DISPUTE REVIEW BOARD REPORT AND RECOMMENDATIONS SH 135 CRESTED BUTTE SOUTH GUNNISON COUNTY, CO CDOT PROJECT NO. HB 135 A-024

DISPUTE CONCERNING TESTING AND UNIT PRICE ADJUSTMENT FOR HMA PAVING AND COMPLIANCE WITH DISPUTE RESOLUTION PROCEDURES

Hearing Date: February 23, 2010

Hearing Location: CDOT Office - 2424 North Townsend Ave., Montrose, CO

Hearing Attendees: Ron Alexander – CDOT – Resident Engineer
Brad Hollandsworth – CDOT – Project Engineer
John Brazelton – CDOT – Region 3 EEO Officer
David Eller – CDOT – Program Engineer
Don Green – CDOT – Tester
John P. Ary – A & S Construction Co.
Chuck Reavis – A & S Construction Co. – Construction Manager

Background:

A & S Construction Co. was awarded a contract for a 2" Hot Mix Asphalt (HMA) overlay on approximately 8 miles of State Highway 135 near Crested Butte, Colorado. The Project was bid on February 14, 2008, awarded to A&S on March 6, 2008 and the Notice to Proceed was issued on March 7, 2008 with a 60 working day time period. The Project was accepted as complete on October 24, 2008. Due to a statewide shortage of the specified Asphalt Cement (PG 58-34), Contract Modification Order (CMO) 002 was issued that changed the asphalt to PG 58-28 and incorporated an asphalt cost adjustment into the Contract

Contractor Statement of Dispute:

1. Irregularities in Sampling and Testing Locations, combined with reports of possible alcohol impairment of testing personnel, have led to questions about the random representation of HMA compaction Quality Assurance Testing and the associated Incentive/Disincentive Payment for Top Mat Density.
2. The CDOT Incentive/Disincentive calculation and payment requires a unit price be entered into the CDOT software program when Asphalt Cement is a separate Bid Item as is the case with this Project, HB 135A – 024. CDOT has paid A&S Construction a total amount of $980,212.08 for all costs associated with the furnishing of Asphalt Cement for the Top Mat & Leveling. This item and pricing was added by CMO 002. The final pay quantity was 1756.13 tons of Asphalt Cement. Calculation of the "unit price" would result in a unit price of $558.17.

Scope of desired action requested by A&S

1. Determination that the correct unit price to be used in the QA/QC QPM Incentive/Disincentive Payment (I/DP) calculations should be $558.17.
2. All tests determined to have sampling error will not be used per paragraph 105.03. The I/DP will reflect only tests without errors.

CDOT Statement of Dispute:

1. A&S failed to comply with the dispute resolution procedures of the parties' contract and is therefore barred from any recovery.
2. No irregularities occurred with regard to the HMA compaction Quality Assurance testing requiring a recalculation of the Incentive/Disincentive Payment.
3. A recalculation of the Incentive/Disincentive Payment computation based on a modified asphalt cement unit price is not warranted.

Pre-hearing Submittal:

Both parties provided the DRB with Pre-hearing Submittals per Spec. Section 105.22(e), the Lists of Contents of which are included in Attachment 1. Both parties provided the DRB with their lists of attendees

Contractor Presentation on the Testing Issue:

The Project was bid on February 14, 2008. The HMA paving started on September 8, 2008 with the top mat starting on September 11, 2008 and completing on October 3, 2008. On September 23, 2008 the Contractor submitted a written request to CDOT for a re-core of Test #29 but the request was rejected by CDOT. (It should be noted that CDOT agreed to eliminate the results of Test #29 in their calculations.) On September 24 the CDOT tester reported Gradation Tests 7 and 8 were out of spec, the only gradation tests that were out of spec on the Project.

On March 11, 2009 A&S sent a formal written request to the Project Engineer asking for the QA/QC report – called QPM. Subsequent requests were sent to the Resident Engineer and on March 26, 2009 CDOT provided the first copy of the QA/QC Report – QPM. This was almost six months after the paving was completed. Normally, the initial draft report is available within a few days of the completion of the paving. On April 10, 2009 A&S notified CDOT of some concerns on the QPM report and asked four questions. CDOT sent a revised QPM report on May 29, 2009 but no answers to the questions. On June 11, 2009 A&S submitted a formal Notice of Dispute and the Request for Equitable Adjustment (REA) was submitted on June 24, 2009. On June 29, 2009 A&S received the answers to two of their four questions. On July 11, 2009 A&S received joint density locations and tests from CDOT.

On August 2, 2009 A&S requested clarification about the test location offset measurements and received a reply from CDOT on August 4, 2009. On August 19 2009 A&S notified CDOT of some added concerns regarding the data used for QPM and that answers were needed for A&S to proceed with their REA. On August 28, 2009 A&S sent another request to CDOT, particularly wanting the

Testing Form 428's. On August 28, 2009 the Resident Engineer told A&S that CDOT was working on getting the information and that he had sent the Project Engineer to the Project to verify the locations of the visible cores. On September 1, 2009 A&S received a response from the Resident Engineer and Project Engineer with information, notification of adjustments or corrections that would be made to the QPM and denial of some of the requested changes to the QPM. The third run of the QPM and an explanation of what was used for the QPM was finally received by A&S on September 21, 2009 and the Form 428's on September 25, 2009.

On November 4, 2009 A&S met with the Project Engineer at the site and reviewed the six core locations that were clearly identifiable. The results of the review were furnished to CDOT at the meeting with the Resident Engineer on November 24, 2009 per CDOT Exhibit RE 16. A&S then covered Spec. Section 105.03 and Section CP 75-08 of the Field Materials Manual and what they felt was a reasonable deviation from the random location requirements. Random numbers for locations are listed to three decimal points which implies somewhat exact measurements should be used in marking the test locations. Spec. Section 105.03 states, *Tests that are determined to have sampling or testing errors will not be used.* CP 75-08 Section 3.2 states, …*random sampling ensures that samples are selected uniformly throughout the entire production process.* CP 75-08 Section 6.1 states, …*sample as close as possible to the values represented on the sampling schedule.*

A&S visited the site again on December 22, 2009 and found that the core at Station 148+00 (Test #24) was 10' from the centerline vs. the random factor location of 8.6' and that CDOT's testing records show the test location as 8.0' from centerline. A&S handed out their analysis of the testing locations, Attachment 2. (The number under the *Error* column for Station 92+00 should be 0.7' vs. 2.7')

A&S then referred to CDOT Exhibit RE31 which lists the tests and locations on a spread sheet, Attachment 3. A&S questioned the numbers in italics. (CDOT explained that the numbers in italics represent assumed dimensions from the Plans where they did not have measurements.) A&S took exception to this method. A discussion on the Exhibit followed.

Based on A&S questioning the abilities of the tester and the difference between the random locations and the actual test locations being more than what A&S felt was a reasonable deviation, A&S requested that eight tests, #16, 17, 21, 24, 25, 30, 53 and 55, not be used in the Incentive/Disincentive calculations. In addition, A&S said that Test #16, a core test, showed a location 19.2 feet from the centerline which put the test 10 inches from the edge of pavement based on the width of 20 feet which was measured at the November 4, 2009 meeting. CP 81 of the Field Materials Manual requires that tests be 1 foot from the edge. A&S also questioned if Tests # 21 and 30 were too close to the edge. A&S was not disputing the test results but only the locations.

CDOT Presentation on the Testing Issue:

The CDOT Project Engineer was on the Project for the entire duration of the Project. The Contract calls for minimum testing of the HMA in 500 ton lots but CDOT can test anywhere per Spec. Section 106.05(b). CP 75 of the Field Materials Manual calls for random testing on a uniform basis but no material is excluded from testing. A&S wants tests rejected for location (sampling) error and not testing error since the sampling is not in accordance with random sampling requirements. CDOT maintains that the locations of the tests show no bias and is therefore random. CDOT stated that some of the passing tests used in the Incentive/Disincentive Payment calculations were also not in the exact or near exact random locations and should also be eliminated if the failing tests are eliminated for location differences. Originally A&S said five tests should not be used but then increased the number of tests that should be eliminated for location problems.

CDOT said two testers were used on the Project. A wheel, which is not exact to a few decimal places but is what is used on most CDOT work, was used to mark the test locations by placing an "X" on the location. The location was usually placed at the nearest 1 foot mark. On Exhibit RE31, Attachment 3, the numbers in italics represents the plan dimension. The paving was not true echelon paving since on the A&S job one crew would pave a section and then the same crew would place the adjoining section but the seam was classified as a "hot seam". The test locations were moved in at least one foot from the edge of asphalt if the random location fell within one foot of the edge of asphalt. CDOT explained the differences in random number use but stated the locations used for testing were still random.

CDOT questioned A&S's allegations on the tester's abilities and how it related to the randomness of test locations. During the paving period A&S never brought the question of the tester's abilities up to CDOT. The A&S Safety Plan says that an employee is to raise a question immediately if there is a safety issue.

CDOT stated that in looking at Spec. Section 105.03 the only error is in exact randomness and that there was no malicious intent by CDOT in not using exact test locations. The CDOT testers followed the testing procedures. In addition, A&S did not follow the Notice requirements.

Contractor Rebuttal on the Testing Issue:

A&S stated that CDOT can test wherever they want and the Project Engineer can select the test but the tests cannot be used in the QPM per Construction Manual 105.3.4.4. Also, Spec. Section 105.05 says that for Pay Factors only CDOT's acceptance results may be used. A&S maintains that "exact" means exact and not near. A&S was told that their tests "hold no water". They also questioned what "close as possible" means in CP 75 and why it took five months to get the test records.

CDOT Rebuttal on the Testing Issue:

CDOT said that "exact" is not contained in CP 75 – Section 6.1.

Gradations #7 and 8 got 96's for a good pay factor. Tests #16 and 17 were taken by Cullen. On Test #16 the first core was torn up by Chris Robinette of A&S and 2 cores were also taken on Test #17. Test #24 showed a high density of 97.1 but was then cored with a density of 96.7. Tests #30, 53 and 55 were also high.

There were eight edge tests taken and two were low. Test #29 was voided by making the pay factor 1.0 in the QPM. A&S never questioned the longitudinal locations for tests. CDOT measured the asphalt mat to apply the random factor. On other projects CDOT has moved the test locations by 20' due to surface irregularities. (A&S said that this is OK if it is documented.)

CDOT questioned A&S's assertion that the test results were delayed in getting to A&S and said that the Form 626's were provided to A&S the next day after the tests. (A&S said they only got forms for four days.) CDOT replied that only completed 626 Forms for failing tests were given to A&S. Surface irregularities can affect the test machine, which is 8" X 13", so the testing device can be moved 7". Using the wheel to measure is common practice. CDOT went over the Test # 29 problems and the pattern for testing as shown in CDOT Exhibit RE 33. Since there were no retests, CDOT eliminated the impact of the test in the QPM which increased the payment to A&S but noted there was no improvement in quality.

CDOT showed a picture of Test #16 which showed four cores, two of which were retests.

Contractor Presentation on Asphalt Unit Price and Incentive/Disincentive Payments:

A&S went over the PG 58-34 asphalt shortage and the change to PG 58-28. A&S had some problems with the language and pricing in the first copy of Contract Modification Order (CMO) 002 they received but the issues were resolved with a Unit Price for PG 58-34 of $485.72/TON which was based on an asphalt rack price for August 2008 of $400.00/TON. Based on Construction Bulletin 2008, Number 8 dated July 29, 2008, A&S was comfortable with the CMO provision on cost escalation for the asphalt.

A&S provided CDOT with documentation for the rack price of $470.00/TON for September and October 2008. There were some problems with CDOT on the correct price they used for escalation, but the issue was settled at an increase of $72.45 ($70.00 + 3.5% Commerce City Sales tax). CDOT Form 266a dated 2/4/2009 confirmed the increase.

On March 27, 2009 CDOT provided A&S with a QPM Report dated 3/27/09 which used an AC Cost/Ton of $486.75. On April 10, 2009 A&S requested information on the QPM Report. On May 29, 2009 CDOT provided A&S a revised QPM Report dated 5/8/09 which used an AC Cost/Ton of $535.00. Since CDOT had not answered A&S's questions, on June 11, 2009 A&S submitted to CDOT a written Notice of Dispute *regarding proper compensation for the QPM related HMA incentive payments.* A&S's problem is with the Unit Price for asphalt that CDOT used in the QPM which does not included the escalation of the asphalt price.

On October 6, 2009 via email, A&S notified CDOT of a dispute concerning the Testing and Calculations associated with the QPM for this Project. On October 21, 2009 A&S submitted an REA. After the Project Engineer found that the issues raised by A&S were without merit, on November 17, 2009 A&S notified the Resident Engineer of the unsatisfactory resolution of the dispute. After discussions with CDOT, on December 22, 2009 in a written proposal, A&S offered CDOT a proposal using their original AC unit price (original bid unit price) of $535.00/TON and the elimination of only Tests # 18, 26 and 25 for the QPM calculations.

CDOT Presentation on Asphalt Unit Price and Incentive/Disincentive Payments:

CDOT went through the PG 58-34 shortage and the change to PG 58-28 including the 900 Pay item for escalation, delay considerations and CMO 002. At no time during the negotiations for the CMO was asphalt price escalation ever discussed as being a consideration in the Unit Price for I/D Payments. The QPM has no provision for price escalation and the Unit Bid Price is the Unit Price in the CMO.

Based on CDOT not allowing a new core test for Test #29 as requested by A&S, the test results were basically eliminated from the QPM by assigning a pay factor of 1.0.

Contractor Rebuttal on Asphalt Unit Price and Incentive/Disincentive Payments:

The three Construction Bulletins concerning the asphalt shortage only led to confusion. The CMO added a new Pay Item for a price today and at some time in the future. The law says that the drafter is responsible for the language and the language is not clear.

CDOT Rebuttal on Asphalt Unit Price and Incentive/Disincentive Payments:

CDOT questioned A&S's comment on the language of the CMO. After A&S raised questions on the Commerce City Tax and additional time, the CMO was changed. Incentive/Disincentive Payment issues were never addressed.

CDOT's position on the change in asphalt type is that it should not affect the Incentive/Disincentive Payment. When the contractor determines his Unit Price at Bid time, he evaluates the risk of the various factors that determine the

I/D Payment. With this in mind, it would not be fair to reduce the Unit Price if the price of asphalt goes down because the risk to the contractor stays the same.

Questions by the DRB on Asphalt Unit Price and Incentive/Disincentive Payments:

Has A&S been told what was used in the QPM Program?

A&S has been told. They have been paid for the binder – the only open item is what is to be used in the I/D Payment calculations.

CDOT Presentation on the Notice Provision of Revised Special Provision 106.05(b):

CDOT said Spec. Section 105.21(b) states, *Disputes will not be considered unless the Contractor has first complied with specified issue resolution processes such as those specified in subsections .... 106.05.* Spec. Section 106.05(b) states, *If the Contractor elects to question the Hot Mix Asphalt (HMA) acceptance test results, the steps outlined in CP 17 shall be followed. ... All requests for the CP 17 process for the density element shall be submitted in writing to the Engineer within 24 hours of receiving the test data from the Engineer.*

A&S took exception to the random locations for the density tests for only failed tests. Test locations were marked with an "X". If A&S would have followed the procedures, the locations would not be in question. A&S's Request for Equitable Adjustment (REA) was insufficient and late.

Contractor Presentation on the Notice Provision of Revised Special Provision 106.05(b):

A&S said at a meeting with the Project Engineer and at the three meetings with the Resident Engineer, the Notice issue was never mentioned by CDOT. A&S said that CP 17 was shown as "under development" in the Table of Contents for the 2008 version. In the Dedication section of the 2009 Manual, CP 17 is shown as (new). A&S questioned what CDOT's intentions were. (CDOT replied that Notice is in the Specs.)

Questions by the DRB on the Notice Provision of Revised Special Provision 106.05(b):

What information was provided in the Form 626's?

The four Form 626's that were given to A&S were reviewed at the Hearing. Each form was signed by A&S. The forms show the Station and Location of the tests. Cores are taken by the Contractor.

Does the Contractor get the random location information?

The random location information is available to the Contractor after the test has been taken. A&S did not ask for this information until they started to question the tests (Reavis email to CDOT 4/10/09).

Summation Statements:

Both parties said they had covered what they needed to present.

Findings:

1. The major disagreement between the parties on the testing issues centers on the location of the tests. Relevant sections from the Field Materials Manual include:

- Definitions 2.13: *Random Sample* - A sample drawn from a lot in which each increment in the lot has an equal probability of being chosen. All samples used for quality control and verification sampling and testing shall be random samples.
- Policy 3.1: *Quality Assurance Program* - It is the policy of CDOT to have a quality assurance program which will assure that materials, products, and workmanship incorporated in CDOT construction projects, and Local Agency projects, are in conformity with the requirements of the approved plans and specifications, including any approved changes.
- Policy 3.4.1: All samples used for verification sampling and testing will be random samples. Additional samples may be taken at any point in the production for verification of quality, but these will not be used for statistical evaluation.

Relevant sections from Field Materials Manual - CP 75 include:

- Scope 1.1: This practice covers the random selection of materials to be sampled and tested.
- Use 3.2: The sampling of materials is one of the most critical steps in materials testing. If the material to be tested to determine conformity to specifications is not chosen randomly, the tests will not reflect the true characteristics of the material being evaluated. Most specifications require samples to be taken using a stratified random process. Stratified random requires that one random sample is selected from each sublot or the quantity represented by the minimum sampling frequency. Stratified random sampling ensures that samples are selected uniformly throughout the entire production process.
- Use 3.3: Random sampling ensures that all produced material will have an equal chance of being selected for testing. No material is excluded from the chance of being selected unless it is specified in the test specification.
- Use 3.4: It is the nature of random testing that some of the samples will represent below average material, just as they will sometimes represent above average material.
- 6.1: On the project, sample as close as possible to the values represented on the sampling schedule. Fill in the “Taken At” column of the random schedule form as samples are being selected. Major deviations from the sampling schedule should be noted and explained on the form or on additional pages as needed.

Based on the foregoing, the Board feels that random testing is a statistical method for selecting a test location so that the test location is not determined by

the personnel performing the tests and that the test fairly represents the lot tested. It also appears that deviations are allowed as long as they are noted. In

reviewing the information shown on Attachments 2 and 3, the Board feels all deviations were noted and that the deviation does not affect the randomness of the tests.

Spec. Section 401.17, Compaction, requires a compaction pavement test section (CTS) be constructed by the Contractor. The first 14 tests on Attachment 3 reflect the tests for CTS-1 and CTS-2. The CTS establishes the type and number of rollers and the rolling pattern to be used for the project to achieve the required densities. Assuming the CTS roller requirement and pattern were used throughout the project, the minor variations in the test locations should not affect the randomness of tests or the results of the tests.

The Contractor's desired action stated in its Statement of Dispute on deleting the test results where it felt the locations were beyond what the randomness requirements indicated, included only the tests where the density test results fell outside of the specification requirements. On the Contractor's listing of tests and errors from the Random Offset, Attachment 2, the Contractor suggests that anything with an error of 0.5' or greater should not be used. It should be noted that of the 40 passing tests shown on Attachment 3, 19, almost one half, of the tests show a test location of 0.5' or more from the Random Offset. If the Contractor's position of eliminating any test results in QPM where the test location is 0.5' or greater from the Random Offset, then ALL tests where the test location is 0.5' or greater should be eliminated.

2. The events that brought about the asphalt shortage were beyond the control of either party. In order to allow the Project to proceed as scheduled, CMO 002 was agreed to and signed by both parties. The CMO *deleted 1,665.000 TONS of Item No. 411-03355, Asphalt Cement Performance Grade (PG 58-34) and added 1,665.000 TONS of Item No. 411-03352, Asphalt Cement Performance Grade (PG 58-28) Substitute PG 58-28 in Lieu of PG 58-34.* The CMO also *added Item No. 900-00006, Added Item (Dollar)/ AC cost Adjustment Provision* to protect both the Contractor and CDOT due to the volatile cost of asphalt at the time of the CMO. The CMO clearly shows that the Bid Item was being replaced with another asphalt product at a different price.

Spec. Section 105.05(g), Process I/DP Computation, specifies the formulas to be used for I/DP. The Unit Price (UP) formulas all use the *Unit Bid Price* and *Bid Tons*.

Nothing was presented at the DRB Hearing or in the Exhibits that were provided to the Board to indicate that at the time CMO 002 was negotiated that either party intended the Unit Price to be used on the Project was anything other than the New Unit Price in the CMO.

Based on the Contractor's position at the DRB Hearing and in his Exhibits which attempt to maximize his payment for I/DP, had there been a decrease in the rack price of asphalt, especially to the extent of $70/ton, the Board feels that the Contractor would not have been making his argument for the change to the Unit Price for I/DP computations.

3. CDOT maintains that the Contractor failed to comply with the dispute resolution provisions of the Contract and is therefore barred from any recovery. Their position is based on Standard Special Provision 105.21(b) on Disputes and Project Special Provision – Revision of Section 106 Hot Mix Asphalt Test Result Verification and Dispute Resolution which requires that if the Contractor questions the acceptance results, all requests for the CP 17 process must be submitted in writing within 24 hours of receiving the test data.

The failing test data that was furnished to the Contractor was provided on CDOT 626 Forms which were signed by the Contractor. Until such time that the Contractor had the Random Offset information, which was provided during the Dispute process, the Contractor had nothing to voice questions on to CDOT concerning test location correctness.

Recommendations:

1. CDOT should review the QPM data input with the Contractor and use all test data input with the exception of Test #29.

2. The QPM should be run using the CMO 002 Unit Price for Asphalt Cement Performance Grade (PG 58-28) of $485.72/TON.

3. CDOT's request to bar recovery based on the lack of 24 hour notice is denied based on the Contractor not having all the information he needed at the time the test results were presented to the Contractor.

4. In the future it is suggested that CDOT make all test results, passing or failing, available to the contractor as soon as the testing has been completed and recorded, even if the tests results might require noting the results are preliminary. CDOT should also discuss the tolerance for random locations with the contractor during the discussions on the Quality Control Plan. Based on the agreed to tolerance, any deviations should be adequately noted on the testing sheets. The QPM should be run by CDOT and provided to the Contractor as soon as possible after the paving is complete.

5. The Contractor's Quality Control Plan should contain provisions for the Contractor's tester to verify test locations and request copies of the Random Sampling Schedule for tests that have been completed.

Respectfully submitted, this 23rd Day of March 2010.

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W. H. Hinton II

Attachments:

1. Exhibit Lists (4 Pages)
2. A&S List of Tests Outside Acceptable Random Location (1Page)
3. CDOT Crested Butte South Lateral Density Location Analysis (2 Pages)

APPENDIX 1

A&S CONSTRUCTION CO.

ARY & SON
Phone: 719-275-4555 Fax: 719-275-8897

CDOT Project HB 135A-024

Summary of supporting documents pertaining to the Density Location portion of our REA/Dispute

As per paragraph 105.22(e)(2)

1. Handwritten speed letter to Brad Hollandsworth – 9/23/08 – one page
2. E-mail to CDOT, Brad Hollandsworth – 3/11/09 – 1 page
3. E-mail to CDOT, acting Resident Engr – 3/18/09 – 1 page
4. E-mail to CDOT, acting Resident Engr – 3/24/09 – 1 page
5. E-mail from CDOT, Brad Hollandsworth – 3/26/09 – 1 page, with QPM attachment
6. E-mail to CDOT, Brad Hollandsworth – 4/10/09 – 1 page
7. E-mail from CDOT, Brad Hollandsworth – 5/29/09 – 1 page, with QPM attachment
8. E-mail to CDOT, Brad Hollandsworth – 5/29/09 – 1 page
9. E-mail to CDOT, Brad Hollandsworth – 6/11/09 -- 1 page , with attachment – 1 page
10. E-mail to CDOT, Brad Hollandsworth – 6/24/09 – 1 page, with attachment – 1 page
11. FAX from CDOT, Brad Hollandsworth – 6/29/09 – 1 cover page, with 1 page of the attached 4
12. E-mail to CDOT, Brad Hollandsworth – 7/6/09 – 1 page reply with previous 2 e-mails
13. Fax from CDOT, Brad Hollandsworth – 7/7/09 – 6 pages
14. E-mail to CDOT, Brad Hollandsworth – 8/2/09 – 1 page reply to previous CDOT e-mail
15. E-mail from CDOT, Brad Hollandsworth – 8/4/09 – 2 pages
16. E-mail to CDOT, Brad Hollandsworth – 8/6/09 – 2 pages
17. E-mail to CDOT, Brad Hollandsworth – 8/19/09 – 2 pages
18. E-mail to CDOT, Brad Hollandsworth – 8/21/09 – 2 pages
19. E-mail to CDOT, Brad Hollandsworth – 8/26/09 – 1 page
20. E-mail from CDOT, Brad Hollandsworth – 8/28/09 – 2 pages
21. E-mail from CDOT, Brad Hollandsworth – 9/1/09 –1 page, with attachment of 2 pages
22. E-mail to CDOT, Brad Hollandsworth – 9/2/09 – 1 page
23. E-mail from CDOT, Brad Hollandsworth – 9/22/09 – 1 page, with 2 attachments
24. E-mail to CDOT, Brad Hollandsworth – 9/24/09 – 2 pages
25. E-mail to CDOT, Brad Hollandsworth – 9/25/09 – 3 pages
26. E-mail to Chuck Reavis, of CDOT Faxed data – 9/25/09 – 1 page with a 14 page attachment
27. E-mail to CDOT, Brad Hollandsworth – 10/6/09 – 4 pages
28. E-mail to CDOT, Brad Hollandsworth – 10/21/09 – 1 page, with a 1 page attachment

29. E-mail from CDOT, Brad Hollandsworth – 11/10/09 – 1 page with 1 attachment of 2 pages
30. E-mail to CDOT, Resident Engineer – 11/17/09 – 1 page with 1 attachment
31. E-mail to CDOT, Resident Engineer – 12/09/09 – 1 page with 1 attachment
32. E-mail to CDOT, Brad Hollandsworth – 12/22/09 – 1 page with 1 attachment
33. A&S notes to the file records - width verification measurements – 12/23/09 – 1 page
34. E-mail to CDOT, Brad Hollandsworth – 1/6/10 – 1 page with 1 attachment
35. Standard Specifications, Project Plans and Specifications, Existing Striping Plan prepared by Subcontractor
36. Materials Manual, QPM Software Program Instructions, CDOT Construction Manual
37. CDOT Exhibit list furnished to A&S listing items 1-45

APPENDIX 1

A&S CONSTRUCTION CO.

ARY & SON
Phone: 719-275-4555 Fax: 719-275-8897

CDOT Project HB 135A-024

Summary of supporting documents pertaining to the AC Price portion of our REA/Dispute
As per paragraph 105.22(e)(2)

1. E-mail from CDOT, Darryl Carlson– 8/6/08 – 1 page
2. Letter/Proposal from A&S to CDOT dated 8/6/08 – 2 pages
3. E-mail from CDOT, Darryl Carlson – 8/8/08 – 1 page
4. E-mail from CDOT, Brad Hollandsworth – 9/5/08 -- 1 page , with attachment – 2 more pages
5. E-mail from CDOT, Brad Hollandsworth – 9/8/08 – 3 pages
6. E-mail to CDOT, Brad Hollandsworth – 9/12/08 – 1 page with 1 page attachment
7. E-mail to CDOT, Brad Hollandsworth – 9/15/08 – 1 page
8. E-mail from CDOT, Brad Hollandsworth – 9/18/08 – 2 pages
9. E-mail from CDOT, Brad Hollandsworth – 9/19/08 – 3 pages, with a 2 page attachment
10. E-mail to CDOT, Brad Hollandsworth – 2/4/09 – 1 page
11. E-mail from CDOT, Brad Hollandsworth – 2/4/09 – 1 page with a 1 page attachment
12. E-mail from CDOT, Brad Hollandsworth – 3/27/09 – 1 page with the QPM attached—29 pages
13. E-mail to CDOT, Brad Hollandsworth – 6/24/09 – 1 page with a 1 page attachment
14. E-mail to CDOT, Brad Hollandsworth – 8/21/09 –3 pages
15. E-mail from CDOT, Brad Hollandsworth – 9/22/09 – 1 page with a 5 page letter attachment and 30 page QPM report
16. E-mail from CDOT, Brad Hollandsworth – 9/30/09 – 4 pages
17. E-mail to CDOT, Brad Hollandsworth - 10/21/09 – 1 page with a one page attachment
18. E-mail from CDOT, Brad Hollandsworth – 11/10/09 – 1 page with a 2 page attachment
19. Standard Specifications, Project Plans and Specifications, Materials Manual, QPM Program Instructions.

APPENDIX 1

Crested Butte South **Dispute Resolution CDOT**

Exhibit Listing

1. [50] Notice to Proceed, Contract and Bond, Project Acceptance Letter
2. [53] June 24, 2009 Letter from A&S Request for Equitable Adjustment (REA) & e-mail from Brad rejecting due to inadequate specific information.
3. [28] e-mail from Chuck dated August 21, 2009 – providing A&S recorded lateral locations. Exhibit contains back & forth e-mails between Brad & Chuck for Aug 21, and Aug 20.
4. [2] Letter from A&S dated October 21, 2009 – Written Request for Equitable Adjustment.
5. [25] QPM Report dated 9/21/09
6. [17c] Project Special Provision – Revision of Section 106 Hot Mix Asphalt Test Verification and Dispute Resolution
7. [19] CP75 Stratified Random Sampling Method Field Materials Manual (2008)
8. [17d] Standard Specification 106.05 (b)
9. [17e] Standard Specification 401.21
10. [17f] Standard Specification 105.05 (g)
11. [31] Spreadsheet prepared by Ron titled Crested Butte South Lateral Density Location Analysis. Shows test number, random test numbers, widths, and test locations compared to Westest and A&S recorded locations. Attachment describes where information was obtained to create analysis.

[8] CMO-2 dated 10/2/08, Cover letter, & negotiations dated 11/13/08

APPENDIX 1

Crested Butte South REA **Resident Engineer Review**

Exhibit Listing

1. e-mail from Chuck to Brad dated October 06, 2009 7:57 AM. Evidence of A&S "written notice of dispute", stating REA as per the Specifications will follow. Exhibit contains e-mail correspondence between Chuck & Brad Sept 22 – 25, 30, & October 6th 2009
2. Letter from A&S dated October 21, 2009 – Written Request for Equitable Adjustment.
3. 3a is field notes taken 11/4/09 Chuck, Brad, & Roger – measurements of core locations at project site. 3b is an e-mail from Chuck – continuation of 11/4/09 discussion requesting tests 18, 26, and 55 be deleted. 3c recollection of meeting prepared by Brad 12/08/09
4. Letter from Brad dated 11/10/09 – Official Project Engineer Review response.
5. Letter from A&S dated 11/17/09 – formal written notice to Resident Engineer confirming unsatisfactory resolution of dispute.
6. Letter from Ron dated 11/19/09 – acknowledge request for Resident Engineer review setting up meeting for 11/24/09 10:00 a.m.
7. Construction Bulletin 2008/9 dated 8/9/08 – Chuck provided during 11/24/09 Resident Engineer review meeting 1.
8. CMO-2 dated 10/2/08, Cover letter, & negotiations dated 11/13/08
9. Construction Bulletin 2008/6 dated 7/7/08 – Chuck provided during 11/24/09 Resident Engineer review meeting 1.
10. e-mail from Darryl advising to advance with CMO-2 referenced during discussion but not provided.
11. Letter from A&S dated 8/6/08 providing additional information on pricing for CMO-2 – Chuck provided during 11/24/09 Resident Engineer review. – Part of CMO-2 package (Exhibit 8).
12. Construction Bulletin 2008/8 dated 7/29/08 revised 8/4/08 – Chuck provided during 11/24/09 Resident Engineer review meeting 1.
13. Brad – Draft CMO referenced during discussion but not provided.
14. e-mail from Chuck dated 9/7/08 discussing binder costs – not part of CMO-2 package.
15. Instructions from Asphalt03 - Chuck provided during 11/24/09 Resident Engineer review meeting 1.
16. Document Chuck provided during 11/24/09 Resident Engineer review titled "Meeting with CDOT on Crested Butte Project 11/4/09 – 10:00 AM"
17. Contract Documents – Plans, Standard Special Conditions, Project Special Conditions.
18. CDOT Standard Specifications for Road and Bridge Construction – 2005
19. Field Materials Manual – 2008
20. 282 forms Asphalt Paving Inspector Daily Report - pages hand numbered from 1 to 60 (skipped page 12) – prepared & maintained by Contractor's Ticket Taker. Resident Engineer modified by adding daily tonnage total from daily ticket tapes

on first sheet of each day's recording and numbered pages 1-60 (skipped 12). Red arrows on side by Resident Engineer for number of trucks echelon paver sat.

21. 428 forms – Nuclear Asphalt Density – 18 pages – Prepared by CDOT Tester for each QA Density test numbered 1 – 64
22. Westest Asphalt Nuclear Density Worksheet – 10 pages – Prepared by QC (Westest) tester representing QC testing. Not complete, missing test original numbers 21 through 27
23. Random Sampling Schedule – Tests 15 through 64 – prepared by CDOT Tester. Resident Engineer modified by adding original test numbers. Since tests 1 – 7 are CTS 1 and tests 8 – 14 are CTS 2, take the printed test number on the sheet and add 14 to get the "original test number".
24. e-mail from Chuck dated August 21, 2009 – providing A&S recorded lateral locations. Exhibit contains back & forth e-mails between brad & Chuck for Aug 21, and Aug 20.
25. QPM Report dated 9/21/09
26. Letter from Brad to Chuck dated Sept 22, 2009 describing changes made to QPM Report reflected in Exhibit 25
27. Letter from Brad to Chuck dated October 22, 2009 acknowledging receipt of A&S Request for Equitable Adjustment
28. e-mail from Chuck to Brad dated Aug 19, 2009 outlining 6 tests in incorrect locations plus information on Test #29.
29. e-mail from Ron to Chuck dated August 28, 2009 suggesting he recheck his recording locations.
30. Letter from Brad to Chuck Dated Sept 1, 2009 describing changes to be made to QPM per internal discussions at CDOT
31. Spreadsheet prepared by Ron titled Crested Butte South Lateral Density Location Analysis. Shows test number, random test numbers, widths, and test locations compared to Westest and A&S recorded locations. Attachment describes where information was obtained to create analysis.
32. Hand calculations prepared by Ron evaluating the longitudinal locations for tests 17, 21, and 31 to verify the calculations performed by Chuck in exhibit 16
33. Drawing of approximate location 133+00 to 140+00 with pattern test results around the test 29 location. Modified with Ron's notes during his review.
34. e-mail from Ron to Chuck dated November 30, 2009 requesting re-consideration of the naming of exhibit 16, discussion on how Don did longitudinal locations, and setting up the second RE Review meeting.
35. Copy of daily testing card Don uses to schedule testing. Ron has notes after discussing with Don where information is comes from and is used.
36. e-mail from Brad to Chuck dated 7/18/08 offer time extension & change Furnish HMA from 58-34 to 58-28,
37. Daily reports from Brad Hollandsworth 9/11/08 - 10/03/08 – 19 pages
38. Daily reports from Cullen Rutan 9/11/08 - 10/03/08 – 17 entries
39. Daily reports from Dave Benson 9/11/08 - 10/03/08 – 15 entries
40. CDOT 626 forms signed by A&S showing failing tests. (2 pages – 4 half sheets)
41. 105-1 dated 7/15/08
42. 105-5 dated 9/18/08
43. 105-6 dated 9/23/08
44. 105-7 dated 9/23/08

45. Memo from Chris Robinette to Brad dated 9/23/08 proposed corrective actions.
46. A&S presented at third Resident Engineer Review meeting AC Price used in QPM
47. A&S presented at third Resident Engineer Review meeting QPM issues, test location discussion.
48. Temperature study by US Army Corps of Engineers calculates time to get to 175 degrees. Resident Engineer hand calculations using Corps info determine time for truck cycle. Resident Engineer worksheets laying out paving pattern.
49. Resident Engineer Review – Conclusion
50. Notice to Proceed, Contract and Bond, Project Acceptance Letter
51. Resident Engineer Review Meetings Minutes.
52. Letter from A&S requesting formation of Dispute Review Board & Correspondence.
53. June 24, 2009 Letter from A&S Request for Equitable Adjustment (REA) & e-mail from Brad rejecting due to inadequate specific information.

APPENDIX 2

A&S List of Tests Outside Acceptable Random Location

Original Test #	DATE	station	random offset factor	actual width of paving as measured in the field	random specified lateral offset	CDOT recorded actual offset	current visible core offset	difference from specified offset ERROR	comment
16	9/16/08	81+00	0.979	20' (jointly)11/4	19.6'	19.5'	19.2'	0.4'	1' rule says the core should have been 19.0-this core violates CP 91 para 9.1
17	9/16/08	92+00	0.756	20.8(by CDOT)	15.7'	15.0'	N/A	2.7'	Should not be used as per 105.03
24	9/18/08	148+00	0.423	20.3(A&S 12/22)	8.6'	8.0'	10.0'	1.4'	An error in location and a location that Doesn't match the tester's records
25	9/19/08	155+60	0.882	20.2(A&S 12/22)	17.8'	11.0'	N/A	6.8'	
30	9/22/08	165+00	0.929	22.9 (jointly)11/4	21.3'	18.0'	20.8'	0.5'	An error in location and a location that Doesn't match the tester's records
53	9/30/08	357+50	0.642	32.1(A&S 12/22)	20.6'	16.0'	N/A	4.6'	
55	9/30/08	393+00	0.332	23.0(A&S 12/22)	7.64'	7.0'		0.64'	
21	9/17/08	89+25	0.046	20.0(CDOT)	0.92'	1.0'	N/A	EDGE	Taken at Edge-SUSPECT test

APPENDIX 3

Exhibit 31 Description

The purpose of this document is to explain the source of information contained in the Exhibit 31 worksheet titled Crested Butte South Lateral Density Location Analysis prepared by Ron Alexander, Resident Engineer during the REA process which evaluates the lateral test locations.

Column 1 is the original test numbers and column 2 is the QPM test numbers. Exhibits will discuss two sets of test numbers. The original set of numbers which are the numbers the testers (both QA and QC) used in their field paperwork. The QPM numbers were used in the 9/21/09 QPM run where test number 1 was inserted to represent the leveling course. The Asphalt03 program numbered the tests automatically however it is noted that there is no test number 33 in the QPM.

Column 3 is the station the test was taken at and the information for this column came from the CDOT 428 forms (exhibit 21) and is the stations consistently discussed in all exhibits.

Column 4 is left (L) or right (R) of centerline looking up station. So a test in the L would be a southbound location and an R would be a northbound test location. This information came from the CDOT 428 form records (exhibit 21).

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Column 5 is the Scheduled Random offset multiplier. This number came from exhibit 23.

Column 6 is the Used Random offset number. This is most often the same number in column 4, however such as test 18 the CDOT 428 form (exhibit 21) noted that it used a multiplier of 0.149 which is the scheduled multiplier for the next test.

Column 7 is and offset start distance. This number is only used on test 51. This is where the mat width that was measured to apply the multiplier to started 12 foot from the centerline. So the recorded offsets from centerline needed to have the 12 foot added but not included in the calculation to determine the location.

Column 8 is the width of the mat used in the offset multiplier calculation. If the number is not italic, there was either a field measurement, or a source of information to determine that information. The CDOT form 428 (exhibit 21) sheet does not have a spot for the width to be logged or the offset location for that matter so filling in that information was optional. The tester only logged a couple widths in his CDOT form 428 recording. Where the number in column 7 is italic, the width is assumed based on the plan sheet widths.

Column 9 is the width total. With exception for test 51 again, this is the same number as column 7. On test 51 the width total is the 12 feet from centerline that the mat started, plus the 18 foot width of the mat tested to equal 30 feet.

Column 10 is the Random Offset Scheduled. This is a calculated field where the Scheduled Random Offset (column 5) is multiplied times the Width (column 8).
Column 11 is the Random Offset Used number. This is a calculated field where the Used Random Offset (column 6) is multiplied times the Width (column 8). The only modification to these formulas are on tests where in the comments there is a note that says "Moved in from EA". For those tests the offset calculated location has one foot added or subtracted to account for moving the test in one foot from the edge of mat.

Column 12 is the CDOT Record Offset which is information from the CDOT 428 forms (exhibit 21).

Column 13 is A&S Record Offset. This information was provided by Chuck in an e-mail exhibit 24.

Column 14 is Westest Record Offset. This information was taken from exhibit 22 the Westest Asphalt Nuclear Density worksheets. An 'X' in this column indicates no record of an offset on the Westest worksheet. An 'O' in this column indicates we do not have a copy of the Westest worksheet for that test.

Column 15 is the Cores Measured Offset. This is information field measured by Chuck Roger, and Brad on 11-4-09 as represented in exhibit 3a.

Column 16 is the comment column which contains comments found on the CDOT 428 forms (exhibit 21) or comments logged in such as where tests were moved one foot in from the edge of mat.

Column 17 is the CDOT test results from the CDOT form 428 (exhibit 21).

APPENDIX 3

Crested Butte South Lateral Density Location Analysis

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Original Test No	QPM Test No	Station	L/R	Scheduled Rand O/S	Used Rand O/S	O/S Start	W	W Tot	Random O/S Schd	Random O/S Used	CDOT Record O/S	A&S Record O/S	Westest Record O/S	Cores Measured O/S	Comment	CDOT Results
	1															
1	2	34+26		0.500	0.500		12.0	12.0	6.0	6.0	6.0					96.3
2	3	35+12		0.882	0.882		12.0	12.0	10.6	10.6	10.5					95.2
3	4	36+98		0.699	0.699		12.0	12.0	8.4	8.4	8.0					91.2
4	5	38+10		0.218	0.218		12.0	12.0	2.6	2.6	2.5					92.2
5	6	38+80		0.496	0.496		12.0	12.0	6.0	6.0	6.0					94.3
6	7	40+45		0.800	0.800		12.0	12.0	9.6	9.6	9.5					91.7
7	8	42+12		0.267	0.267		12.0	12.0	3.2	3.2	3.0				QL = 69.257	94.1
8	9	33+19		0.595	0.595		12.0	12.0	7.1	7.1	7.0		7.0			93.5
9	10	34+88		0.342	0.342		12.0	12.0	4.1	4.1	4.0		4.0			94.8
10	11	36+31		0.979	0.979		12.0	12.0	11.7	10.7	10.0		10.0		Moved in from EA	93.7
11	12	37+99		0.938	0.938		12.0	12.0	11.3	10.3	9.5		9.5		Moved in from EA	93.2
12	13	38+83		0.415	0.415		12.0	12.0	5.0	5.0	5.0		5.0			94.0
13	14	40+58		0.178	0.178		12.0	12.0	2.1	2.1	2.0		2.0			91.3
14	15	42+92		0.383	0.383		12.0	12.0	4.6	4.6	4.5		4.5		QL = 95.585	94.2
15	16	54+50	L	0.249	0.249		*20.0*	20.0	5.0	5.0	5.0	4.0	X			95.2
16	17	81+00	L	0.979	0.979		20.5	20.5	20.1	19.1	19.0	2.0	X	19.2	Moved in from EA	91.5
17	18	92+00	L	0.756	0.756		20.8	20.8	15.7	15.7	15.0	10.0	X	15.3		90.2
18	19	110+00	L	0.723	0.149		*20.0*	20.0	14.5	3.0	3.0	8.0	X		Form 428 says used 0.149 as	94.0

															multiplier	
19	20	53+00	R	0.149	0.149	*20.0*	20.0	3.0	3.0	3.0	3.0	3.0				94.5
20	21	79+00	R	0.961	0.961	23.5	23.5	22.6	21.6	16.0	2.0	2.0	20.3		Moved in from EA	94.2
21	22	89+25	R	0.046	0.046	*20.0*	20.0	0.9	0.9	1.0	3.0	3.0				91.1
22	23	124+00	L	0.454	0.454	37.0	37.0	16.8	16.8	16.5	3.0	O				93.5
23	24	134+00	L	0.273	0.273	26.5	26.5	7.2	7.2	7.0	16.0	O				94.4
24	25	*148+00*	L	0.423	0.423	*20.0*	20.0	8.5	8.5	8.0	8.0	O				96.7
25	26	155+60	L	0.882	0.882	*12.0*	12.0	10.6	10.6	11.0	11.0	O				96.8
26	27	184+00	L	0.954	0.954	*20.0*	20.0	19.1	18.1	18.0	2.0	O	16.5		Moved in from EA	94.9
27	28	191+50	L	0.609	0.609	21.0	21.0	12.8	12.8	13.0	2.0	O				94.1
28	29	125+00	R	0.562	0.562	27.2	27.2	15.3	15.3	15.0	3.0	16.0				94.5
29	30	136+10	R	0.620	0.620	26.5	26.5	16.4	16.4	15.5	16.0	3.0	16.0			86.0
30	31	165+00	R	0.929	0.929	20.0	20.0	18.6	18.6	18.0	12.0	15.0	16.5		2.0 is Left of Right EA	91.5
31	32	182+20	R	0.199	0.199	*20.0*	20.0	4.0	4.0	3.0	3.0	4.0	5.4			94.1
32	34	221+30	L	0.718	0.718	*20.0*	20.0	14.4	14.4	14.0	15.0					91.3
33	35	234+20	L	0.305	0.305	20.5	20.5	6.3	6.3	7.5	5.0	10.0				94.1
34	36	247+00	L	0.010	0.010	*20.0*	20.0	0.2	1.2	1.0	10.0				Moved in from EA	92.6
35	37	271+30	L	0.859	0.859	20.8	20.8	17.9	17.9	19.0	7.0	7.0				92.3
36	38	203+70	R	0.799	0.799	20.6	20.6	16.5	16.5	17.0	2.0	23.0				94.1
37	39	223+60	R	0.221	0.221	*20.0*	20.0	4.4	4.4	4.8	5.0	4.8				93.7
38	40	232+60	R	0.177	0.177	*20.0*	20.0	3.5	3.5	3.5	3.0	3.5				93.9
39	41	246+00	R	0.247	0.247	*20.0*	20.0	4.9	4.9	5.8	6.0	5.8				93.2
40	42	272+00	R	0.824	0.824	*20.0*	20.0	16.5	16.5	4.0	17.0	16.5				92.4
41	43	398+00	L	0.419	0.419	*20.0*	20.0	8.4	8.4	8.0	8.0	8.0				93.4
42	44	313+00	L	0.115	0.675	*20.0*	20.0	2.3	13.5	13.5	13.5	13.5				92.8
43	45	331+50	L	0.540	0.540	*20.0*	20.0	10.8	10.8	9.0	9.0	9.0				94.7
44	46	338+00	L	0.158	0.158	*20.0*	20.0	3.2	3.2	2.0	3.0	2.5				94.5
45	47	349+00	L	0.976	0.976	*20.0*	20.0	19.5	18.5	18.0	9.0	18.0			Moved in from EA	94.3
46	48	310+20	R	0.449	0.449	*20.0*	20.0	9.0	9.0	8.5	3.0	8.5				94.5
47	49	325+40	R	0.599	0.599	*20.0*	20.0	12.0	12.0	3.0	11.0	3.0				94.8
48	50	339+40	R	0.641	0.500	*20.0*	20.0	12.8	10.0	10.0	7.0	11.0				95.0

49	51	356+00	L	0.288	0.288		*20.0*	20.0	5.8	5.8	9.0	7.0	6.5		93.5
50	52	368+40	L	0.253	0.253		*20.0*	20.0	5.1	5.1	6.0	9.0	8.5		94.9
51	53	378+30	L	0.672	0.672	12.0	*18.0*	30.0	24.1	20.2	24.0	24.0	24.0		93.5
52	54	387+00	L	0.547	0.547		*28.0*	28.0	15.3	15.3	15.0	15.0	15.0		93.5
53	55	357+50	R	0.642	0.642		*28.0*	28.0	18.0	18.0	16.0	18.0	18.0		91.3
54	56	372+20	R	0.118	0.642		*26.0*	26.0	3.1	16.7	16.0	18.0	17.0		92.7
55	57	393+00	R	0.332	0.332		*20.0*	20.0	6.6	6.6	7.0	18.0	9.0		96.2
56	58	407+50	R	0.752	0.752		20.0	20.0	15.0	15.0	11.5	18.0	13.0		93.4
57	59	417+20	R	0.841	0.841		21.0	21.0	17.7	17.7	17.0	17.0	15.0		94.1
58	60	429+50	R	0.633	0.633		24.0	24.0	15.2	15.2	15.0	9.0	15.0		93.1
59	61	439+00	R	0.185	0.815		22.4	22.4	4.1	18.3	18.0	13.0	18.0		93.5
60	62	418+20	L	0.176	0.176		*20.0*	20.0	3.5	3.5	4.0	15.0	4.0		92.8
61	63	437+00	L	0.274	0.274		*20.0*	20.0	5.5	5.5	3.5	15.0	3.5		93.5
62	64	445+00	L	0.271	0.271		*20.0*	20.0	5.4	5.4	6.0	6.0	6.0		94.8
63	65	462+40	L	0.031	0.436		*20.0*	20.0	0.6	8.7	9.0	9.0	9.0		95.4
64	66	466+20		0.436	0.436		*20.0*	20.0	8.7	8.7	8.3	8.0		CDOT O/S info on Daily Diary	94.7