

JAN 06 2013




Washington State  
Department of Transportation

## Memorandum

DATE: December 16, 2013

TO: Derek Case, MS 47345

THRU: <sup>DB</sup>  
Dave Becher, MS NB82-65

FROM:   
John Chi, Project Engineer, MS NB82-50

SUBJECT: Contract 008432, SR 250, West Connection Bridge  
Federal Aid No. BR-0520(051)  
**Change Order No. 4 – “Casing Installation Method”**  
Log No. 228

### Description & Evolution of Change

For review and further processing, is PE recommended Change Order No. 4. This change order compensates the Contractor for impacts associated with installation of the drilled shaft casing at Piers 25 to 30.

Written notification was received via a Notice of Protest letter on June 19, 2013 from the Contractor stating the Contract documents regarding the permanent shaft casings for the 8-foot diameter shafts at Piers 25 through 30 were misleading. In particular, the Contractor said their bid was prepared assuming that it would be possible to install the permanent casings to the elevations shown in the Plans with vibratory methods and the information in the contract documents indicated this would be feasible. Following bid execution, an in-depth feasibility study was prepared by the Contractor's geotechnical engineer who indicated it would not be possible or likely to be able to install the permanent casing to full depth. The permanent casing depths were established to provide protection to the nearby existing SR 520 bridge pilings during shaft installation. The new shafts at Piers 25 to 30 are about 7.5 feet away from the existing concrete columns, less than one shaft diameter. The existing columns are 4-foot diameter hollow concrete pilings that have some embedment into underlying glacial till.

The original Notice of Protest letter was responded to on June 26, 2013 stating it was invalid. The Contract documents did not specify a particular method that would be successful. It is the Contractor's responsibility to choose the appropriate means and methods to successfully perform the work as specified. A letter was received from Mowat-American dated July 1, 2013 stating they disagreed with the determination that their Notice of Protest was invalid and requested reconsideration of that initial assessment.

Several meetings were held with the Contractor and the SR 520 design and construction team members to determine the feasibility of various casing installation methods and whether the permanent casing depths could be reduced. The general opinion was that Contractor's proposed means of vibrating the permanent casings in might be possible but would require an extreme level of effort (tandem APE 600 vibratory hammers) which still might not be able to achieve the design elevations and would be expected to exceed the

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allowable vibration limits on the nearby existing structure and possibly at the on-land structures nearby. This would also result in the risk of dealing with casings that cannot be advanced to design depth: if this were to occur, would there be an acceptable "close enough" depth? This scenario would occur on the water with the drilling operation on standby with high pressure to leave the casing as-is.

The geotechnical engineer of record and WSDOT geotechnical staff were strongly of the opinion that the full plan depth of the permanent casings is needed to minimize the risk of damage to the existing structure during drilling operations. In addition, the permanent casings were included as part of the structure in the structural seismic analysis of the bridge. As the Piers 25-30 segment of the bridge is a widening of the existing structure, the WSDOT Bridge and Structures "Do no harm" policy applies. The policy states widening of an existing structure must be done in such a way that the new portion of the structure shall not induce extra loading on the existing part during seismic modeling. The permanent casing has an effect on the stiffness of the shafts, which then would react differently in a seismic event if it was not installed to the plan elevation.

Because the permanent casing tip elevations had been established during the design process as a measure to mitigate risk of damage to the existing structure and the Contractor was not in a position to take on the risk of raising the permanent casing elevations, the preferred course of action is to use the oscillator-rotator method for installing the permanent casings to full depth. This would allow the Contractor to reliably install the casings to the depths specified in the Plans and would provide WSDOT with the assurance that risk to the existing bridge is minimized and the installation method is unlikely to result in a delay that could substantially impact the completion of West Connection Bridge and thereby the Floating Bridge and Landings project.

Mowat-American sent a Notice of Claim letter dated July 22, 2013 which provided the costs to switch from conventional drilled methods to oscillatory methods. The direct costs are estimated to be approximately \$1.4M, including costs to de-mobilize DBM (the original shaft subcontractor), mobilize Malcolm (the oscillated shaft subcontractor), the additional costs that Malcolm will incur using a different method, and Mowat-American's costs to support the drilling operations. The proposed costs were reviewed by the WSDOT construction office team and found to be reasonable and appropriate with the exception of some markup items.

In consideration WSDOT will be getting a more reliable installation method from the Contractor, risks will be reduced to the existing SR 520 structure, and risk is lowered to the overall delivery of West Connection Bridge and the program, WSDOT offered to share in the cost of the changed shaft construction methodology for the amount of \$550,000. Mowat-American accepted this offer and also requested two weeks (10 working days) of additional time to account for the de-mobilization/remobilization of the drill crews and revised work methodology and two additional WB SR 520 weekend closures for the concrete pour at Pier 35. WSDOT agreed with granting the additional working days and the

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two additional WB SR 520 weekend closures. This solution keeps the project on track and avoids elevating the issue to the Dispute Review Board.

John Chi, Project Engineer gave verbal approval for this change on August 9, 2013.  
Dave Becher, SR 520 Engineering Manager, provided approval on August 9, 2013.  
Mark Gaines, Assistant State Construction Engineer, provided written approval on September 10, 2013.  
Anthony Sarhan, Federal Highway Administration provided written approval on September 30, 2013.

**Entitlement/Price**

New item "CO#4 Casing Installation" will be paid at the agreed lump sum amount of \$550,000.00 and shall be full pay for all labor, equipment, materials and associated cost necessary to perform the work as described.

The net amount for this change order is \$550,000.00.

**Contract Time/Disclaimer**

Ten (10) non-compensable working days time extension will be granted revising the total authorized time of the contract to 300 working days. A written time impact analysis is attached.

**Closing**

If you require any further information, please contact John Chi at 425-225-8741.

kw:ak  
Attach.

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CHANGE ORDER**

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CONTRACT NO: 008432  
CONTRACT TITLE: SR 520 WEST CONNECTION BRIDGE  
CHANGE ORDER NO: 4 CASING INSTALLATION

FEDERAL AID NO: BR-0520 (051)

PRIME CONTRACTOR: SW0158161 MOWAT - AMERICAN, A JOINT VENTURE  
PO BOX 1330  
WOODINVILLE WA 98072-1330




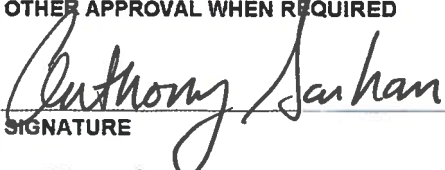
Ordered by Engineer under the terms of Section 1-04.4 of the Standard Specifications

Change proposed by Contractor

ENDORSED BY:  CONTRACTOR 12/3/13 DATE	SURETY CONSENT:  ATTORNEY IN FACT  DATE
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ORIGINAL CONTRACT AMOUNT: 22,129,243.20  
CURRENT CONTRACT AMOUNT: 22,151,743.20  
ESTIMATED NET CHANGE THIS ORDER: 550,000.00  
ESTIMATED CONTRACT TOTAL AFTER CHANGE: 22,701,743.20

Approval Required:  Region  Olympia Service Center  Local Agency

<input checked="" type="checkbox"/> APPROVAL RECOMMENDED  PROJECT ENGINEER 12/4/13 DATE	<input type="checkbox"/> EXECUTED EXECUTED:  STATE CONSTRUCTION ENGINEER For 01/14/2014 DATE
<input checked="" type="checkbox"/> APPROVAL RECOMMENDED REGIONAL ADMIN:  BY: 12/17/13 DATE	<input type="checkbox"/> EXECUTED OTHER APPROVAL WHEN REQUIRED  SIGNATURE 1/16/14 DATE FHWA REPRESENTING

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All work, materials, and measurements to be in accordance with the provisions of the Standard Specifications and Special Provisions for the type of construction involved.

This contract is revised as follows:

**DESCRIPTION**

This change order compensates the contractor for impacts associated with the installation of drilled shaft casing at Piers 25 to 30. This change order also adds two additional WB SR 520 only continuous weekend closures for concrete shaft pour at Pier 35.

**CONSTRUCTION REQUIREMENTS**

Section 6-12.3(3) is supplemented with the following:

The Contractor shall ensure the permanent casing depths are met for the drilled shafts to be constructed adjacent to existing SR 520 bridge pilings as shown in the Plans and as directed by the Engineer. The permanent shaft casings shall be installed using an oscillator/rotator drill rig.

Section 1-07.23(1) is supplemented with the following:

Two WB SR 520 only continuous weekend closures for 12 consecutive hours will be permitted between 11 p.m. Friday and 5 a.m. Monday for concrete shaft pour at Pier 35.

**MEASUREMENT**

No specific unit of measurement shall apply to the new lump sum item "CO#4 Casing Installation".

**PAYMENT**

New item "CO#4 Casing Installation" will be paid at the agreed lump sum amount of \$550,000.00. This shall be full pay for all labor, equipment, materials, and associated costs necessary to perform the work as described.

**TIME**

Ten (10) non-compensable working days time extension will be granted.

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ITEM NO	GROUP NO	STD ITEM	ITEM DESCRIPTION	UNIT MEASURE	UNIT PRICE	EST QTY CHANGE	EST AMT CHANGE

1002	01		CO#4 CASING INSTALLATION	L.S.	0.00	550,000.00	550,000.00
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550,000.00  
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