STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONTRACT CHANGE ORDER MEMORANDUM

TO: Tony Anziano, Program Manager /	FILE: **E.A.** 04 - 0120F4
FROM: Darryl Schram, Senior TE	**CO-RTE-PM** SF-80-13.2/13.9
	FED. NO.
CCO#: **274** SUPPLEMENT#: **0** Category Code: **BZZZ**	CONTINGENCY BALANCE (incl. this change) **$91,842,764.99**
COST: **$161,080.00** INCREASE ☑ DECREASE ☐	HEADQUARTERS APPROVAL REQUIRED? ☐ YES ☑ NO
SUPPLEMENTAL FUNDS PROVIDED: **$0.00**	IS THIS REQUEST IN ACCORDANCE WITH ENVIRONMENTAL DOCUMENTS? ☑ YES ☐ NO
CCO DESCRIPTION: Supplemental Cable Band Clamps	**PROJECT DESCRIPTION:** CONSTRUCT SELF-ANCHORED SUSPENSION BRIDGE

Original Contract Time:	Time Adj. This Change:	Previously Approved CCO Time Adjustments:	Percentage Time Adjusted: (including this change)	Total # of Unreconciled Deferred Time CCO(s): (including this change)
2490 Day(s)	**0** Day(s)	**501** Day(s)	**20** %	**3**

THIS CHANGE ORDER PROVIDES FOR:

Furnishing sixteen (16) supplemental galvanized cable band clamps.

During installation and initial bolt tensioning of the cable bands it was discovered that the measured gap between the male/female halves of several cable bands was smaller than anticipated. Previously, confirmation of cable band dimension had been verified and agreed to during the cable band friction test conducted at Pier 7. However, the cable band diameter of the North Main Span was compacted to a smaller diameter than what was observed during the cable band friction test; therefore, the Department became concerned about the small gap condition between the male/female halves of the cable band. An evaluation was performed and the Department issued Contract Change Order (CCO) 247, directing the Contractor to modify a number of the cable bands to increase the gap size to account for the expected cable band gap reductions associated with the expected reduction in cable diameter that would take place during load transfer as the Main Cable is loaded.

Subsequently, as more information became available, field observations showed locations of several cable bands where gaps had closed to less than 5 mm. This was due primarily to the reduction in Main Cable diameter, commensurate with the elongation of the Main Cable as it was loaded. However, field staff also witnessed further cable compaction (i.e.: reduction in cable diameter and cable band gaps) from the continual cable band bolt tensioning effort directed in CCO 264. In addition, the Main Cable may further elongate and reduce in diameter as it receives additional loading from the application of the epoxy AC wearing surface and the opening to vehicular "live load" traffic. Additional cable band bolt tensioning may be required to maintain the required cable band hoop stress (i.e.: sliding friction). With the additional tensioning, if the cable band gaps were to close and the cable band halves come into contact, a loss of hoop stress might be realized, requiring remedial action to maintain the required sliding friction.

To address this issue and to prevent schedule impacts to the Seismic Safety Opening (SSO) milestone, the Department is implementing multiple risk management strategies. CCOs 271 and 274 will procure four (4) additional cable bands and sixteen (16) supplemental cable band clamps, respectively. CCO 273 will procure additional higher strength cable band bolts. In the event a cable band were to close, the cable bands and supplemental cable band clamps can be placed beneath the existing cable bands to bolster frictional resistance. Alternatively, frictional resistance in the cable band clamps can be increased as a whole by replacing the existing bolts with higher strength bolts. In this instance, the bolt tension in areas of a cable band with sufficient gap space can be increased to make up for the areas where bolt tension must be allowed to decrease to prevent a gap closure. CCO 280 will procure the tensioning equipment required to install the higher strength bolts, and CCO 285 will provide for the shipping of the CCO 273 bolts.

This CCO furnishes supplemental cable band clamps to provide additional frictional capacity, should it be deemed necessary. If it is determined that there is insufficient tension in the bolts to properly secure a cable band against slipping on the Main Cable, then a supplemental clamp will be installed, in a separate change order.

The Risk Register has captured the risk associated with this type of issue. Risk Item 1.2, "Schedule Delays to Seismic Safety Opening," captures the risk to schedule, and Risk Item 75, "Cable Field Installation: Issues with Load Transfer" and Risk Item 100, "Cable Field Installation: Cable Wrapping and Cable Bands," address potential direct costs.

The total cost of this change order is $161,080.00 lump sum, which can be financed from the contingency fund. A detailed cost analysis is on file.

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No time adjustment is warranted as this change order does not affect the controlling operation.

This change order has concurrence from William Casey (Supervising TE), Rich Foley (HQ Oversight), Wenyi Long (Bridge Design), Jing Chen (District Design), and Lina Ellis (Maintenance).

CONCURRED BY:		
Construction Engineer:	William Casey, Sup TE	Date 12/20/12
Bridge Engineer:	CT Oversight, Wenyi Long, P.E.	Date 12/20/12
Project Engineer:	District Design, Jing Chen	Date 12/20/12
Project Manager:		Date
FHWA Rep.:		Date
Environmental:		Date
Other (specify):	HQ, Rich Foley	Date 1/2/13
Other (specify):	Struct. Maint, Lina Ellis	Date 12/19/12
District Prior Approval By:		Date
HQ (Issue Approve) By:		Date
Resident Engineer's Signature:		Date 2/25/13

ESTIMATE OF COST

	THIS REQUEST	TOTAL TO DATE
ITEMS	$0.00	$0.00
FORCE ACCOUNT	$0.00	$0.00
AGREED PRICE	$161,080.00	$161,080.00
ADJUSTMENT	$0.00	$0.00
TOTAL	$161,080.00	$161,080.00

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)
☐ CCO FUNDED PER CONTRACT ☐ CCO FUNDED AS FOLLOWS

FEDERAL FUNDING SOURCE	PERCENT

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