMENT**

Hot Mix Asphalt (PPA) will be measured by the actual number of tons of material placed and accepted.

**BASIS OF PAYMENT**

The accepted quantities will be paid for at the contract unit price for the pay item listed below and shall include all aggregate, binder, additives, equipment, labor, testing and sampling, and all other work necessary to complete the work as described.

Payment will be made under:

**Pay Item Pay Unit**

Hot Mix Asphalt (PPA) Ton

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**INSTRUCTION TO DESIGNERS** (delete instruction from final draft):

Use this special provision when polyphosphoric acid (PPA)-modified binder is to be added to Hot Mix Asphalt, as determined by the Region Materials Engineer.