**DISPUTE REVIEW BOARD REPORTAND RECOMMENDATION**

**SH 96 BRIDGES KIOWA, OTERO, & CROWLEY COUNTIES, CO**

**CDOT PROJECT NO. FBR 096A-039**

**DISPUTE 3 CONCERNING QUANTITY INCREASES**

**Hearing Dates:** June 18, 2013

**Hearing Location:** CDOT Region 2 Office 1480Quail Lake Loop Colorado Springs, CO

**Hearing Attendees:** Tom Jackson – Structures, Inc. - President Shawn Horton – Structures, Inc. – Project Manager Ken Hawkins – S/I Parsons Brinkerhoff – Director of Engineering Dennis Eden - S/I Parsons Brinkerhoff – Project Engineer Karen Rowe – CDOT – Region 2 South Program Engineer Paul Westoff – CDOT – Resident Engineer Tom Bronniman – CDOT Project Engineer John Sabo – CDOT/AECOM – Highway Deputy Dept. Manager Beth Sprague – CDOT/Atkins – Scheduler Leo F. Milan, Jr. – CDOT – Sr. Assistant Attorney General

**Background:** On June 30, 2010, Structures, Inc. (Contractor) was awarded a Contract by CDOT for $2,908,694 for a Modified Design/Build Project for the replacement of four bridge structures on SH 96 in Kiowa, Otero, & Crowley Counties, Colorado. A Notice to Proceed was issued on July 28, 2010. (**NOTE:** The Pay Estimates show a Notice to Proceed Date of August 18, 2010.) The Contract was a Completion Date Contract with a completion date of May 27, 2011.

The Project required the design and replacement of bridge structures and the associated earthwork and paving of approximately 100 feet for the approaches. The Contractor chose to use precast concrete boxes (CBC) for the structures. The Contractor’s design consultant was Parsons Brinkerhoff (PB).

The Contract included the Standard Specifications for Road and Bridge Construction dated 2005 and any Special Provisions for this Project and Revised Standard Specifications along with technical provisions for the Modified Design/Build features of the Project.

After the initial design had been completed and layout work started on the Project site, it was discovered that the actual field conditions did not match the design layout. An error was discovered in the survey data that was provided by CDOT and new survey information was given to the Contractor. The Contractor maintains that the change in survey data caused a major change in the final quantities required to complete the Project.

**Joint Statement of Dispute:**

The quantities identified in the contract for bidding were based on the erroneous survey information provided to all bidders. Once the survey error was identified, Structures, Inc. provided revised quantities to CDOT. These quantities were significantly different than the original quantities identified for bidding. The dispute is regarding whether those differences are solely the result of the original survey error. CDOT and Structures, Inc. are requesting the DRB make a recommendation as to the responsible party for the cost of the revised quantity amounts.

**Pre-hearing Submittal:**

In addition to the Bid Plans and Specifications for the Project,both parties provided the DRB with Pre-hearing Submittals per Spec. Section 105.23(e) which included but were not limited to documentary evidence relevant to the issues, serial letters, e-mails, speed memos, daily logs, handwritten notes and schedules. Both parties provided the DRB with their lists of attendees. The Contractor also provided supplemental information at the hearing. The DRB allowed the use of any supplemental information that had been used in previous negotiations but did not allow the use of the resource loaded schedules since they had not previously been submitted to CDOT.

The DRB pointed out that neither Party had complied with all the requirements of Spec. Sections 105.22 (d) and (e) in that the pre-hearing submittal documents were incomplete.

**Contractor Presentation on Quantity Increases:**

The Contractor referred to Tab 10 in its pre-hearing submittal entitled SH 96 QUANTITY CHANGES DUE TO ERRONEOUS SCALING FACTOR. The major differences are in ABC (CL. 6), Select Embankment and HMA (GR SX) (75) Top and Bottom Mat.

The Contractor said CDOT’s analysis of the quantities was prepared by AECOM and compares the quantities resulting from the final design model produced by PB to the quantities for the designs based on both the original survey data and the corrected information. These comparisons do not yield much of anything concerning quantity variance due to the fact that the survey error was in reference to a spatial variance of project location, not in design or footprint.

PB used the model based on the original survey information at bid time for quantities. It then calculated quantities based on its first set of design plans issued for construction in November 2010. After the plans were revised due to the error in survey information, another set of quantities were calculated based on the set of design plans issued for construction in February 2011.

The Contractor requested time for the added work and payment for the added quantities as show in Tab 10.

**CDOT Presentation on Quantity Increases:**

CDOT said the Contractor is indicating that all the problems on the project stem from the erroneous survey. Even though the survey error created a difference in the spatial location of the survey itself, the location would not have affected work that was being done by a design engineer. The designer sitting at a monitor would have no concept of the physical location of the road or bridges. It was simply in “paper space” on his monitor. While the erroneous scaling factor located the survey about 2 miles in a different plane the scale of the survey itself was essentially of no consequence.

CDOT gave an analysis using a theodolite and a dumpy level. The survey for each site may have had an assumed control line and stationing as well as an assumed elevation. The data collected for each site was relevant to that local datum alone regardless of the actual location in the real world. And thus any calculation of quantities would not be affected by the datum used for the survey. The same can be said for this dispute.

AECOM said that using the original survey data and the revised survey data should produce the same quantities. They referred to the chart in pre-hearing submittal Tab D3 - Quantities where they show their quantities for the two sets of survey data being the same. The chart also shows PB’s original quantities and the as-built quantities. AECOM further stated that the as-built quantity overruns, considering the CMO adjustments by CDOT, are relatively small percentage wise.

CDOT pointed out that most of the quantities are based on the cross sections multiplied by the length. A change in the survey data would not change the quantities.

**Contractor Rebuttal on Quantity Increases:**

PB said the surveys were not the same and, therefore, the terrain models were not the same. The scaling factor error resulted in an elongation of the project of seven feet. This changed the terrain model. They did not overlay the two to review the differences. PB asked how did the project grow if there was no change as CDOT stated.

The Contractor pointed out that it was not comparing bid quantities to final quantities but quantities based on the two sets of survey data which are the yellow and green columns on the CDOT chart.

**CDOT Rebuttal on Quantity Increases:**

CDOT said the elongation of 6.5 feet in a project that is a half mile long is a minimal change. The actual length of areas that were reworked on the Contract totaled about 1,200 feet.

**Questions by the DRB on Quantity Increases:**

1. **To CDOT and Contractor:** Where does the increased project length that has been mentioned come from?

Both said it was due to the location of each set of survey data on the earth.

1. **To CDOT and Contractor:** TECHNICAL REQUIREMENTS SECTION 18 - MODIFICATIONS TO STANDARD SPECIFICATIONS, Section 109.01 states, *The work will be paid for on a lump sum basis. …Only the lump sum price will be used to determine final payment to Contractor, except as provided in subsection 109.02 as revised for this project.*  If this is what the Contract states, where do the quantity increases come from?

The Contractor said the Unit Prices were used for payment purposes, to which CDOT agreed.

**The hearing was recessed pending the submission of various items requested by the DRB. All submissions were received by June 24, 2013**

**Findings:**

1. Relocating the structures from one place on the earth to another should not change the quantities unless the topography radically changed which could affect embankment quantities. Nothing was included in the pre-hearing submittal or at the hearing that indicated that the topography was different or clearly defined the increases other than the quantities that were provided by PB. The contractor is responsible to incorporate the actual field conditions into its final design.
2. The Contractor/PB submitted a list of quantity comparisons (Tabs 9& 10) between the old and new surveys which indicated quantity differences ranging between 39.65 and 79.76% for the major items of work; however, they did not identify where or why the differences occurred. The Bid Quantities on the PB chart are meaningless since the quantities based on the PB design reflect the work that had to be performed. Differences between Bid Quantities and Design Quantities do not pertain to CDOT but are matters between the Contractor and PB.
3. CDOT/AECOM submitted old and new survey quantities (Tab D3) that were identical. They also submitted numerous cross sections which overlaid both sets of data which showed minute differences. The cross section for station 214+20 showed significant differences between the two surveys however the discrepancies between right and left sides appear to balance.
4. The quantities are strictly a function of the roadway cross sections times the length between cross sections. The quantity variations indicate that no serious effort, such as a station by station cross sectional area comparisons, had been made by the Contractor to determine why such discrepancies on a simple stretch of roadway could exist.

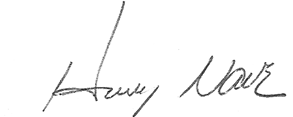
1. The Technical Requirements clearly state the work will be paid for on a lump sum basis per TECHNICAL REQUIREMENTS SECTION 18 - MODIFICATIONS TO STANDARD SPECIFICATIONS, Sections 109.01and 109.02 except for Changes and Force Account Work per 109.04.
2. If the quantities did not change due to the change in survey data, there cannot be any delay for additional work.

**Recommendations:**

1. The Contractor’s request for additional quantities due to the change in survey data is without merit.
2. The Contractor’s request for excusable delay is without merit.

Respectfully submitted, this 24th day of July 2013.

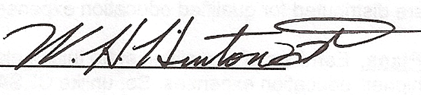
**Dispute Review Board**

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**Henry J. Nave**

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**John L. Tracy**

** W. H. Hinton II**