

**DECISION DOCUMENT**

**TO: ASPHALT TASK GROUP**

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**FROM: 2-YEAR ASPHALT JOB MIX FORMULA TEAM AND ASPHALT SUB TASK GROUP**

KEE FOO  
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Granite Construction

**PREPARED BY:** KEE FOO/TONY LIMAS, HMA Job Mix Formula Working Group

**DATE:** February 16, 2021

**SUBJECT: PROPOSED REVISION TO ASPHALT JOB MIX FORMULA LONGEVITY**

## **ISSUE**

The California Department of Transportation (Caltrans) Hot Mix Asphalt (HMA) Job Mix Formula (JMF) are valid for a period of 1 year. As a best practice, most states allow a mix design life of 2 years or more provided there is an efficient JMF renewal process in place.

**Background:** Prior to Caltrans quality control/quality assurance (QC/QA) specifications, Caltrans laboratories performed HMA JMF on an annual basis. The existing 1-year mix design criteria was carried over to the QC/QA and SuperPave Standard specifications in which the contractor is responsible for the development of HMA JMFs.

**Moving Forward:** Industry has taken the position that HMA JMF should be extended to three years minimum. Caltrans has taken the position that HMA JMF can be extended to two years. Industry believes a 1-year JMF extension is viable, provided minor revisions to improve efficiency can be made to the JMF renewal process.

**Benefits:** Extending the life of JMF results in significant benefits for all stakeholders; costs related to HMA JMF and greenhouse gas (GHG) emissions associated with the production of JMF verification asphalt mixtures including the extraction and processing of asphalt binder and mineral aggregates are cut in half.

Increasing the use of the JMF renewal process will produce the added benefits of reducing contractor/Caltrans cost associated with laboratory mix designs and, at the same time, act to reduce GHG emission associated with multiple JMF mix verification hot drops at the HMA plant.

Among other benefits, extending the life of HMA JMF will act to ensure the efficient use of the Road Repair and Accountability Act of 2017 (SB 1) funding available for the Departments Road Maintenance and Rehabilitation Program while maintaining alignment with the Departments federally mandated Transportation Asset Management Plan (TAMP).

These changes, while somewhat minor in scope and application, also allow Caltrans to leverage significant benefits in support of the Departments Health and Safety; Stewardship and Efficiency; Sustainability; System Performance; and Organizational Excellence goals.

Below are a list of benefits and supporting background metrics associated with a 1-year extension for HMA JMF.

Benefits of extending the HMA JMF life to two years:

- Reduces statewide cost to Contractor/Caltrans (SB-1 funding) by approximately \$16,000,000 annually
- Eliminates project delays associated with the approval of 800 HMA JMF
- Eliminates approximately 6,840 metric tons CO<sub>2</sub>e per year
- Eliminates the equivalent CO<sub>2</sub>e of approximately 1,486 passenger vehicles/year
- Is in alignment with TAMP
- Is in alignment with the Departments Health and Safety, Stewardship, and Sustainability goals
- Reduces District laboratory workload to a manageable level

- Reduced workload will allow for improvements in Caltrans test turnaround time
- Reduced workload will improve the accuracy of testing at Caltrans materials laboratories
- Reduces workload will reduce laboratory equipment costs at Caltrans materials laboratories

#### Background Metrics

- 40± HMA producers
- Average of 20 JMF per year
- 800 total JMF per year
- 2 hot drops per JMF
- 1,600 total hot drops per year
- 90 tons per hot drop (drum/batch plant)
- 144,000 tons of mix per year for JMF
- \$10,000 total cost per hot drop
- \$16,000,000 annual statewide cost for JMF
- GHG = 47.5 kg CO<sub>2</sub>e per ton of HMA
- Total GHG = 6,840,000 kg or 6,840 metric tons
- Passenger vehicle emissions = 4.6 metric tons/vehicle/year

#### **RECOMMENDATIONS**

The HMA Job Mix Formula Working Group recommends the following specification changes be made through the next Revised Standard Specifications (RSS).

1. Extend the life of a HMA JMF to two years
2. Replace paragraph 4 and 5 of Section 39-2.01A(4)(d) Job Mix Formula with:

The Engineer verifies the JMF for renewal under section 39-2.01A(4)(b) except:

1. Engineer keeps the samples until you provide test results for your part on a Contractor Job Mix Formula Renewal form.
2. Engineer may use the most recent aggregate quality test results within the past 12 months, or the Engineer may perform aggregate quality tests.
3. The Engineer may use RAP and binder tests from the project where renewal samples are taken, or the Engineer may perform RAP and binder tests.
4. Department tests samples of materials obtained from the HMA production unit after you submit test results that comply with the mix design specifications.
5. After completion of the JMF verification renewal document review, the Engineer verifies each proposed JMF within 20 days of receiving the verification renewal samples and the complete Contractor Job Mix Formula Renewal form.
6. You may not adjust the JMF due to a failed verification.
7. For each HMA type and aggregate gradation specified, the Engineer verifies at no cost to you one proposed JMF renewal within a 24-month period.


This change has been discussed and routed through construction industry members representing material suppliers and paving contractors. Industry has advocated for this change

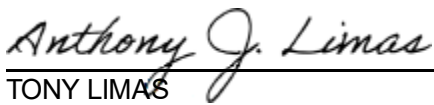
with the understanding that extending the life of HMA mix designs by one year will result in multiple benefits to Caltrans and their industry partners. Further, this change is in alignment with the Departments sustainability goals and guidelines and acts to ensure the efficient use of certain SB 1 funds available for the Departments Road Maintenance and Rehabilitation Program.

**Implementation**


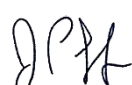





A Construction Policy Directive to implement this decision on on-going projects will be issued as soon as possible. This decision will be incorporated into the October 2021 RSS. Caltrans will outreach to the Districts to ensure smooth implementation of these proposed changes. To these statements the undersigned do agree.

**RECOMMENDED BY:**

 <hr/> KEE FOO Caltrans Chair, Asphalt Sub Task Group	<hr/> 02/26/2021 Date
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 <hr/> TONY LIMAS Industry Lead, Asphalt Sub Task Group	<hr/> 02/26/2021 Date
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**APPROVED BY:**

 <hr/> TOM PYLE Asphalt Task Group Chair	<hr/> 04/12/2021 Date	 <hr/> JEREMY PETERSON-SELF Asphalt Task Group Member	<hr/> 04/14/2021 Date
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