STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

CHANGE ORDER MEMORANDUM

CEM-4903 (REV 2/2014)

DATE

TO		FILE	CONTRACT NO.
FROM			CO-RTE-PM
			FED NO.
CHANGE ORDER NO.	SUPPLEMENT NO.	CATEGORY CODE	CONTINGENCY BALANCE (Including this change) $
CHANGE ORDER AMOUNT $ ☐ INCREASE ☐ DECREASE			HEADQUARTERS APPROVAL REQUIRED? ☐ YES ☒ NO
SUPPLEMENTAL FUNDS PROVIDED $			IS THIS REQUEST IN ACCORDANCE WITH ENVIRONMENTAL DOCUMENTS? ☒ YES ☐ NO

ORIGINAL CONTRACT TIME:	TIME ADJUSTMENT THIS CHANGE:	PREVIOUSLY APPROVED TIME ADJUSTMENTS:	PERCENTAGE TIME ADJUSTED (Including this change)	TOTAL # OF UNRECONCILED DEFERRED TIME (Including this change)
_____ DAY(S)	_____ DAY(S)	_____ DAY(S)	_____ %	

THIS CHANGE ORDER PROVIDES FOR (Use additional pages as needed):

Revising the Type A hot mix asphalt (HMA) job mix formula (JMF) because the current amount of reclaimed asphalt pavement (RAP) allowed in project JMF exceeds the new maximum percentage of RAP pavement binder ratio (RPBR) requirements. The RPBR for the current JMF was determined under a separate change order. The new maximum RPBR requires the following:

1) HMA mix design
2) Type A HMA JMF
3) JMF verification
4) Reducing the performance grade of the virgin grade asphalt binder to performance grade <insert grade>

Replace 4 with the following when maximum allowable RAP percentage must be reduced because of new maximum allowable RPBR.

4) Increasing the amount of virgin aggregate and virgin asphalt binder used in HMA based on a reduction in the percentage of reclaimed asphalt pavement used in HMA.

In addition, quality control testing is required for the critical binder temperatures of the virgin asphalt binder with a testing frequency of every 5 days during HMA production. If the RAP stockpile is augmented, quality control testing is required for the critical binder temperatures of recovered RAP binder at the frequency of 1 for every 500 tons of RAP.

Reason for Change

Nationwide there have been several premature asphalt pavement failures that have been related to high asphalt binder replacement from recycled materials. Asphalt binder replacement (ABR) is a term used for the asphalt from either RAP or recycled asphalt shingles (RAS) used to replace a portion of the total asphalt binder in new pavements. RAP is commonly used to replace from 15 to 25 percent of the total virgin aggregate in HMA. There have been increased concerns with the use of recycled materials in pavements because of how the ABR effects the combined asphalt binder properties and, therefore, HMA performance. Based on the percentage of ABR, varying degrees of stiffness can be experienced by the in-service pavements. Increased stiffness can have a positive impact on performance by preventing rutting and may reduce cracking potential due to less pavement deflection under loads. However, increased stiffness can also have a negative impact on performance with increased cracking in low temperatures or thin pavement sections. This change order is being implemented to prevent potential premature asphalt pavement failures in California due to increased asphalt binder stiffness caused by using RAP.

Concurrence

This change order is in accordance with Division of Construction CPD 16-8, dated June 22, 2016. FHWA gave blanket approval for this change on February 17, 2016.

ADA Notice For individuals with sensory disabilities, this document is available in alternate formats. For alternate format information, contact the Forms Management Unit at (916) 445-1233, TTY 711, or write to Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

CHANGE ORDER MEMORANDUM

CEM-4903 (REV 2/2014)

CHANGE ORDER NUMBER	SUPPLEMENT NO	CONTRACT NUMBER	DATE

Payment Methods

Extra Work at Agreed Lump Sum Price

The agreed extra work at lump sum $ <lump sum price> is based on a force account analysis filed in the project records, and represents the costs for the new JMF.

Estimated Extra Work at Agreed Lump Sum Price Total $_____.

Adjustment of Compensation at Unit Price

Use the following when the performance grade asphalt binder grade must be reduced to allow up to contract specified maximum allowable RAP percentage because of new maximum allowable RPBR requirement.

The contractor agrees with a unit price adjustment of $_____ per ton of HMA for each ton of HMA that contains performance grade <insert performance grade binder grade> asphalt binder. The agreed unit price is based on a force account analysis filed in the project records and represents the difference between the costs of the planned HMA using performance grade <insert performance grade binder grade> versus revised performance grade <insert performance grade binder grade> based on new maximum allowable RPBR shown on asphalt binder blending charts.

Use the following when maximum allowable RAP percentage must be reduced because of new maximum allowable RPBR requirement.

The contractor agrees with a unit price adjustment of $_____ per ton of HMA for each ton of HMA that contains <insert percentage> percent RAP. The agreed unit price is based on a force account analysis filed in the project records and represents the difference between the costs as planned using <insert percentage> percent RAP versus revised <insert percentage> percent RAP based on maximum allowable RPBR shown on asphalt binder blending charts.

Estimated net cost = <insert tons> tons @ $<insert unit price adjustment> per ton = $<insert total cost>

Extra Work at Agreed Unit Price

The contractor agrees with a unit price of $_____for true grading quality control tests required of recovered RAP binder and preparing blending charts whenever the RAP stockpile is augmented with 500 tons of RAP. The agreed unit price is based on a force account analysis filed in the project records which represents the costs for RAP binder extraction under AASHTO T 164, Method A, recovering the extracted asphalt binder under either ASTM D 1856 or AASHTO R 59, true grading the RAP binder under AASHTO T 315 and AASHTO T 313, and preparing blending charts for high, intermediate, and low critical temperatures.

Estimated Cost Recovered RAP Binder Blending Charts:
<insert # of tests> true grade tests @ $<insert unit price > per true grading = $<insert total cost>

The contractor agrees with a unit price of $_____for true grading quality control tests required of virgin asphalt binder and preparing blending charts for every 5 days of HMA production. The agreed unit price is based on a force account analysis filed in the project records which represents the costs for RAP binder extraction under AASHTO T 164, Method A, recovering the extracted asphalt binder under either ASTM D 1856 or AASHTO R 59, true grading the virgin asphalt binder under AASHTO T 313 and AASHTO T 315, and preparing blending charts for high, intermediate, and low critical temperatures.

Estimated Cost Virgin Binder Blending Charts:
<insert # of tests> true grade tests @ $<insert unit price > per true grading = $<insert total cost>

Estimated Extra Work at Agreed Unit Price Total $_____.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

CHANGE ORDER MEMORANDUM

CEM-4903 (REV 2/2014)

DATE

CHANGE ORDER NUMBER	SUPPLEMENT NO	CONTRACT NUMBER

Time Adjustment

This change order will affect the controlling activity. A determination of time adjustment is deferred until new JMF authorized by the engineer.

CONCURRED BY:	
CONSTRUCTION ENGINEER/BRIDGE ENGINEER	DATE
PROJECT ENGINEER	DATE
PROJECT MANAGER	DATE
FHWA REP.	DATE
ENVIRONMENTAL	DATE
OTHER (SPECIFY)	DATE
	DATE
HQ OR DISTRICT PRIOR APPROVAL BY	DATE
RESIDENT ENGINEER SIGNATURE	DATE

ESTIMATE OF COST

	THIS REQUEST	TOTAL TO DATE
ITEMS		
FORCE ACCOUNT		
AGREED PRICE		
ADJUSTMENT		
TOTAL	$0.00	$0.00

FEDERAL PARTICIPATION

☐ PARTICIPATING ☐ PARTICIPATING IN PART ☐ NONE

☐ NON-PARTICIPATING (Maintenance) ☐ NON-PARTICIPATING

FEDERAL SEGREGATION (If more than one funding source or P.I.P. type)

☐ CHANGE ORDER FUNDED PER CONTRACT ☐ CHANGE ORDER FUNDED AS FOLLOWS

FEDERAL FUNDING SOURCE	PERCENT