**DISPUTE REVIEW BOARD REPORTAND RECOMMENDATION**

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

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

 **DISPUTE 2 CONCERNING THE INCONSISTENT CROSS SLOPE ON SH 96**

**Hearing Dates:** June 17 and 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 (June 18 only) 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 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 Concrete Box Culverts (CBC) had been constructed at Site 1and, it was discovered that the actual field conditions showed that the CBC’s did not fit the vertical alignment of the original roadway. This caused a dip in the roadway at the CBC and the approaches not to tie in to the original roadway.

**Joint Statement of Dispute:**

 The contract contained conflicting requirements regarding the final cross slope construction of the roadway. One requirement stated that the contractor should match the existing cross slope and another that a two-percent cross slope should be constructed. The CBC’s were constructed per the designed plans based on a 2% cross slope, but due to the existing pavement tie-ins having a slightly positive cross slope verses a 2% fall, resulted in the left sides of Sites 1 and 2 having up to a seven inch drop off tapered at 12:1 longitudinally and 3:1 transversely adjacent to the roadway as well as a change in the horizontal profile of the same amount. The CDOT Resident Engineer did not allow the roadway to open to traffic because of safety concerns associated with the drop off which delayed the contractor. Mating the existing roadway with the designed cross section also resulted in additional quantities of materials. It is desired that the DRB make a recommendation as to who the responsible party is for the time and costs for the delay and additional materials.

**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 start of the hearing that was discussed during the pre-hearing phone conference. 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 the Inconsistent Cross Slope on SH 96:**

The Contractor stated that the CDOT Position Paper said the CDOT Resident Engineer (RE) visited the site on April 16, 2011 to review the Site prior to opening the road. The correct date was May 18, 2011 when the RE cancelled the opening.

 Prior to May 18, 2011, it was obvious that the existing roadway was not going to meet the as-constructed CBC and paving that had been installed to the top of the bottom mat of asphalt. There were major variances in the design cross slopes verses the existing cross slopes.

 On May 27, 2011, the Contractor provided the PB information on asphalt core data, pavement transitions and cross sections to CDOT along with some comments on asphalt thicknesses. CDOT replied to the Contractor’s proposal on June 1, 2011 with concerns about pavement sections and Contract requirements that the grade could not be lowered. CDOT also made some suggestions on raising the curb heads and removing and replacing some of the asphalt that had already been installed. The Contractor replied to CDOT’s letter on June 2 stating that it felt the problem was CDOT’s and that it would have its surveyor supply additional information as soon as they could get it but the surveyor was committed to other projects at the time.

 On June 23, 2011, CDOT sent the Contractor a letter noting nothing had been received from the Contractor, that there is a severe discrepancy in matching the existing profile which adversely impacts the construction of the shoulders and side slopes, and requested the Contractor provide recommendations by July 1. In a letter to CDOT of June 27, the Contractor requested direction on solutions from CDOT and then emailed additional information to CDOT on July 1. On July 20 the Contractor sent additional information and suggestions on milling and paving to CDOT. The Contractor’s email of August 12 confirmed the accepted fix and the milling and asphalt overlay commenced on August 16.

 The Contractor pointed out that the Structure Report dated February 2010 that was included in the bid documents states under ROADWAY ALIGNMENT AND TYPICAL SECTION for Sites 1 and 2, *The proposed horizontal and vertical roadway alignment at the time of this report is that generated from the existing (the) survey of the existing roadway.* ***The CBC alternative******requires******no further adjustment of horizontal or vertical alignments.*** (emphasis added.) Bid sheet 3a shows the existing roadway with a centerline crown and a 2% cross slope. This is how the new roadway was designed.

 The problem was not discovered until the Contractor completed the first mat of paving. The Contractor felt that the solution to the problem caused by faulty information from CDOT should be considered a shared solution. The redesign by PB resulted in tapers being added and milling and filling of the asphalt to tie in the finished paving to the existing. In addition to the delay, 74.4 tons of additional asphalt were required. After the problem was discovered, the Contractor proposed a solution in nine days which was ultimately accepted by CDOT; however, it took 77 days for CDOT to approve the final fix.

**CDOT Presentation on the Inconsistent Cross Slope on SH 96:**

While Dispute 2 is titled Inconsistent Cross Slope, it not only deals with the cross slope issue but with the horizontal profile grades.

 CDOT did not allow opening the road on May 18, 2011 due to tapers in the first mat of asphalt that were not safe and the appearance that the headwall would be too low with the proposed fix. It was a Contractor problem and CDOT waited for an acceptable solution from the Contractor. The pictures included in the pre-hearing submittal show that there was about a five inch drop from the top of the base mat to the existing asphalt. The pictures also show that there is a sag in the road at the CBC.

 The Contractor has said that due to the conflict in the plans to match the existing cross slope and provide a 2% cross slope, the error was the onus of CDOT. This was a Design/Build project and it was the Contractor’s responsibility to provide a design plan that met the requirements of the Contract. Had the conflict been brought to the attention of the Engineer prior to construction, discussions could have taken place with CDOT to develop a resolution.

 CDOT said any engineer that has experience in this field should be able to reasonably estimate a slope on a road as being normal or different than normal.  Any roadway that “wildly” varies from that should be immediately recognized prior to ground being broken and not when the work is nearly complete. While the phrase used by the Contractor of “Wildly at variance” is subjective if it is taken at its face value, wouldn’t the designer have been able to see that variance or difference in reviewing the plans prior to releasing them for construction and subsequently stamping those plans?

 CDOT admitted that there was a conflict in the Design/Build documents between Drawing Sheet 3a and the Technical Requirements that said to match the existing. The inconsistent cross slope is shown in the sketch in the pre-hearing submittal. CDOT provided the survey information and cross sections could have been developed and the problem brought up during the design. Drawing Sheets No. 117 – 119 which were prepared by PB show the existing and design cross sections based on the revised CDOT survey information. The design cross sections show 2% cross slopes and not the actual cross slopes of the existing roadway. The designers should have looked at the existing conditions when preparing their design.

 AECOM referred to Tab D3 – Cross Sections Site 1 which were prepared from the CDOT Recalculated Survey information. The cross sections show that the original existing cross slope was not a 2% crown from the centerline. The profile grade shown on Drawing Sheet No. 106 does not show a dip in the profile grade and calls out *6” Max. Aggregate Base Course and 5” of asphalt.*

 AECOM said if they were doing the design, they would have established the alignment, developed cross sections from the available data, set the alignment to match the existing and then looked for areas where there was a non-match. The profile would then be raised or lowered. CDOT pointed out that the bid document Technical Requirements allowed for the vertical alignment of the bridge approaches to be modified.

CDOT said that since, according to the CPM schedule, no activities for this work were on the Critical Path, no delay to the completion date occurred and per the Contract, if no delay to the Contract Completion Date occurred, then no compensation for either money or time is warranted. The designed is owned by the Contractor and thus it is their responsibility to address the issues to meet CDOT’s approval.

**Contractor Rebuttal on the Inconsistent Cross Slope on SH 96:**

 The Contractor disagreed with CDOT’s comment that *not apparent* was the same as *observable.*  The bottom line is that the Contractor provided a solution in nine days but it took CDOT 77 days to accept the solution. The Contractor also disagreed with AECOM’s methodology being standard.

 PB said the requirement was for a 2% cross slope which is what they designed. It was not their intention to replicate any conditions that were incorrect. PB met the Spec. requirements with the crowned cross section so that there would not be a problem with additional work in the future. PB said they understood the differences in the cross sections of the existing road but it is usual for tangent sections to be crowned. This is true whether the project is Design/Bid/Build or Design/Build. Its problem is the untimely responses from CDOT while limiting work areas.

**CDOT Rebuttal on the Inconsistent Cross Slope on SH 96:**

CDOT was not sure of the relevance of the Contractor’s comment about a poorly maintained roadway. Information for cross sections of the existing were available at bid time. Questions on 2% cross slope or matching should have been brought up before the bid. CDOT met with each bid team where changes could be proposed. If there is a discrepancy in the bid documents, it is the Contractor’s duty to inform CDOT.

Bridge Enterprise funds and requirements do not allow CDOT to extend the work area limits. CDOT said that milling to meet the profile was not in the Contract. CDOT admitted they took a while in their decision and that the coring was required to make sure there was adequate roadway support. One option was to raise the headwall to make the rail the proper height.

On June 2, the Contractor said it would have its surveyor shoot elevations. These elevations were not provided to CDOT until June 27. There was a meeting on July 18 and the Contractor submitted milling and overlay cross sections on July 20. CDOT had to make sure the pavement structure would be adequate which took time.

CDOT said that the work was not on the Critical Path and that the Contractor was working at Sites 3 and 4.

PB remarked that there was a cross slope in the end but not all at 2% and that there was some milling considered in the design. CDOT said milling was not shown in the design plans.

**Questions by the DRB on the Inconsistent Cross Slope on SH 96:**

1. **To CDOT:** In the Technical Requirements Section 13 – Roadways on Page 47, it calls for the cross slopes to match the existing. On Plan Sheet 3a it calls for a 2% cross slope. What did CDOT want? What if the existing cross slope was wrong or there was a swale?

CDOT said it wanted the cross slopes to match the existing.

1. **To CDOT:** Did any bidders bring up problems with matching the existing pavement?

 CDOT said no other contractors brought up a problem.

PB said the size of the project dictates the amount of time spent on pre-design during bidding. AECOM said not as much time is spent on smaller jobs during the bid but that they would usually go to the site.

**3. To Contractor:** Where is a dip shown in the profile?

A dip is not shown in the profile. What the Contractor was referring to is the dip shown in the sketches in Tab 6 of the pre-hearing submittal. Also, the profile that was surveyed after the problem was discovered shows how the centerline undulates.

**4. To CDOT:** Did CDOT know for a fact that no more Bridge Enterprise funds were available to make a quality and safe project?

CDOT saidBridge Enterprise would have addressed money for safety issues.

**5. To Contractor:** Is milling shown in the design/construction drawings?

The Contractor said the plans showed to mill out 2” and put back 2”. It said it was on Sheet 102 but does not have the plans at the hearing.

**The hearing was recessed for the day.**

**Additional discussion on the Inconsistent Cross Slope on SH 96: (June 18, 2013)**

The Contractor said the sketch in Tab 6 of the pre-hearing submittal was intended to show how the roadway dropped from the centerline to a line 12 feet from the centerline. Tab 8, Page 13 shows the centerline of the existing pavement with shots taken every 25 feet. The high points do not show in the CDOT survey info. Tab 8, Sheet 12 shows the shots at the CBC and the cross slopes.

 CDOT said that the Project was a Design/Build project and required that the Contractor verify the survey.

 The Contractor said it proposed a solution in nine days from the time the problem was discovered. The problem was not readily detectable until the CBC’s were near completion.

 CDOT referred to pre-hearing submittal Tab D1 – Sheet No. 103. The profile grade is shown and it does not show a dip at the CBC. AECOM added that Tab D3 – Cross Sections Site 1 do not show a dip at the CBC.

**Contractor Presentation on Schedule Impact and Quantum:**

 The Contractor questioned how Liquidated Damages (LD’s) could be enforced if the Critical Path was not impacted. The Atkins’ schedule does not allow for the three holidays that fell during the delay. The Contractor explained his rationale for the 50 day delay that was included in its May 11, 2012 Notice of Dispute and Written Request for Equitable Adjustment.

 The Contractor also said that it had additional costs for the asphalt required to remedy the cross slope problem.

**CDOT Presentation on Schedule Impact and Quantum:**

Atkins said they took the Contractor’s schedule update and added the delay information submitted by the Contractor and found that the Substantial Completion Date did not change. Atkins also pointed out that the sequencing changed as the Contractor was performing work concurrently at Sites 3 and 4 which was not the case in the original schedule.

 CDOT said the Contractor also wanted to wait to bring the striping crew out one time which was not what was indicated in the Baseline Schedule. Initially, CDOT had charged 141 days of LD’s. It then agreed to add 40 days for dispute 1A. CDOT did not feel the grading problem was theirs and that the problem with the grade was the Contractor’s responsibility and, therefore, any delay was the responsibility of the Contractor.

 CDOT said it wanted to review the Contractor’s reference in its Supplemental Information Concerning the CDOT Structure Report.

**Contractor Rebuttal on Schedule Impact and Quantum:**

The Contractor referred to the CDOT Audit and said it wanted to recoup its labor, equipment and sub costs but needed the Audit equipment rates from CDOT to complete its cost analysis. It said it used its internal equipment rates in its original proposal.

In order to start work at Sites 3 and 4, the Contractor said it needed to rent two more sets of signals since the original two sets had to remain at Sites 1 and 2. The reason for starting work at Sites 3 and 4 was there was no work that could be done at sites 1 and 2 while the grading problem was being worked out.

**CDOT Rebuttal on Schedule Impact and Quantum:**

CDOT said the cross slope problem was a design/construction error and the Contractor had to move ahead at Sites 3 and 4 or get further behind. CDOT also said that Sites 1 and 2 did not affect Sites 3 and 4 except for the signals. They said this was discussed during their negotiations.

**DRB Questions on Schedule Impact and Quantum:**

1. **To Contractor and CDOT:** How can there be a Critical Path in the schedule if the schedule is not complete and all activities are not shown?

The Contractor said it prepared the schedule to manage the work and not for future litigation. It focuses on production.

Atkins said there cannot be a Critical Path unless both design and construction activities are shown. They said they removed the seeding constraints to get a Critical Path for construction to try to be fair. CDOT said it did not do an accurate review of the schedule.

1. **To Contractor:** Was a schedule submitted showing delay and the effect on Sites 3 and 4 per Spec. Section 108.07(d)4?

The Contractor said such a schedule was not submitted.

1. **To Contractor:** Were monthly schedule updates submitted reflecting the delays as required by the Specs.?

The Contractor said delays were not shown on the updates.

1. **To Contractor:** Explain the issue with the equipment rates. Doesn’t Spec. Section 109.04(c) cover allowable equipment rates? What rates should the DRB consider?

The Contractor said it used its internal equipment rates and not the Spec. rates. The CDOT Audit set the rates and that is what the Contractor wants to use for its costs in Section 12.A.(4) in the Supplemental Information on Page 55.

1. **To CDOT:** Has CDOT seen or reviewed the information in the Contractor’s Supplemental Information dated 6/16/13? Other than the resource loaded schedules, is there anything that has not previously been reviewed? This was discussed in the pre-hearing phone conference.

CDOT said it was ok with the material in the Supplemental Information other than the schedules.

1. **To CDOT and Contractor:** What was done from May 18 when the problem was discovered until August 16? What was not timely?

The Contractor said it proposed the mill and fill solution in nine days. It then took CDOT 77 days to accept the proposal. CDOT’s June 1, 2011 letter in Tab 8 requested the Contractor to do work the Contractor feels is outside the scope of the Design/Build documents. The Contractor added remedies and provided more information in a June 2 email. CDOT did not respond until its letter of June 23 which asked the Contractor to provide a recommendation by July 1 so all parties can come to an agreement.

CDOT said the Contractor installed the additional signals on May 20. It assessed 55 days of LD’s and allowed 13 days of overhead and two months of signal rental for Sites 3 and 4.

1. **To Contractor:** Is there an as-built schedule?

The Contractor said the last monthly update of 10/21/11 is the as-built schedule. The Contractor said its 55 days of delay come from the resource loaded schedule while the 50 days was in its Notice of Dispute.

**Note:** CDOT will submit to the DRB the Baseline Schedule prepared by Atkins with the seeding constraint removed, which was not included in the Atkins schedules given to the DRB on June 17, and the Contractor will submit its monthly schedule updates by June 24, 2013.

**Contractor Summary on the Inconsistent Cross Slope on SH 96:**

Near the completion of the work, the problems with the varying cross sections was discovered. The Contractor proposed a mill and fill solution to CDOT in nine days which was accepted in the field. It then proceeded to work at Sites 3 and 4 rather than stop work. In its letter of June 27, 2011, the Contractor asked CDOT whether CDOT wanted to adjust the headwalls or perform removal and replacement of the existing roadway in order to get to the 2% cross slope. CDOT agreed to stop the time count on October 15, 2011.

 The Contractor said it was entitled to the delay caused by CDOT and the resulting costs to make the roadway work.

**CDOT Summary on the Inconsistent Cross Slope on SH 96:**

CDOT said that with the concurrent activity at the other sites, there was no impact to the Critical Path and that time had already been added for the survey problem delay. The problem was discovered on May 18, 2011. The original Completion date was May 27, 2011. A review of the actual time does not equate to the delays the Contractor is requesting.

 This Project was a Design/Build Project and the delay was due to the Contractor’s problems with the design.

**Findings:**

1. TECHNICAL REQUIREMENTS SECTION 2 – PROJECT MANAGEMENT requires the Contractor to submit a CPM schedule that includes at a minimum all of the *Salient Design and Construction Components.* The salient features were to be broken down into enough subcomponents to accurately track production on the project. The schedule was also to be cost loaded. The Baseline Schedule submitted by the Contractor did not meet these requirements in that the schedule contained no design activities, did not indicate a Critical Path and was not cost loaded. This section also requires the submission of Methods Statements. Nothing was provided in the Contractor’s pre-hearing submittal or at the hearing that indicated this requirement was met.
2. TECHNICAL REQUIREMENTS SECTION 2 – PROJECT MANAGEMENT requires the *acceptance* of the Initial Schedule by the CDOT Project Engineer. During the hearing, CDOT acknowledged this had not been done.
3. TECHNICAL REQUIREMENTS SECTION 2 – PROJECT MANAGEMENT, the Invoice Documents section requires the Contractor to submit Updated Monthly Progress Schedules. In addition, a Progress Schedule Narrative is also required. Although the Contractor did submit some updates, they were not done on a monthly basis as required and did not show delay activities or added activities.
4. The schedule updating requirements in Finding 3 above requires the CDOT Project Engineer to review and approve the monthly updates. The section also states, *No invoices shall be approved nor payment made if there is not a current accepted Monthly Progress Schedule in place.* Again, CDOT did not follow these requirements.
5. Spec. Section 108.07(d)4 requires the Contractor to submit with its time extension request *a schedule* *revision as defined in subsection 108.03*. The Contractor failed to comply with this requirement.
6. TECHNICAL REQUIREMENTS SECTION 1 – GENERAL under The Major Elements of the Construction Configuration, Item 6E states, *The vertical alignment of SH 96 may be raised a maximum of 1.0 (one) foot.* This allowed the designer to change the vertical profile at the CBC’s to make the profile work.
7. TECHNICAL REQUIREMENTS SECTION 1 – GENERAL on Page 6 states, *The Contractor shall ensure that the design meets all applicable design criteria including but not limited to the strength,* ***safety*** (emphasis added) *and serviceability, as described herein and as shown on the Plans.* It goes on to state, *The roadway design plans provided by the Contractor shall be in accordance with and meet all criteria specified in the CDOT Roadway Design Guide.* The problem with the non-matching cross slopes and the dip at the bridge indicate that the designer did not observe the safety requirement.
8. TECHNICAL REQUIREMENTS SECTION 3 – QUALITY MANAGEMENT under Project Development states, *Designs shall include general profile and cross section information, critical areas sufficient to analyze the general cut and fill limits, right-of-way requirements, and earthwork and structural requirements.* Nothing in the pre-hearing submittal or at the hearing showed that this requirement was met.
9. TECHNICAL REQUIREMENTS SECTION 3 – QUALITY MANAGEMENT under Design Review and Submittal Packages states, *The Contractor shall prepare Preliminary Design (30%)….showing how the Contractor’s design meets the Construction Configuration requirements.* Nothing in the pre-hearing submittal or at the hearing showed that this requirement was met.
10. TECHNICAL REQUIREMENTS SECTION 3 – QUALITY MANAGEMENT under Submittals requires the Contractor to submit as-builts for the review and approval of the CDOT Project Engineer. TECHNICAL REQUIREMENTS SECTION 9 – SURVEY states *The Contractor shall plan, schedule and perform all surveys to document the location of as-built features on the Project.* Based on comments by CDOT at the hearing, the as-builts do not comply with these requirements.
11. TECHNICAL REQUIREMENTS SECTION 10 – ROADWAY PAVEMENTS under Roadway Pavements Analysis and Design states, *CDOT has performed the pavement design to determine the pavement types, HMA grading, binder requirements,* ***pavement thickness*** (emphasis added), *and minimum sub-grade stabilization requirements.* This seems to conflict with the CDOT requirement that was given to the Contractor in CDOT’s June 1, 2011 letter concerning the pavement structure.
12. TECHNICAL REQUIREMENTS SECTION 11 – EARTHWORK states, *The Contractor shall conduct a soil survey confirming that the existing subgrade to remain in place meets the R-value requirements…* Nothing in the pre-hearing submittal or at the hearing showed that this requirement was met.
13. TECHNICAL REQUIREMENTS SECTION 13 – ROADWAYS under Administrative Requirements states, *The vertical alignments for approaches to bridge structures may be modified if each of the following criteria is met: …:.* This provision allowed the designer the ability to adjust the profile at the CBC’s.
14. TECHNICAL REQUIREMENTS SECTION 13 – ROADWAYS under Crowns states, *For pavement widening sections, the widened section will have the cross slope that matches the existing cross slope. For mill and overlay sections, the Contractor shall maintain the existing pavement cross slope.* The cross sections shown on Plan Sheets No. 117 -119 clearly show, even at the small scale that there was a cross slope problem in PB’s design documents. This is also shown in CDOT Tab D3 – Cross Section Site 1.
15. Bid Plan Sheet No. 3a details a 2% cross slope from the centerline on both the Reconstruction Section and the Shoulder Widening Section. This conflicts with Finding 14 above; however, Finding 16 below shows that the requirement to match the existing has precedence. PB in their letter of April 16, 2012, which is in the Contractor’s pre-hearing submittal Tab 6, and during the hearing said they designed based on the 2% cross slope from the crown. As a result, the cross slope discrepancy was never brought to CDOT’s attention.

1. TECHNICAL REQUIREMENTS SECTION 1 and SECTION 18 list the precedence of the Contract Documents with the TECHNICAL REQUIREMENTS SECTIONS 1 thru 18 having the highest precedence.
2. The Structure Report dated February 2010 that was included in the bid documents states under ROADWAY ALIGNMENT AND TYPICAL SECTION for Sites 1 and 2 *The proposed horizontal and vertical roadway alignment at the time of this report is that generated from the existing (the) survey of the existing roadway.* ***The CBC alternative******requires******no further adjustment of horizontal or vertical alignments*** (emphasis added**)*.*** This statement seems to indicate there was no need to revise the vertical profile at the CBC. Could the incorrect survey data used by CDOT in making this statement make the statement incorrect?
3. Based on several of the above Findings, it is quite apparent that PB prepared a design and never verified that the design would work in the field. This is very disturbing since the cross sections that were included in the plans prepared by PB showed there was a problem with the cross slopes of the existing pavement and the designed cross slopes. Furthermore, the problem was never addressed, even though there were numerous early stage design requirements for review, until the CBC had been constructed and the first mat of asphalt installed.
4. Nothing in the pre-hearing submittal or at the hearing showed that the CBC was installed at the correct elevation to verify that the ABC did not exceed the maximum depth called out on Plan Sheet. No. 106. Also the designer changed the term 6” ABC on the bid drawings to **6” MAX. ABC** on the typical CBC sections. This may have prevented the Contractor from bringing the subgrade up to a proper elevation to tie into the existing pavement when it should have been obvious that the grade was too low for a good tie-in. This note may have prevented the Contractor from using more ABC in lieu of asphalt to reach a proper subgrade.
5. Based on the conflicting cross slope requirements in the CDOT bid documents and the statement referenced in Finding 17 above, the amount of CBC approach rework would seem to be minimal. There is also some question on how the incorrect survey information could have influenced the work the Contractor anticipated being required at bid time.  Revision of Section 103- Escrow of Proposal Documentation is included in the Contract documents. Assuming this requirement was complied with, it should be easy to verify what the Contractor anticipated at Bid time.

Accordingly, unless the escrowed documents reveal otherwise, it appears there is a difference in scope of work which requires the reworking of the approaches and the milling and filling that was required. The Contractor is entitled to the added costs for the additional scope of work and the resulting delay for the additional work.

1. In order to minimize any further delay to the overall project, the Contractor started to work at Sites 3 and 4 on 5/20/11 by installing the additional traffic signals and then began Bridge Demo on 5/24/11. The cross slope problem was determined on 5/18/11. Accordingly, the Contractor lost six days to the overall schedule for the project while the various scenarios were discussed for the revisions at Site 1.
2. Based on the delay that was the subject of Dispute 1B and the DRB’s finding, the Contractor was behind schedule although there is no way to analyze a Critical Path based on the schedules that were submitted. The unavailability of the Contractor’s surveyor is a Contractor problem but the schedule had already been delayed due to Dispute 1A by two months which could have been an impact on the surveyor’s availability but nothing in the pre-hearing submittal or the hearing documented this fact. Also, the way and time CDOT took to get a final resolution was untimely considering the status of the project and the threatened LD’s. Accordingly, since both parties contributed to the delays, the six day delay discussed in Finding 21 above is considered Excusable and Noncompensable for delay costs.

**Recommendations:**

1. Based on the above Findings, it is clear that a Critical Path Schedule was never submitted and approved nor were Monthly Updates submitted and approved as required by the Contract. Accordingly, it makes it impossible to perform an accurate delay analysis. **Therefore, using the rationale in Findings 21 and 22 above, it is recommended that 6 calendar days be added to the revised Contract Completion date of July 28, 2011(Dispute 1A) which results in a revised Contract Completion date of August 3, 2011.**
2. Once the additional scope of work has been determined as discussed in Finding 20 above, the added working days for the increased work should be determined in the manner used by Atkins in their Analysis for Dispute 3 contained in the Atkins letter dated September 21, 2012 to CDOT. **This should then be converted to calendar days and added to the revised Contract date of August 3, 2011 as described in Recommendation 1 above.**
3. Based on the CDOT Audit, the parties had agreed to a daily extended jobsite overhead rate of $1,202.42 per day. **Accordingly, it is recommended that the Contractor be compensated for the days determined by Recommendation 2 above at $1,202.42 per day.**

1. Nothing in the pre-hearing submittals or at the hearing showed the increase in the scope of work except for the Contractor’s statement that an additional 74.4 tons of asphalt was required. **The Contractor should prepare quantities for the added work for review and approval by CDOT. It appears that Unit Prices already exist in the Pay Estimate for most items except the asphalt milling, which should be documented by subcontractor costs, and the added traffic signals. Any items not covered by Unit Prices should be priced based on Revised Spec. Section 109.10.**
2. Should the parties not agree on resolutions to Recommendations 2, 3 and 4, the DRB will review the positions of both parties and provide additional Recommendations pending approval of additional time for the DRB members.

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**