DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION SH 66 OVERLAY – LYONS TO SH 287 BOULDER COUNTY, CO CDOT PROJECT NO. STA 0661-011

DISPUTE 2 CONCERNING FURNISH CONCRETE PAVEMENT

Hearing Date: September 14, 2010

Hearing Location: CDOT Region 4 Office

1050 Lee Hill Rd. Boulder, CO

Hearing Attendees: Ken Lawson – Lawson Construction Co - President

Jim Sampson – Lawson Construction Co. – Project Manager Jonathan Boonin – Hutchinson Black & Cook – Lawson Attorney

Neil Lacey – CDOT HQ – Area Engineer Frank Kinder – Assistant Area Engineer Gary DeWitt – CDOT – Materials Engineer

Mark Gosselin – CDOT Region 4 – Program Engineer James Flohr – CDOT Region 4 – Resident Engineer

Chris Boespflug – CDOT – Project Engineer

Ella Reichley – CDOT – Assistant Project Engineer

Background:

Lawson Construction Co. (Contractor) was awarded a contract by CDOT for \$6,826,556.55 to construct a six inch bonded concrete overlay above a milled asphalt surface on SH 66 from Lyons to Longmont in Boulder County, approximately 7.5 miles. The width of the overlay varied from 44 to approximately 90 feet. The Notice to Proceed was issued on March 17, 2009. The Project was partially accepted on December 22, 2009 and Final Acceptance occurred on March 19, 2010.

Section 7 of the Contract incorporates the Plans, the Standard Specifications for Road and Bridge Construction dated 2005 and any Special Provisions for this Project and Revised Standard Specifications.

Due to a difference in the interpretation of the payment provisions of the Contract for excessive vs. additional concrete for paving, the Contractor submitted a Request for Equitable Adjustment (REA) on January 20, 2010 which was denied by the CDOT Project Engineer on February 11, 2010. Per Spec Section 105.21, the Contractor elevated the dispute to the Resident Engineer on February 12, 2010. After four meetings with the Resident Engineer and the submission by the Contractor of an addendum to the REA on March 10, 2010 the parties could not reach an agreement. The decision was made on March 19, 2010 to elevate the dispute to a Dispute Review Board per Specification Section 105.22.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 2 of 13

Joint Statement of Dispute:

Lawson Construction Company constructed a 6 inch bonded concrete overlay above a milled asphalt surface on State Highway 66 from Longmont to Lyons in Boulder County. As required by specification, Lawson took a series of stab depth measurements of the freshly placed concrete generally every 100 feet behind the paver and this information was provided to CDOT. Lawson determined concrete depths by setting string lines prior to placement of concrete. CDOT approved all paving grades prior to placement of concrete, as required by specification. After approving grades and analyzing the stab depth data, CDOT took the position that there were areas in which the depth of concrete was defined as excessive. CDOT calculated 1,092.5 CY as excessive (including waste) concrete determined by Lawson stab depth measurements and deducted this quantity from the Furnish Concrete Pavement pay item. Lawson contends that additional concrete depth was required for surface irregularities, delamintation of existing thin lift asphalt, and string line leveling of variable longitudinal and variable transverse grade as milled per the Contract. Lawson contends compliance with contract expectation requires placement of additional concrete. Lawson contends CDOT directed design changes and CDOT is accountable for compensation due to changes as a result of directed construction. Lawson contends CDOT should make payment for all concrete placed on the project, as CDOT approved and directed construction of all sub grade elevations. CDOT contends that Lawson did not take proper care in the existing surface preparation prior to concrete placement and that the thickness of concrete placed was within their control. Lawson denies this allegation and contends that it acted reasonably with all proper care. Lawson contends it took proper care and control, the additional thickness is calculated at approximately 1/8 inch over the area paved. It is desired that the Dispute Resolution Board (DRB) determine merit and quantum.

Pre-hearing Submittal:

In addition to the Plans and Specifications for the Project, both parties provided the DRB with Pre-hearing Submittals per Specification Section 105.22(e) which included but were not limited to documentary evidence relevant to the issues, serial letters, e-mail, speed memos and handwritten notes. Both parties essentially submitted the same documents in organized 3 ring binders as exhibits, as well as, drawings prepared by the Contractor's surveyor showing the concrete previously placed in the first two paving passes and the as-built conditions after the milling had been completed on the eastbound lane (third pass). Both parties provided the DRB with their lists of attendees. A Timeline of Critical Events is found in Attachment 1.

Contractor Presentation on Cross Section Survey, Change in Cross Slope by CDOT and the Effect on Milling and Subgrade:

The Contractor bid the plans which included the Line Sheets (Plan Sheets No. 24-37) which showed the SH 66 alignment and miscellaneous side locations but no existing or proposed grade profiles or survey information. The Survey Tabulation Sheet (Plan Sheet No. 3) showed that the Contractor's surveyor was to use the existing roadway for horizontal and vertical control and roadway alignment. Typical Sections were provided on Plan Sheets No. 4-7 and called out *Approx.* ½" to 1" Leveling

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 3 of 13

Planing, 6" Minimum Concrete Thickness and 2% Cross Slope. The Control Line was shown as the existing roadway crown. The existing H.M.A. Pavement was noted as Cross Slope Varies. Based on the information shown on the Sections, the Contractor contended that since there was no indication that the asphalt/subgrade was to be milled to a 2% cross slope, that a concrete overrun should have been expected.

The Contractor submitted a survey of the roadway cross sections on June 1 and June 8, 2009 as required by the Contract. A review of these cross sections coupled with the ½" to 1" milling requirement and a 2% finished cross slope clearly showed that the Project could not be constructed without a very substantial concrete overfill. The Contractor estimated the overfill would have resulted in a \$700,000 to \$1,000,000 overrun in the Bid Item Furnish Concrete Pavement.

There were several meetings after the survey information had been submitted to CDOT to discuss probable problems. The Contractor started milling the westbound lane at the east end of the Project on June 11, 2009 and had gotten to Hoover Street by June 12. Based on the string line that the Contractor had installed, it was very apparent that there was going to be an over depth in concrete if the work was constructed per the milling and cross slope requirements as stated in the Plans and Specifications and the Contractor had a meeting on June 12 with CDOT to discuss their feelings on concrete overrun. The Contractor said that CDOT made the decision to change the Contract requirements by changing the Control Line to the edge of the shoulder of the westbound lane and the milling was changed to provide for a finished 1 ½ % to 2% cross slope. This changed the milling from a depth requirement to grade controlled milling. This was noted in the Contractor's Job Progress Narrative Report dated June 25, 2009. The Contractor contended that the milling change would result in more time, additional survey and more milling but that CDOT realized that the added work would be substantially less than the concrete overrun if the Project was constructed per the Contract. The Contractor maintained that the changes reduced the concrete overrun but that the existing roadway conditions did not allow for it to eliminate all the overruns.

To show the impact on the Project from the increase in milling quantities that resulted from the changes requested by CDOT, the Contractor said that CDOT's revised milling quantity was 9,821 CY and the Contractor's was 10,164 CY while the quantity shown on Plan Sheet No. 9 was 3,012 CY. When the Contractor bid the Project, it assumed there was 5 to 6 inches of asphalt and that the ½" to 1" milling would knock off the high spots and provide the required bonding surface. There was nothing to indicate that the Contractor would have to do grade milling to construct the project. The Contractor said that the pictures included in its pre-hearing submittal show what the subgrade/asphalt looked like after it did the milling to try to meet the changed CDOT requirements. The Contractor stated that these conditions were discussed with CDOT on numerous occasions.

The pictures also show that there was going to be some concrete overrun. This was especially true when the mill broke through into the existing subgrade or where the asphalt lifts delaminated. The Contract had a Force Account item for HMA Leveling but CDOT chose not to use the asphalt per the Revised Specification 202.09 and said to fill these areas with concrete. Since these areas were definitely irregularities, the

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 4 of 13

Contractor expected to be paid for the additional concrete per Revised Specification 412.10.

The Contractor maintained that CDOT approved all subgrade/asphalt conditions and saw the string line that was to be used for guiding the paver prior to the placement of concrete. Revised Specification 412.21 states *The thickness of the concrete pavement thin whitetopping shall be controlled and determined by the following simultaneous methods* (emphasis added):

- String line
- Stabs of the plastic concrete

CDOT's denial was only based on the stab requirement and totally disregarded the string line provision.

CDOT Presentation on Cross Section Survey, Change in Cross Slope by CDOT and the Effect on Milling and Subgrade:

The Contractor said that there was a significant variation in the milled cross slope. If the Contractor would have milled per the Contract to a 2% cross slope, there would not have been a problem with the overlay concrete quantities. CDOT realized that more milling was required than the ½" to 1". CDOT challenged the Contractor's position that CDOT directed the changes. There were many conversations which CDOT thought resulted in a collaborative effort to construct the Project. When the Contractor made a proposal, CDOT asked if they had considered something else. The Contractor decided to move the Control Line to the shoulder. Normally, a contractor would ask for a change per Specification 104.02 and give written notice rather than expecting a change order from CDOT as the Contractor stated. CDOT did not direct the Contractor to change the Control Line.

From other CDOT projects, the Contractor knew that items would be discussed and that the work should not be done until CDOT could do evaluations. The Contractor's June 30, 2009 letter was not a Notice but rather stated the corrective actions that it would take to improve concrete smoothness.

Revised Specification 202.09 required a milling machine capable of "grade control" and the Contractor should have been able to control the machine. The Contractor failed to meet the specification requirement that the milled surface should not have been out more that 3/8" in 10 feet. The problem was that the Contractor did not control its subcontractor.

CDOT realized there would be some concrete overrun on the third paving pass (eastbound lane) since the north edge of the eastbound paving was locked in from the earlier paving runs. CDOT marked up the Contractor's survey drawings showing where CDOT allowed for some additional concrete based on a concrete depth of 6 1/2". Very few of these areas were in a run of over 200 feet (length used in determining "excessive concrete"). There were only a few areas where the base was exposed and almost none where the length was 200 feet. CDOT made the excessive concrete calculations and adjustments on a monthly basis based on the 200 feet requirement of the Contract.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 5 of 13

CDOT disagreed that no additional concrete was paid for as some overrun areas were listed in the plans and the third pass was adjusted in several areas.

Contractor Rebuttal

The Contractor had many conversations with CDOT and the items were worked out. In the case of the concrete overrun, the intent was to minimize the overrun and not eliminate it. There was no way to minimize the overrun and construct the Project per the Contract. CDOT was required to provide a constructible set of Plans and Specifications and Specification 104.02 requires CDOT to evaluate changed conditions and give direction to the Contractor.

The Contractor felt it was protected for added quantities by the Unit Price and the Specifications. CDOT said that the Contractor would be paid and that the intent was to minimize overrun.

Nothing in the Contract calls for grade control but the Specifications do require a machine capable of grade control. If work was not being done per the Contract, CDOT has the ability to stop work. Milling of ½" to 1" would not "chunk" out the asphalt as was the case with the overdepth milling. The Contractor did the best it could under the conditions but CDOT said that was not good enough. The total overrun was not known until after a major portion of the concrete had been placed. CDOT had been notified and never gave a response. The Contractor only wants to be paid for the "additional" concrete and not "excessive concrete".

CDOT Rebuttal

There were many conversations on the issue and CDOT suggested that the Contractor put the issues in writing but CDOT never received anything. The Contractor said that "if it made money, all would go away". They did have a meeting on the additional milling concerning extra work and costs but never got anything in writing. If something was "unconstructible" CDOT agreed and paid. The extra milling was intended to offset the additional concrete.

CDOT said that milling the subgrade/asphalt to the 2% cross slope with some variability was cheaper than the cost of additional concrete. Some of the overrun was due to breaks in the mill grade and some crowns. CDOT asked why the Contractor did not place a string line for the miller and then both the miller and the Contractor could work from the string line. The lack of grade control for the miller is what created the problem.

CDOT said no set of plans is perfect. By varying the cross slope, the average milling depth over the Project was 1.63". Additional milling was required and is another dispute but it should not be justification for the concrete overrun.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 6 of 13

Discussions after the Rebuttals

Contractor: The Contractor agrees there was "additional concrete" but not "excessive concrete". The Contractor asked CDOT about this many times. Other areas which required more work were paid by the Unit Price. The Contractor tried to minimize the concrete overrun. CDOT could have requested asphalt fills but did not want to do it that way. With all the problems with the existing conditions and unconstructability of the Project per the Contract, nothing was ever received from CDOT on how to build the Project.

Contractor: CDOT expected the work to be done based on the existing roadway. There was no bid survey or control. The Contractor provided the survey drawings showing the conditions for the third pass and paid for the survey work which was not a Contract requirement.

CDOT: In the spirit of partnering with the industry, CDOT met with contractors and ACPA on the feasibility of the white topping or asphalt and the bid information needed. Industry said to leave the survey data out and that the contractor could do the survey based on the contractor requirements. Industry also said grading plans would not be required.

CDOT: The industry said to provide a survey bid item and a milling item. This was a "showcase project".

CDOT: The Contractor asked what they were to build. The Plans and Specifications show what was to be done and the Typical Sections show the work. The asphalt was to be milled to a 2% cross slope. Revised Specification 202.09 states the tolerances in the milling. If the tolerances had been met, there would not have been an overrun.

Contractor: The overrun that CDOT has deducted from the quantities amounts to the equivalent of 1/8" of concrete over the entire Project. With the conditions that the Contractor faced, this is a very minimal amount. CDOT even allowed for a ½" of overrun knowing that there would be some variations.

Contractor Presentation on Furnish Concrete Pavement Quantities and Payment

The Contract requires payment for the concrete paving by two items – Place Concrete by the square yard (SY) and Furnish Concrete by the cubic yard (CY). The Contractor was required to control quantities by concrete yield, stabs of the plastic concrete to determine the actual concrete depth and string line placed prior to placement to control the paving machine. The challenge for the Contractor was what should the grade be, what was to be used for the Control Line and how to complete the paving after the first two paving passes had been placed. For the third pass the Contractor had three meeting with their surveyor and CDOT on the drawings that had been prepared by the surveyor. The drawings showed the extra fill of concrete that was required. The string line that was set was set for a smooth longitudinal roadway profile rather than up and down to meet the concrete depth requirements. CDOT knew there would be concrete overrun and was OK with the profile. This overrun was "additional concrete" to meet

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 7 of 13

the string line profile and not "excessive concrete". CDOT considered it "excessive concrete".

In some areas the Contractor did not provide CDOT with the concrete stab depths. In these cases CDOT used the concrete cores to determine concrete depth. The Contractor said that the first time they received the calculations on the concrete deducts was in the CDOT transmittal which was received by the Contractor on March 3, 2010. In the area where CDOT deducted 233 CY (11/25/09 summary), based on the concrete yield and the area paved, the additional concrete would have only been 66.47 CY. This shows that some of the CDOT calculations are not accurate. (CDOT spoke up and said this is the first time they have heard of the discrepancy.) The Contractor said that CDOT had both the square yard and cubic yard quantities on a daily basis.

The Contractor maintained that CDOT should have followed Specification 412.20 and checked and approved the subgrade prior to concrete placement. CDOT was OK with the Contractor placing the concrete before each placement. On the third paving pass, CDOT had the Contractor's survey drawing which had been discussed in meetings and knew what the concrete thickness would be. The Contractor said it took the initiative to get the job done and never received anything from CDOT even though CDOT knew the Project could not be built per the Contract.

CDOT Presentation on Furnish Concrete Pavement Quantities and Payment

CDOT disagreed as to when the Contractor received the concrete deduct sheets. They agreed that there was a transmittal on March 3, 2010 but said the Contractor got the sheets within a week after the work was done when they placed them in the Contractor's box.

CDOT took exception to the milled surface being a subgrade as called out in the Specifications.

Contractor Rebuttal

The Contractor got 3 or 4 of the concrete deduct sheets based on the stab depths but did not get all of them until March 3, 2010.

CDOT Rebuttal

CDOT said that it had given the deduct sheets based on core depths where the Contractor had not provided stab sheets to the Contractor before March 3, 2010.

CDOT said that it had given additional concrete quantities to the Contractor at Station 468 based on the survey sheets and as highlighted on the Contractor's sheets. (CDOT Exhibit 7).

CDOT said that the quantities for payment were provided to the Contractor on a monthly basis and the Contractor had never taken exception to the quantities as shown by CDOT.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 8 of 13

After questioning by the Board, CDOT said that it had not provided the deductive quantities to the Contractor on a monthly basis when CDOT gave the Pay Estimate to the Contractor but the Contractor could have asked for them. The Contractor also stated that CDOT inspectors had done daily inspections and knew what the string line indicated the concrete depth would be.

CDOT brought up the concrete depths at Stations 385, 390 and 448 and said that they had paid for the concrete overruns in these areas.

Discussions after the Rebuttals

Contractor: CDOT did not follow the specification and use both the string line and the stab depths **simultaneously** (emphasis added). The string line cannot go up and down but had to be set to provide for a smooth concrete surface.

CDOT: In Revised Specification 412 you have to look at the words *control and determine*. The string line shows where to pave but the stabs shows the actual concrete depth.

Contractor: The Specification says that the cored depths control.

CDOT: CDOT said that waste was not included in the 1,092 CY deduct.

CDOT: CDOT said that it cannot agree to an open ended change to the Contract and it did not receive Notice as required by the Contract in order to review a change.

Answers to Questions and Points made by the Board

The Board drew a typical cross slope as surveyed by the Contractor and showed that with the broken back cross slope and a 2% finished concrete cross slope that there was going to be overrun. CDOT said the Project was not built per the Contract and that it was its intention for the subgrade to have a 2% cross slope. In addition, most of the concrete deducts were on the third paving pass.

At the June 17, 2009 meeting CDOT should have known there was a major problem in building the Project per the Contract and that changes had to be made to get the Project done.

CDOT: Payment quantities were given to the Contractor monthly but the deductive quantities were not.

CDOT: CDOT did not check the string line.

Contractor: The Contractor did not provide stab depths to CDOT on all placements. It did not know whether the stabs were not taken or that the stab depths were not given to CDOT.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 9 of 13

Contractor: A corrective plan for the subgrade was not provided to CDOT. It was assumed that the areas were to be filled with concrete since CDOT did not request the HMA fill.

Contractor: The Contractor had not provided CDOT the Contractor's exceptions to some of the deduct calculations that were provided on March 3, 2010. (CDOT said that the Contractor had the deducts before March 3, 2010.)

Note: Since CDOT had not heard of the Contractor's exceptions to the calculations prior to the hearing, both parties agreed as follows:

- The Contractor will provide CDOT with its exceptions by the end of the day on September 15, 2010.
- CDOT will review the exceptions on September 16, 2010.
- No later than September 17, 2010, the parties will discuss the issue and provide the Board with any agreements that were reached.

The parties advised the Board on September 16, 2010 that they had agreed to an additional 262.3 CY of Furnish Concrete Pavement which changes the amount in the dispute to 830.2 CY.

Findings:

- 1. Based on the variable cross slopes of the existing asphalt pavement as shown on the asbuilt surveys, a milling depth of $\frac{1}{2}$ " to 1" and the cross slope of the finished concrete pavement to be 2%, the concrete depth would have been greater than the 6.5" average as allowed by CDOT.
- 2. After the Contractor had completed the milling from SH 287 to Hoover street, it was obvious that the Contract requirements (milling depth and finished concrete cross slope) could not be met without a substantial concrete overrun. Even though CDOT was well-aware of the problem, CDOT never issued a change order or direction in writing to protect both parties to the Contract. Also, Specification 412.20(b) for Concrete Pavement Overlays states *Payment will be made for irregularities under pay item of Furnish Concrete Pavement*.
- 3. If the Contractor switched the Control line to the north shoulder rather than the crown as originally specified and changed the milling depth to 1.5" to 2.5" without CDOT's approval, CDOT had the authority to stop the work per the Contract. It was stated in the exhibits and during the hearing that the parties mutually agreed to this change; however, there was no documentation supporting such a statement.
- 4. Based on the problems that were encountered in the third paving pass and the concrete overrun, it appears that adequate study of the changed milling requirement was not done by either party to determine if the initial change minimized potential concrete overrun.
- 5. Both parties admit that several meetings/discussions concerning the problems with the Contract requirements were held; however CDOT maintains that no change notice was

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2

Page 10 of 13

ever issued in writing by the Contractor. The Job Progress Narrative Report dated June 25, 2009 which was submitted by the Contractor to CDOT states the changes that were made *pursuant to CDOT direction*. Nothing was found in the pre-hearing submittals or was presented during the hearing that indicated CDOT ever responded to this comment.

- 6. CDOT's position that Revised Specification 202.09 requires the milling machine to be capable of grade control for the cross slope milling was taken out of context since grade control refers to the profile (longitudinal roadway) grade. (No profile grade was given in the Contract documents.)
- 7. CDOT had a Force Account item for HMA to repair/bring to grade the milled surface but did not use the HMA where there was delamination of the asphalt or where the mill broke through the asphalt and into the base course.
- 8. Revised Specification 412.21 called out **simultaneous methods** to be used for determining the thickness of the concrete pavement. CDOT chose to ignore the string line method which would have given an indication of possible concrete overruns prior to the placement of the concrete.
- 9. CDOT did not identify distressed or irregular areas in the planed surface as required by Revised Specification 202.09. Also, CDOT did not check and approve the subgrade as required by Specification 412.20.
- 10. The milling methods were changed to attempt to minimize the concrete overrun and provide a reasonable surface on which to place the new concrete pavement. The revised overrun quantity of 830.2 CY amounts to 0.134"overrun over the entire pavement surface. CDOT also pointed out in its Position Paper that in two areas (Station 268+00 to 294+00 and near Station 161+00) that it allowed overruns where the concrete depth was 7.5" to 9" due to the conditions that existed prior to the start of milling by the Contractor. These allowed overruns would reduce the Project overrun depth for the entire Project to less that 0.134". Based on the pictures that were provided to the Board and the changed conditions, this does not seem to be "excessive concrete".
- 11. Based on pictures, the 200 LF length to apply the excessive concrete determination should have been reviewed by CDOT with the Contractor prior to each concrete placement to determine what caused the additional concrete depth that would be placed. The string line that was placed by the Contractor should have aided in the determination.
- 12. Based on the survey information/drawings that were provided by the Contractor prior to the third paving pass, an evaluation of possible concrete overruns by CDOT and the Contractor should have been made prior to the Contractor placing the concrete.
- 13. The Contractor failed to take the stab measurements or failed to furnish CDOT with the stab results in some areas as required by the Specifications. Accordingly, the use of concrete cores by CDOT to determine concrete thickness is appropriate per Specification 412.21.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 11 of 13

- 14. The written documentation by both parties concerning the existing asphalt paving, how the Contract requirements could or could not be met, and how changed requirements were to be accomplished was very inadequate.
- 15. The Furnish Concrete Pavement quantity listed in the bid documents was based on a concrete thickness of 6" and did not include the ½" allowable overrun. Also, some additional concrete should have been expected based on the macrotexture requirements of Revised Specification 202.09.
- 16. CDOT's Position paper on page 8 stated that no deductions were made for excessive concrete between Stations 268+00 and 294+00; however, the tabulation on the first page of CDOT Exhibit 2, 1/25/2009, Seq 4 shows a deduct of 60.5 CY. The Board does not know if this was included in the revised quantity submitted by the parties on September 16, 2010.

Recommendations:

1. Based on the major changes in the milling process to try to minimize the concrete overrun, there were some irregularities in the milled surface that increased the concrete depth in some places. Also, the 200 LF criteria for calculating excessive concrete should probably have been evaluated prior to the placement of concrete since the 200 LF had little to do with what the Contractor had to do to get the milling done. CDOT probably has a much improved roadway as a result of the Contractor's effort (re planning/milling and the concrete necessary to make it work).

Using the Place Concrete Pavement quantity of 223,178.27 SY per Pay Estimate 10 dated 6/16/10, a 6.5" concrete depth results in a concrete quantity of 40, 296.08 CY. Using the Furnish Concrete Pavement quantity in Pay Estimate 10 of 40,441.82 CY and adding CDOT's original excessive concrete quantity of 1,092.5 CY results in a total concrete quantity used on the Project of 41,534.32 CY. This is only a 3.08% increase over the quantity using a depth of 6.5".

Accordingly, the Board recommends that CDOT use a Furnish Concrete Pavement quantity of 41, 534.32 CY (40,441.82 + 262.30 + 830.20).

2. The Board also recommends that on similar projects in the future that any deducts and supporting documentation be furnished to the contractor on a monthly basis with or before the pay estimate so that differences can be reviewed while the work is still fresh in everyone's minds.

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2 Page 12 of 13

Respectfully submitted, this 23rd day of September 2010.

Dispute Review Board

Nicholas Pijoan

John J. Trace

John J. Trace

John J. Handan

Attachments:

1. Timeline of Critical Events

DISPUTE REVIEW BOARD REPORT AND RECOMMENDATION CDOT PROJECT NO. C 0252-390: DISPUTE 2

Page 13 of 13

ATTACHMENT 1

STA 0661-011: 16214 SH 66 - US 36 TO SH 287

<u>TIMELINE OF CRITICAL EVENTS – DISPUTE 2 CONCERNING FURNISH</u> CONCRETE PAVEMENT

| Asphalt Milling begins |
|---|
| Meeting on grade to discuss method of milling |
| First day of Paving |
| Last day of Concrete Paving |
| Last day of Concrete Paving |
| REA submitted |
| Project level meeting to discuss merits of dispute |
| Merit of dispute denied |
| Lawson rejects PE's denial of merit in letter to the Resident Engineer (RE). |
| RE Review process begun with 1st meeting |
| RE Review 2 nd meeting |
| RE Review 3 rd meeting |
| Addendum to REA submitted |
| RE Review process ended with 4 th meeting. Decision to take dispute to a Dispute Review Board. |
| Added utility work complete. Notice of final project acceptance given. |
| |