



Date 30 August 2016

The work included in this change order consists of additional Professional Engineering Services to provide the Client with additional Rehabilitation/Repair Plans and Construction Administration services for Kemp's Bottom Road Bridge. Detailed Scope of Services described in Change Order 1 - Attachment.

Date Signed: \_\_\_\_\_

## Kemp Bottom Road Bridge – Rehabilitation/Repairs

### Scope of Work:

- Rehabilitation/Repair Plans: Provide construction drawings for the repair of bent 5 and placement of riprap. This work will include coordination efforts with geotechnical services. The following plan sheets will be developed:
  - Title Sheet
  - General Notes, Index, Quantities
  - General Plan & Elevation
  - Riprap Revetment Plan
  - Bent Repair Details
  - Suggested Temporary Supports, Jacking & Construction Sequence
  - Soil Boring Logs

The proposed bent repair will consist of new steel pipe piles and new steel cap beams. The steel pipe piles will be placed outside the limits of the existing structure to minimize traffic interruption. These piles will be used to support a primary transverse steel beam system, connecting to a shorter secondary steel beam system running longitudinally under the existing concrete cap. Once the existing cap is supported by the new piles and steel beams, the existing pipe piles will be removed from the existing concrete cap to the top of the existing concrete collar, leaving the embedded piles in place.

A riprap revetment plan will be developed to detail upstream and downstream placement near the structure in accordance with the geotechnical report and recommendations.

All design will be in accordance with current AASHTO LRFD Bridge Design Specifications.

One progress plan set (75% plans) will be submitted for review and comment. The final submittal will include a full-size set of plans and a design calculation book. Stantec will perform one site visit and attend a plan review meeting (field review).

- Construction Administration (CA): Stantec will provide support during construction activities which will include the following tasks:
  - Attend construction progress meetings (2 assumed)
  - Review contractor submittals (proposed sequence and shop drawings)
  - Respond to contractor requests for information (3 assumed)
  - Provide construction engineering services for field and plan differences (1 assumed plan change)

CA services will also include review of the contractor- submitted temporary support system, jacking system, sequence of construction and shop drawings with design calculations, stamped and signed by a Mississippi Registered Professional Engineer.

Stantec will provide construction engineering services for a maximum of one plan change for different conditions found in the field than what is shown on the plans.

Stantec will provide construction inspections services throughout construction which is assumed to be approximately eight weeks.

# **BURNS COOLEY DENNIS, INC.**

## **GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS**

### **Corporate Office**

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Ridgeland, MS 39157  
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### **Mailing Address**

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### **Materials Laboratory**

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Ridgeland, MS 39157  
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Fax: (601) 856-3552

August 25, 2016

Stantec  
200 North Congress Street, Suite 600  
Jackson, Mississippi 39201-1916

Proposal No. 160406PR

Attention: John McKee, P.E.

Re: Proposal Phase 2 Geotechnical Analyses and Recommendations  
Remediation of Kemp Bottom Bridge  
Vicksburg, Mississippi

Gentlemen:

Per your request, Burns Cooley Dennis, Inc. has performed Phase 1 services for the above-referenced project. Our Phase 1 services included the following:

- Drilling and sampling three borings at the site
- Installing an inclinometer casing in one of the borings, and reading of the inclinometer three times
- Performing laboratory tests on selected soil samples to investigate the strengths, classifications and moisture contents of the soils encountered in the borings
- Performing stability analyses to estimate the amount of lateral load the soil slope is placing on the Bent 5 piles
- Performing laterally loaded pile analyses to estimate the amount of load required to displace the Bent 5 piles laterally by 8 in. and to estimate the bending stresses in the piles as the result of the displacement
- Performing pile group analyses of the Bent 5 piles to estimate the pile stresses caused by the design bridge loads

- Performing slope stability analyses to design a riprap buttress to stabilize the channel slope under the west side of the bridge
- Attending a meeting at Stantec's Vicksburg office on August 9, 2016 to present the results of our Phase 1 services and to discuss options for remediating the bridge and what is required to move forward on this project

Based on discussions during the August 9th meeting, we understand that Stantec's structural engineers are currently analyzing methods to re-support the bridge at Bent 5 with new piles. Moving forward, Phase 2 of this project will result in Stantec preparing drawings and specifications so that the remediation construction can be bid.

We foresee that BCD's Phase 2 services would include the following:

- Performing additional laterally loaded pile analyses and stability analyses to estimate the loads being applied to the piles in Bents 6 (West Bank) and 4 (East Bank) from the channel slopes, and to estimate the stresses in the existing piles at these bents
- Performing analyses to develop axial capacity curves for the proposed new piles
- Performing stability analyses for the final buttress configuration recommended by the hydraulic engineers, and providing input as to what configuration will satisfy the slope stability requirements
- Continue to monitor the slope inclinometer
- Attending one additional meeting in Vicksburg with the Stantec project team
- Preparing a geotechnical report summarizing the results of our investigation and presenting our geotechnical recommendations
- Performing a review of Stantec's drawings and specifications
- Performing two Dynamic Pile Tests during driving of the new piles using PDA to estimate static axial capacities, analyzing PDA Testing results using the CAPWAP program, and preparing PDA test reports

Our Phase 1 services have been completed, and we will soon be providing Stantec with an invoice of \$23,802.37 for the Phase 1 services. We estimate that the price to complete the Phase 2 services is \$27,200.00, resulting in a total price for the Phase 1 and Phase 2 services of \$51,002.37. Considering the emergency nature of this project, we will perform the Phase 2 services on an ASAP basis.


We appreciate the opportunity to submit this proposal. The proposal letter and attached contract agreement are being transmitted by e-mail for your review and execution. If the scope of services and price estimate described in the preceding paragraphs are acceptable, please sign the contract and return a copy to us by e-mail along with the letter. We look forward to providing geotechnical engineering services for this project.

Very truly yours,

BURNS COOLEY DENNIS, INC.



Bradley D. Campbell, P.E.



A. E. (Eddie) Templeton, P.E.

AET/BDC/khb

Copy Submitted: (via e-mail)

CC: Brian Robbins, P.E. (Stantec)

Attachments