



Ohio Department of Transportation

1980 West Broad Street, P.O. Box 899, Columbus, Ohio 43216-0899

May 27, 2003

Joseph W. Allen
Senior Vice President
The Great Lakes Construction Company
2608 Great Lakes Way
Hinckley, Ohio 44233-9590

Re: **Summit County Project 323(00)**
Dispute Number 04-0323(00)-1102-01, Concrete Pavement with Warranty
Dispute Number 04-0323(00)-1102-02, Thin Pavement

Dear Contractor:

This letter is the Deputy Directors Board's ruling on the above referenced disputes heard on March 20, 2003.

Background

Both Parties agreed to follow Proposal Note 025, Dispute Resolution and Administrative Claims Process, in lieu of arbitration provided by Supplemental Specification 884 Concrete Pavement with Warranty.

Dispute Number 04-0323(00)-1102-01, Concrete Pavement with Warranty

During the 2002 construction season, the District DCE determined that concrete ramp pavement with longitudinal cracking placed in 2001 must be removed and replaced as per SS 884 due to poor workmanship on the Contractor's part. The Contractor disagreed with the DCE's determination and appealed the determination using Step 3 of the Dispute Resolution and Administrative Claims Process. The basis of the Contractor's appeal was the longitudinal cracking was due to design errors, not poor workmanship.

Dispute Number 04-0323(00)-1102-02, Thin Pavement

The thin pavement dispute rose to the Deputy Directors Board agenda through the informal adoption of Proposal Note 025, Dispute Resolution and Administrative Claim Process. The Contractor placed concrete pavement (plan depth - 13.77 inch and 12.20 inch) in two areas of the project. The District then cored the pavement to determine the thickness of the concrete pavement. The District determined that the concrete pavement was up to 1.02 inches deficient in one shoulder area and up to 0.57 inch deficient in another ramp area. The District cited 1997 Construction and Material Specifications, Section 451.16 which requires pavement to be within 0.50 inch deficiency to qualify for payment. The District informed the Contractor that the deficient segments of concrete pavement would not be paid for unless the Contractor removed

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and replaced the pavement to plan depth. The Contractor disagreed with the District and escalated the dispute to Step 3 in an effort to receive partial payment for the concrete pavement.

After careful review of the submitted documents and review of the testimony given at the hearing, the Board has reached the following decisions on the above disputes.

Thin Pavement

Award: \$13,115

The Board finds that the Contractor should be paid for the thin concrete pavement at a rate of 47.5% of the Contract amount of \$27,611. The rate of 47.5% was calculated by ODOT pavement experts and represents the percentage of design ESALs the pavement will be able to carry in its as-built condition. Furthermore, the Board finds the pavement will still be subject to the contract warranty.

Concrete Pavement with Warranty

Award: -0-

The Board finds that by a preponderance of evidence, the cracking was caused by factors within the Contractor's control.

The District maintains that the mid-slab cracking problem on the subject ramp pavement is a circumstance wholly of the Great Lakes Construction Company's making due to their own "means and methods". The list of reasons for the cracking was recited by the District in their Dispute Documentation and their presentation:

1. The Contractor first chose to use Item 452 instead of Item 451, losing any benefit reinforcing could have provided the slab.
2. The Contractor then decided to place an exceedingly wide pavement section which requires more timely longitudinal sawing than normal widths, yet chose not to modify his sawing schedule.
3. The Contractor also had complete control over their choice of concrete mix design, concrete supplier and admixture supplier.
4. In addition, GLCC chose to use a subbase material known for its propensity to draw moisture away from the concrete creating a weaker pavement.
5. When the Contractor discovered a problem, it made no attempt to change any of these variables which were cited as contributing factors in the report from the ACPA. Other than to suggest an insignificant overall width reduction of one foot between longitudinal joints which was tried by the project in 2002 and found to have no affect on the cracking problem.
6. GLCC's belief that all of the concrete pavement was placed in accordance with the specifications is a factual misstatement. The curing operation was almost always in violation of the specifications in 2001, lagging behind the paving operation by a significant amount. The finishing machine did not have a means

to consolidate the concrete as required and a significant amount of water was added to the surface as a finishing aid.

This was compared and contrasted to the Contractor's arguments recited in their Dispute Documentation and presentation:

1. The Contractor believes contractor warranty obligations are only for those items under their control, which is workmanship - not design. The Contractor believes that the uniform characteristics of these cracks, i.e. location, timing, etc., demonstrate design failure, not faulty workmanship. *"The Department retained complete control of pavement design, repeatedly denying our requested modifications. We do not believe the longitudinal cracks are the result of the contractor's performance and firmly believe that the cost of any corrective work should be compensated by ODOT."*

2. The Contractor states that its means and methods were as per the Department's specifications. The ramps were paved full width, including shoulders, with the same Bid-Well paver which was approved and used on other District projects. In order to ensure concrete consolidation, the Contractor placed two men with vibrators in front of the Bid-Well. Longitudinal joints were cut as per Item 451.08 and curing was performed as per Item 451.10.

The Contractor's Study by Wiss, Janey, Elstner Associates (WJE) further refined the Contractor's position with the following arguments:

1. Placing joints three feet in from one edge of the ramp pavement and six feet from the other, as specified by ODOT, is an inadequate means of preventing unwanted longitudinal cracking. One longitudinal joint near the mid-width of the pavement, instead of two near the edges, would have been effective in eliminating unwanted longitudinal cracking.

2. "It has been my observation, during 40 years of evaluating cracks in concrete, that The relatively high percentage of occurrence of longitudinal cracking in these ramps is an indication that the location of the longitudinal contraction joints was improper."

The Board obtained opinions counter to the WJE study by in-house technical experts Keith Keeran, Construction Administration, and Aric Morse, Pavement Engineering. Excerpts from these opinions are as follows:

1. WJE mentions the transverse contraction joint spacing was specified at 16 feet. Apparently, GLCC did not inform WJE that this was the maximum spacing allowed and that SS 884 allows the contractor to use a minimum spacing of 12 feet. Therefore, the allowable spacing is 12 to 16 feet. It was the GLCC's choice to use 16 feet, the maximum.

2. The WJE report concludes by stating "... The relative high percentage of occurrence of longitudinal cracking in these ramps is an indication that the location of the longitudinal contraction joints was improper." It was my understanding that there is 400 feet of longitudinal cracks. The typical sections in the plans show that there is 1559 meters (5114 feet) of ramp pavement. Therefore, less than 10 % of the total ramp length has cracked at this time. This is hardly a "high percentage of occurrence" as stated by WJE.

3. Based on the services advertised, the firm Wiss, Janney, Elstner Associates, Inc. (WJE) specializes in building and bridge structures, not pavement engineering.

4. The contractor could have used a lower W/C ratio, resulting in less overall shrinkage, thus lowering the tensile stress at the center of the pour.

5. The contractor could have used a conventional paving system. The contractor was not required to use a pump to deliver his concrete.

6. With knowledge of a contractor's responsibility to warranty, his proposed mix, expected timing of sawing, construction methods, and choice of pavement type, it would seem appropriate that the contractor would have had communications with ODOT to consider the need for a longitudinal joint. Many of the points the experts make are correct, however, none of these points directly indicate that a 16 foot wide lane is incorrect. In fact, much of the information points to shrinkage as the problem, yet the contractor used the maximum amount of water permitted. The choice of paver, the delivery of concrete, and the W/C ratio all increase the potential for shrinkage, which can lead to shrinkage cracking.

The Board finds that the evidence and conclusions presented by the District are more persuasive and the more likely cause or causes of the cracking than that which is represented by the Contractor.

In Conclusion

Under the terms of your contract and adoption of Proposal Note 025 Dispute Resolution

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and Administrative Claims Process for project 246(01), the Step 3 decision on disputes less than \$100,000 (thin pavement) is administratively final. The Thin Pavement decision and award is final.

Under the terms of your contract and adoption of Proposal Note 025 Dispute Resolution and Administrative Claims Process for project 246(01), you have the right to pursue a claim before the Director's Claim Board for claims over \$100,000 (concrete pavement with warranty) should you not accept the decision of the Deputy Directors Board. Your Notice of Intent to File a Claim for Concrete Pavement with Warranty must be received by myself within thirty (30) calendar days of completion of Step 3.

Please contact me at (614) 387-1164 with any other procedural questions.

Respectfully,

Clint M. Bishop, P.E.
Secretary
Deputy Directors Board

copies sent via e-mail and post mail:

Deputy Directors Board: Tony Vogel, Mark Kelsey, Mohamed Darwish
Central Office: V. Dunlap
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Dispute File