

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

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*Flex your power!  
Be energy efficient!*

April 3, 2012

10-SJ-4-T15.3/R18.9  
10-0V9604  
Project ID 1000020468

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN SAN JOAQUIN COUNTY IN STOCKTON AT VARIOUS LOCATIONS FROM FRESNO AVENUE TO 0.1 MILE EAST OF FILBERT STREET OVERCROSSING.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Wednesday, April 18, 2012, instead of the original date of Wednesday, April 4, 2012.

This addendum is being issued to set a new bid opening date as shown herein and revise the Notice to Bidders and Special Provisions.

In the Special Provisions, Section 10-1.17, "HOT MIX ASPHALT WITH 5 PERCENT RAS, is deleted.

In the Special Provisions, Section 10-1.175, "HOT MIX ASPHALT WITH 3 TO 5 PERCENT RECLAIMED ASPHALT SHINGLES, is added as attached.

To Bid book holders:

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This addendum and attachment are available for the Contractors' download on the Web site:

**[http://www.dot.ca.gov/hq/esc/oe/project\\_ads\\_addenda/10/10-0V9604](http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/10/10-0V9604)**

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,



SHARRI BENDER EHLERT  
District Director  
District 6 Central Region

Attachment

## 10-1.175 HOT MIX ASPHALT WITH 3 TO 5 PERCENT RECLAIMED ASPHALT SHINGLES

### GENERAL

#### Summary

This work includes using from 3.0 to 5.0 percent by weight reclaimed asphalt shingles (RAS) in HMA Type A. Do not use softening agents, asphalt modifiers, rejuvenators, or recycling agents in HMA.

HMA with RAS must comply with Section 39, "Hot Mix Asphalt," of the Standard Specifications, except 39-1.02F Reclaimed Asphalt Pavement.

The requirements for reclaimed asphalt pavement (RAP) in Section 39 "Hot Mix Asphalt," of the Standard Specifications, apply to RAS.

Assign the substitution rate of from 3.0 to 5.0 percent RAS for virgin aggregate with the job mix formula (JMF) submittal.

You may produce HMA using both RAS and RAP. When both RAS and RAP are used you may substitute part of the virgin aggregate in HMA in a quantity not exceeding 15.0 percent of the aggregate blend.

You may substitute RAP aggregate for a part of the virgin aggregate in HMA in a quantity not exceeding maximum percent of RAP allowed of the aggregate blend. The maximum percent of RAP allowed to replace virgin aggregate blend in HMA shall be computer as follows:

$$\text{Maximun percent RAP allowed} = 15.0 \text{ percent} - A$$

where:

$$A = \text{percent RAS in HMA}$$

Assign the substitution rate of RAP aggregate for virgin aggregate with the JMF submittal. The JMF must include the percent of RAP used. If you change your assigned RAP aggregate substitution rate by more than 5 percent, submit a new JMF.

### MATERIALS

#### Reclaimed Asphalt Shingles (RAS)

RAS may be either pre-consumer or post-consumer asphalt shingles. Post consumer singles are tear-offs produced from roofing replacements and pre-consumer asphalt shingles are primarily shingle manufacturer scrap. Post-consumer asphalt shingles shall be in accordance with AASHTO MP 15. For post-consumer asphalt shingles, the RAS processing company shall provide a certificate of compliance that the RAS complies with AASHTO MP 15 and these specifications. For pre-consumer asphalt shingles, the shingle manufacturer or RAS processing company shall provide a certificate of compliance that the RAS complies with these specifications.

Processed RAS shall be sufficiently dry to be free flowing and to prevent foaming when blended with the asphalt binder. Processed RAS must be free of all chemicals, oils, or any other hazardous materials. Deleterious material present in post-consumer asphalt shingles shall be limited to the percentages stated in AASHTO MP 15. Processed RAS from pre-consumer asphalt shingles shall be free from debris or other particles.

Processed RAS must have the following gradation as determined under California Test 202:

**RAS Grading**

Sieve Size	Requirement percent passing
3/8"	100
No. 4	90-100

Processed RAS must not be agglomerated or be allowed to congeal in large piles. Pre-consumer and post-consumer asphalt shingles shall not be blended for use in HMA mixtures and shall be stockpiled separately from other materials.

Section 39 aggregate quality specifications do not apply to processed RAS.

**RAS Stockpile Quality Control**

Sample and test processed RAS at a minimum frequency of one sample per 250 tons with a minimum of six samples per RAS stockpile to assure that gradation, asphalt binder content and specific gravity meet the processed RAS quality characteristics.

The quality characteristic for RAS gradation, determined by California Test 202 is:

**RAS Grading**

Sieve Size	Requirement percent passing
3/8"	100
No. 4	90-100

The quality characteristic for RAS asphalt binder content, determined by ASTM D 2172 (Method B), is ± 0.8% of the average processed RAS stockpile asphalt binder content. If new RAS stockpiles piles are required, the average binder content of the new RAS stockpile shall be within ± 2% of the average binder content of the original processed RAS stockpile. Submit a new JMF when the average binder content in a new processed RAS stockpile is more than ± 2% from the average binder content of the original processed RAS stockpile used in the mix design.

The quality characteristic for maximum specific gravity for processed RAS, determined by CT 309, is the average maximum specific gravity reported on page 4 of Form CEM-3512 ± 0.060. Submit a new JMF when the processed RAS specific gravity is more than ± 0.060 from the average maximum specific gravity reported on page 4 of Form CEM-3512.

Submit processed RAS stockpile quality control data to the engineer prior to using a processed RAS stockpile in HMA production.

**Reclaimed Asphalt Pavement (RAP)**

RAP shall be the product resulting from cold milling or crushing of existing asphalt concrete pavement. You may process and stockpile RAP during the entire project. Prevent material contamination and segregation. Store RAP in stockpiles on smooth surfaces free of debris and organic material. Processed RAP stockpiles must be only homogeneous RAP.

Section 39 aggregate quality specifications do not apply to processed RAP.

**MIX DESIGN**

Substitute RAS aggregate for part of the virgin aggregate in HMA in a quantity equal to from 3.0 to 5.0 percent by weight of the aggregate blend.

For mix design, use Lab Procedure 9 (LP-9), except use percentage RAS instead of 15% RAP. When both processed RAS and processed RAP are used, use Lab Procedure 9 (LP-9), except provide test results for gradation, asphalt binder content and specific gravity for RAS, RAP and combination.

The amount of binder replaced in HMA by binder in the RAS and RAP shall be computed as follows:

$$\text{Binder replacement percent} = [(AXB) + (C \times D) / E]$$

where:

- A = percent binder content of RAP
- B = percent RAP in HMA
- C = percent binder content in RAS
- D = percent RAS in HMA
- E = optimum binder content of HMA

For HMA mixtures utilizing both RAP and RAS the maximum binder replacement shall be 25.0 percent for surface course and 40.0 percent for lower courses. HMA Type A with a surface course of OGFC will not be considered a lower course, except when the OGFC is RHMA-O or RHMA-O-HB.

RAS shall not contribute more than 25 percent by weight of the optimum binder content for HMA.

For HMA with a binder replacement percent less than or equal to 25 percent of optimum binder content, you may request that the performance graded asphalt binder grade with upper and lower temperature classifications be reduced by 6°C from the specified grade.

For HMA with a binder replacement greater than 25 percent of optimum binder content and less than or equal to 40 percent of optimum binder content you must use a performance graded asphalt binder grade with upper and lower temperature classifications reduced by 6°C from the specified grade.

**CONTRACTOR QUALITY CONTROL**

Perform sampling and testing at the specified frequency and location for the following additional quality characteristic:

**Minimum Quality Control**

Quality characteristic	Test method	Minimum sampling and testing frequency	Requirement	Location of sampling	Maximum reporting time allowance
Combined aggregate gradation	California Test 202 <sup>a</sup>	1 per 3000 tons	Report Only	Loose mix behind the paver. See California Test 125	48 Hours

Note:

<sup>a</sup>Determine the combined gradation by performing a sieve analysis on recovered aggregate from either California Test 382 or ASTM 2172 (Method B).

**CONSTRUCTION**

Contractor shall notify the engineer when a new RAS stockpile is to be utilized.

**MEASUREMENT AND PAYMENT**

Full compensation for HMA with 3 to 5 percent RAS shall be considered as included in the contract price paid per ton for HMA (Type A) and no separate payment will be make therefor.