

OHIO DEPARTMENT OF TRANSPORTATION

ODOT CLAIMS

DIGEST NUMBER 6

1999

CLAIMS BOARD AND ARBITRATION DECISIONS

**Covering Claims Settled by the Director's Claims Board and by the
Binding Arbitration Process**

from

January 1, 1999, to December 31, 1999

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Claim Number: 12-0166(97)-0898-03
Contractor: The W.M. Brode Company
Project Number: 970166
Hearing Date: January 5, 1999
Board Members: Cash Misel, John T. Grow, and Gary Angles of District 6
Demand Amount: \$450,064.36
Awarded Amount: \$388,917.84

General

This \$1,072,662 contract upgraded and lengthened an existing retaining wall along the south side of State Route 84 (Ridge Road) in the City of Willoughby in Lake County. The 9 foot retaining wall was to be 9,850 feet long and consisted of 33,264 square feet of sheet piling driven 20 feet deep. The retaining wall also required drilling holes back under the existing roadway for 132 tieback anchors to hold the new vertical retaining wall.

The original project completion date was October 31, 1997. The postponed completion date was June 16, 1998 and all physical work was completed July 2, 1998

Contractor Position

The Contractor, W.M. Brode Company (WMBC) filed a claim for \$450,064.36 which involved six items as follows:

1. Driving resistance Modification WMBC claimed that the actual average driving resistance for the sheet piling was 130 blows per foot versus 35 blows per foot that they anticipated in their bid. They claimed that "N" values shown in the plan led them to conclude that driving resistance should not be more than normal resistance of 35 blows per foot. They had to mobilize a larger drive hammer and production differences added 20 work days.

2. Waler Modifications WMBC claimed that the plan design for the waler ignored accepted installation tolerances which resulted in them having to re-design and re-fabricate the plan specified steel waler. There were 19 tieback anchors which were installed out of tolerance. WMBC viewed this as a change in their contract and requested in their claim the extra cost of \$34,106.66 to re-design and re-fabricate the waler.

3. Bulkhead Cap Modification WMBC claimed that the plan design for the bulkhead cap ignored accepted installation tolerances which resulted in them having to redesign the plan specified bulkhead cap. The bulkhead cap specified could not be used throughout the wall length because of the misalignment sections of sheet piling due to driving forces. The claimed amount for this item was \$51,040.34 .

4. AFCON Rock Anchor Claim AFCON, a subcontractor to WMBC, was hired to install the tieback anchors back under the existing pavement to hold up the new retaining wall. They claimed that seven (7) soil borings in the plan were drilled vertically in the existing eastbound lane adjacent to the new retaining wall. There were no borings made at the locations back under the pavement where the anchors were detailed to extend.

The plans detailed a soil anchor design (not rock anchors) for the tiebacks. Accordingly, AFCON bid drilling through soil with a hollow-stem type auger to place the tieback anchors. A changed condition was encountered when AFCON encountered rock in lieu of soil. AFCON had to use rock drilling equipment to place the tieback anchors because the soil augers could not penetrate the rock. The use of rock drilling equipment slowed down the production considerably and increased the cost of drilling the holes.

An analysis by AFCON calculated the total as bid cost (excluding materials) to install tiebacks. The analysis then calculated the total actual cost (excluding materials) to install them. The first figure was subtracted from the later to obtain the claimed amount of \$192,702.37 for this portion of the claim.

5. Prime 5% Mark-up on AFCON Claim WMBC requested a 5% markup on the extra work performed by their subcontractor, AFCON. WMBC requested payment of \$9,635.12 ($\$192,702.37 \times 0.05$) for this item.

6. Prime Home Office Overhead Claim The above conditions in combination with other extra work required for pavement and drainage on top of the retaining wall delayed the project 223 days. WMBC used the Eichleay formula to calculate a Daily Contract Home Office Overhead Rate of \$479.50 per day. This was multiplied by the delay period of 223 days to obtain their claimed amount of \$109,327.00 in extra cost.

The summary of the six items involved in WMBC's claim is as follows:

1. Driving resistance Modification	\$ 53,252.87
2. Waler Modification	\$ 34,106.66
3. Bulkhead Cap Modification	\$ 51,040.34
4. AFCON Rock Anchor Claim	\$192,720.37
5. Prime 5% Mark-up on AFCON Claim	\$ 9,635.12
6. Prime Home Office Overhead Claim	\$109,327.00
Total	<u>\$450,064.36</u>

District Position

1. Driving resistance Modification It was the District's position that the Contractor had not provided any proof that subsurface soil conditions were different from those shown in the plan.

The Contractor's comment regarding "N" values shown in the plans was inconclusive. In addition, the Contractor chose not to complete driving of the sheet piling to grade in one operation, could have contributed to increased driving resistance upon resumption of the driving of the sheeting.

2. Waler Modification It was determined in the field that the plan design waler was suitable without any modifications if the location and angle of the installed tiebacks was within plan specified tolerances. It was possible to thread the tiebacks through the waler fabricated according to the plan design by bending the tendons of the tieback, that were properly installed, within plan tolerances. Modification of the waler was needed where the tiebacks were installed outside plan specified location and angle tolerances but any costs associated with modifications should be the Contractor's responsibility as they caused the problem. The claim for added cost to modify the waler was denied by the District.

3. Bulkhead Cap Modification The District contended that the plan required the Contractor to adjust the width of the bulkhead cap for different size pile. The plans indicate the sheet pile is to be installed in a straight alignment. It was the Contractor's responsibility to install the sheet piling according to plan details. The installed sheet piling was not in a straight alignment. The Contractor shop welded the bulkhead cap without taking into account normal expected variations in the alignment and actual width of the top of the installed sheeting. This part of the claim was also rejected.

4. AFCON Rock Anchor Claim The tieback design for the soil type anchors is based on the anchoring conditions that are indicated in the core boring data for borings made near the proposed sheet pile wall. There is no guarantee that no rock will be encountered. The soil borings indicate variable conditions, including glacial till. An experienced Contractor should have anticipated encountering variable soil conditions, including rock. This part of the claim was also rejected.

5. Prime 5% Mark-up on AFCON Claim The mark up claim was rejected as the AFCON claim was not recognized by the District.

6. Prime Home Office Overhead The District's position was that unless items 1 through 5 above are proven by the Contractor, ODOT is not responsible for any home office overhead costs. District admits that the Contractor did work through the winter months and all work on the sheet piles, tiebacks, walers and caps was completed on April 1, 1998. Time extensions written for the project were for the installation of catch basins, storm sewer and paving as extra work for a total of 228 days including 151 days for winter. This extra work could not be completed during winter months.

Board Decision

1. Driving resistance Modification The Board found that the plan specification of sheet piles and the soil report led the Contractor to assume during bidding that the specified piling could be driven to the plan depth with a pile driving effort of 35 blows per driven foot. This assumption was based on the N-values given in the boring logs under the column entitled "Std. Pen. Test". The actual blow counts averaged 132 blows per driven foot, according to the Contractor's testimony. Even though the site geology note on plan sheet 37 stated that overburden soils were glacial in origin and five of the seven soil boring logs reported rock fragments which would suggest the presence of cobbles and boulders, the Board recognized that the actual soils were such that they constituted a changed condition.

The Board held that there is a risk that subsoil conditions will vary from the conditions indicated in a soil report and a portion of that risk is assigned to the Contractor. The Contractor indicated in his testimony given at the Hearing that a thirty percent change in the actual driving effort from that bid, is not unusual and is covered by his normal bid. Accordingly, while the Board recognized a changed condition the award should be reduced by thirty percent from the actual cost to account for the Contractor's assigned risk.

The Board does not accept the Contractor's claimed costs because these costs are calculated from a total cost analysis. A total cost analysis is not acceptable to the Board because it assumes no Contractor bidding errors or Contractor inefficiencies in pursuing the work.

Accordingly, the Board requests from the District and Contractor additional cost information. This information should be gleaned from the project and Contractor records and publicly available equipment rental rates that will allow establishment of a price difference between driving the sheet pile using an effort of 132 blows per foot and an effort of 35 blows per foot. The Board will accept a price negotiated and accepted by the Contractor and District as the actual cost incurred.

2. Waler Modification The Board found that the waler design given on plan sheet 36, was an impossible design because it required the sheet piling to be driven perfectly straight. Since it is impossible to drive sheet piling perfectly straight, the modifications to the waler, required to fit the actual driven piling, are compensable.

The Board did not accept the Contractor's claimed costs because these costs were calculated from a total cost analysis. A total cost analysis is not acceptable to the Board because it assumes no Contractor bidding errors or Contractor inefficiencies in pursuing the work.

The Board requests from the District and Contractor additional cost information. This information should be gleaned from the project and Contractor records and fabricator invoices for the waler changes, to establish an actual cost for the modification. The Board will accept

a price negotiated and accepted by the Contractor and District, as the actual cost incurred.

3. Bulkhead Cap Modification The Board found that the design for the sheet piling bulkhead cap, detailed on plan sheet 36, did not allow for reasonable field adjustments. The Contractor is entitled to compensation for the costs incurred by the necessary modifications of the bulkhead cap to meet field conditions.

However, the Board also finds that the Contractor should have notified the Department of the design difficulties earlier to allow the Department to mitigate the problem and reduce costs. The Board believes the design problem should have been obvious to the Contractor before the bulkhead caps were completely fabricated. Accordingly, the Board assigns the Contractor ten-percent responsibility for the correction and will reduce the award to the Contractor by ten percent.

The Board did not accept the Contractor's claimed costs because these costs were calculated from a total cost analysis. A total cost analysis is not acceptable to the Board because it assumes no Contractor bidding errors or Contractor inefficiencies in pursuing the work.

The Board requests from the District and Contractor additional cost information. This information should be gleaned from the project and Contractor records and fabricator invoices for the bulkhead changes, to establish an actual cost for the modification. The Board will accept a price negotiated and accepted by the Contractor and District, as the actual costs incurred.

4. AFCON Rock Anchor Claim The Board found that the plans did give a soil anchor design for the tiebacks. Accordingly, the Contractor had the right to bid drilling through soil with a hollow-stem auger to place these anchors. The Board recognized that a changed condition occurred when the Contractor had to use rock drilling equipment to place the anchors because the soil auger hit rocks. These rocks were not clearly shown in the subsurface investigation reported in the plans although the site geology note on plan sheet 37 did note the soils were glacial in origin. The Board found that the Contractor was entitled to additional compensation for the difference between soil boring and rock drilling for the total length of the tieback drilled holes, approximately 7,029 feet according to plan dimensions and plan quantity.

The Board did not accept the Contractor's claimed costs because these costs are calculated from a total cost analysis. A total cost analysis is not acceptable to the Board because it assumes no Contractor bidding errors or Contractor inefficiencies in pursuing the work.

Accordingly, the Board requested from the District and Contractor additional cost information. This information should be gleaned from the project and Contractor records and publicly available equipment rental rates that will allow establishment of a price per foot difference between soil boring and actual drilling effort. The Board will accept a price negotiated and accepted by the Contractor and District.

5. Prime 5% Mark-up on AFCON Claim The Contractor also claimed a five percent mark up on the tieback issue because the claimed work was performed by a subcontractor. While the Department specifications allow a prime contractor mark up on extra work performed by a subcontractor, this entitlement is not allowed in a claim unless the actual costs are supported. Accordingly, the Board requested information on the actual costs incurred by the prime contractor on the tieback issue.

6. Prime Home Office Overhead Claim The Board found that the recognized tieback, pile driving, bulkhead cap, and waler problems delayed the work. The Board accepted the District analysis that found the delay period started at the original contract completion date of October 30, 1997 and ended 152 days later on April 1, 1998 when all work on the problem items was completed. This recognized period includes the winter because the Contractor continued to work during the winter.

The Contractor claimed 228 days as the delay period. However, this included 76 days from April 2, 1998 to the extended contract completion date of June 16, 1998. This 76-day period was due to change order work unrelated to recognized tieback, pile driving, bulkhead cap, and waler delays. Accordingly, additional compensation for home office overhead is not allowed. The Construction and Material Specifications section 109.04(f) is specific in stating that change order compensation includes home office overhead compensation.

The Board directed the Office of Accounting to review the W.M. Brode Company submitted financial statements and determine the indirect costs allowed in the home office overhead calculation. The Board will not allow costs that are not reasonably related to the support of construction contracts. The resulting per diem rate will be multiplied by the recognized 152 days to determine the award for home office overhead.

This claim was remanded to District 12 to negotiate a claim settlement with the contractor on each of the issues. The final awarded amounts are shown in the following section.

Summary of Claim

	<i>Claimed</i>	<i>Awarded</i>
1. Driving resistance Modification	\$ 53,252.87	\$37,277.01
2. Waler Modification	\$ 34,106.66	30,053.19
3. Bulkhead Cap Modification	\$ 51,040.34	45,899.33
4. AFCON Rock Anchor Claim	\$192,720.37	198,327.91
5. Prime 5% Mark-up on AFCON Claim	\$ 9,635.12	9,916.40
6. Prime Home Office Overhead Claim	\$109,327.00	77,360.40
Total	\$450,064.36	\$398,834.24

Claim Number: 07-0573(95)-0598-03
Contractor: BECDIR Construction Company
Project Number: 950573
Hearing Date: May 27, 1999
Board Members: Don R. Conaway, Keith C. Swearingen and Larry Weisman of District 8
Demand Amount: \$41,668.83 + 30 days time extension
Awarded Amount: \$17,637.89 + 30 days time extension

General

This \$489,095.30 contract constructed a 2.27 mile bikeway in the City of West Carrollton in Montgomery County. The project included construction of a 60 foot long prestressed box beam bridge over Owl Creek.

This project was let on 10/11/95 and the contract was signed on 11/02/95. Work began on 3/05/96. The original project completion date was 7/31/96 but due to four time extensions the postponed completion date was 7/01/97.

Beccdir Construction Company (BCC) filed a claim on this project which involved five separate issues. This claim was submitted to the Director's Claim Board in April of 1998. The claim was sent back to District 7 for a hearing with the BCC and the District. A hearing was held on the District level on February 26, 1999 and a determination was made to pay the Contractor \$5,464.00 to resolve the claim.

A change order was processed and sent to the Contractor. The change order was returned to the District unsigned by the Contractor. BCC rejected the District determination and requested that the claim be heard by the Director's Claim Board.

Contractor Position

The claim involves five separate issues as follows:

1. Additional payment for seeding and mulching The Contractor's final measured quantity did not agree with the District's measured quantity by 9127 square yards. BCC claimed they should be paid for 36,725 square yards and the District measured quantity was 27,598 square yards. BCC claimed they should be paid for the 9127 square yards at the unit bid price of \$0.40 per square yard or a total of \$3,650.80.
2. Commercial fertilizer The final quantity of commercial fertilizer is determined from the final quantity paid for seeding and mulching. The seeding and mulching in issue 1. (above) resulted in an additional 1.01 tons of fertilizer which BCC claimed they should be paid for at the bid price of \$450 per ton for a total of \$454.50.

3. Extra Work as directed by ODOT This issue involves payment for extra work done in the spring of 1997 as a result of flooding of the Little Miami River. Payment for a working foreman was removed from the Contractor's force account. Change Order No. 13 for \$55,805.84 was processed, without the working foreman's wages included. The Contractor expected payment in the amount of \$63,886.13 with the working foreman's wages included. The claimed amount, therefore is \$8,080.29 which is the difference in the two amounts.
4. Change Order 14 Issues Time extensions were written extending the project completion date to July 1, 1997. Change Order No. 14 was processed to cover extended overhead costs from the original project completion date of July 31, 1996 to November 13, 1996. This represents a period of 105 days. BCC submitted costs totaling \$52,646.07 and the District recognized only \$33,941.74 . BCC claimed payment for the difference of \$18,704.33. The discrepancy is due to the amount of compensable time allowed and the method used to calculate additional field office, computer, maintenance of traffic and cellular phone costs. BCC also seeks an additional 30 days of added time be allowed due to a 49% increase in the embankment quantity.
5. Interest on money due BCC claimed that payment by ODOT for work performed was very difficult due to the downsizing that has occurred. BCC stated that Estimate #14 was processed on November 6, 1996 and Estimate #15 was not generated until October 24, 1997, almost a year later. The project was accepted and the bike path was opened to traffic on November 13, 1996. Estimate # 15 was for \$17,786.24 but the amount of work completed at that point and still not paid for was an additional \$90,202.87. A large portion of the money due at the time Estimate #15 was processed, was for liquidated damages that was being withheld even though time extensions had been written and that waived the liquidated damages. BCC claimed the length of time between estimates was 352 days therefore they should be paid interest on the total amount of \$107,989.11 for one year at 10 % interest. BCC arrived at a claimed cost of \$10, 798.91 for this interest issue.

District Position

The District had the following arguments on each of the Contractor's issues:

1. Additional payment for seeding and mulching The District argues that more area was disturbed than shown on the plans. Area that was disturbed outside of the construction limits was considered the responsibility of the Contractor. The District paid for the areas designated in the plans less the stockpile areas and the area of the haul roads.
2. Commercial fertilizer The District claimed they paid for the appropriate amount of fertilizer for the area allowed in issue # 1 above.

3. Extra Work as directed by ODOT The District argues that the person that the BCC calls a "working foreman" (only in extra work force accounts) was the project superintendent during the major part of the project. The person's title changed in the Spring of 1997 when force account work was being performed. The person's function on the project never changed and this person was obviously the superintendent as defined in Section 105.05 of the CMS. Since this person was part of project overhead as per 109.04, the person cannot be included on a force account for hourly payment.
4. Change Order 14 Issues The District argues that project records indicate that of the 105 days (from July 31, 1996 to November 13, 1996), there was 53 days lost due to weather and 22 days for extra work. Since weather and extra work days are not compensable there remains 30 days that are compensable (105 total days - 53 weather days - 22 extra work days = 30 days). The District inadvertently compensated BCC by Change Order No. 14 for 37 days for the superintendent, an error of 7 days. The District contended that the Contractor was over compensated on C.O. # 14 by \$9,657.40.

The District rejected an additional 30 days of time for increased embankment quantity. Payment for the added quantity was made by C.O. Numbers 11 and 12.

The District used 5 months to calculate extended office and computer time which was the original contract period (March through November, 1996). The District calculated \$4,209.06 for maintenance of traffic by prorating the original bid item for an additional 30 days.

ODOT considers charges for cell phone used by the contractor to be included in the compensation for foreman or superintendent transportation.

5. Interest on money due The District indicated that BCC may be due interest and provided a chart of pertinent dates.

Board Decision

1. & 2. Additional payment for seeding and mulching & Commercial fertilizer It was decided that due to the uniqueness of this project and the limited access available, that the Contractor is entitled to additional compensation in the amount of \$3,650.80 for seeding and mulching and \$454.50 for fertilizer.
3. Extra Work as directed by ODOT This issue was denied by the Board. As per Section 105.05 of the C&MS, "The Contractor shall have on the work at all times,... a competent superintendent..." During bid work on this project the Contractor had a superintendent. This same person was listed as a salaried employee when the Contractor was performing extra work. The Board concluded that the "working foreman" and the superintendent were one in the same and should not be listed on the

Contractor's force account.

4. Change Order 14 Issues The board agreed with the District's position that no additional compensation is warranted for superintendent, field office, computer and cellular phone. The Board found that Change Order #14 adequately addressed these issues.

The Board agreed with the District's position for additional compensation for maintaining traffic. The Contractor bid \$7,700 for traffic maintenance. Pro-rating this over a 5 month construction period results in a daily rate of \$51.33 per day. The District determined that a total of 82 calendar days (52 days due to extended time, non-weather delay and 30 days due to additional earthwork) warrants compensation. Thus the Contractor is entitled to \$4,209.05 in compensation.

5. Interest on money due The Board found in favor of the Contractor in the amount of \$8,158.13 for interest due to late payment of change orders. In addition the Board concurred with the agreement that the District reached with the Contractor for payment of \$1,165.40 for interest on moneys held for liquidated damages which were later waived.

Summary

Item	Description	Contractor's Claimed Amount	District Position	Claim Board Decision
1	Seeding & mulching	\$3,650.80	\$0.00	\$3,650.80
2	Fertilizer	454.50	0.00	454.50
3	Foreman Cost	8,080.29	0.00	0.00
4a.	Supervisor cost	6,172.00	-9,657.40	0.00
4b.	Field office & computer	2,460.00	0.00	0.00
4c.	Maintenance of traffic	7,700.00	4,209.06	4,209.06
4d.	Cellular phone	2,372.33	0.00	0.00
5a.	Interest on late payment	8,158.13	1,891.78	8,158.13
5b.	Interest for liq. damages	<u>1,165.40</u>	<u>1,165.40</u>	<u>1,165.40</u>
	Sub-total	\$40,213.45		\$17,837.89
	Original Contractor Interest	<u>1,475.38</u>	_____	_____
	Total	\$41,668.83	-\$2,391.16	\$17,637.89

Claim Number: 12-0305(96)-1298-05
Contractor: The Great Lakes Construction Company
Project Number: 960305
Hearing Date: August 5, 1999
Board Members: Cash Misel, Don R. Conaway and Gary Angles of District 6
Demand Amount: \$48,990.67
Awarded Amount: \$0.00

General

This \$32 million project constructs 1.95 miles of 6 lane, limited access highway on State Route 176 (The Jennings Freeway) in the City of Cleveland. The work involves the construction of the roadway and 4 bridge structures.

The contract was signed on 5/17/96 and work began on 5/23/96. The original project completion date was 10/31/99. There were many delays early on in the project (in 1996) during earthwork operations. There were several utility delays, delays caused by the discovery of contaminated soil and solid waste, delays caused by undercutting and underdrain changes and delay due to the redesign of bridge pier piling on one of the structures. In addition there were 55 rain days from June through November of 1996. The original completion date was postponed by 2 ½ months until 12/15/98.

Great Lakes Construction Company (GLCC) requested compensation for extra costs incurred due to various delays and suspensions beyond the Contractor's control. GLCC requested payment for extended project overhead, escalation of wages and material increases, idle equipment and unabsorbed home office overhead. Many of the requested costs were recognized and paid by change order with the exception of unabsorbed home office overhead.

Contractor Position

GLCC filed a claim for unabsorbed home office overhead for what they claimed was a shift in project revenues from one corporate year to the next (1996 to 1997). They claimed that there was a dramatic reduction in available work on the project in 1996 due to delays and suspensions of work.

GLCC claimed that home office overhead is composed of several components, all of which have current time value. These include office wages, insurance, property, utilities and other costs. Unless these fixed cost components are fully utilized each year, the opportunities to maximize the benefit of those items is lost forever. Under utilized office personnel, for example, can not be over utilized in the future without overtime or hiring of additional personnel. On this project the lost income in 1996, due to delays and suspensions, eliminated GLCC's chance to properly utilize personnel relative to the planned amount of work taken under contract that year. Also due to the sporadic nature of the delays, it was impossible to predict accurately if GLCC should lay-off personnel or bid other work to make up the loss in revenue.

GLCC used the Eichleay Formula for the calculation of unabsorbed home office costs due to delays in their stream of income from payments. The total amount calculated as unabsorbed home office overhead was \$48,990.67 as shown below:

1996 Planned Corporate Revenue		\$35,191,000.00
1996 Actual Corporate Revenue		\$28,692,264.00
1996 Planned Project 305(96) Revenue		\$9,552,000.00
1996 Planned Earthwork Revenue		\$2,267,700.00
Adjusted 1996 Earthwork Revenue (41% of season due to weather delays)	$\$2,267,700.00 \times (0.41) =$	<u>$(-\\$929,757.00)$</u>
Revised Planned 1996 Project 305(96) Revenue		\$8,622,243.00
Actual 1996 Project 305(96) Revenue		\$6,330,473.00
LOST 1996 Project 305(96) Revenue (Actual - Planned)		<u>2,291,770.00</u>
1996 GLCC Corporate General and Administrative Costs		2,009,520.00

Unabsorbed Overhead Calculations

Projected 305(96) Share of Overhead

[Rev. Planned Revenue / Planned Corp. Revenue] x Actual G&A Costs	\$492,357.98
$8,622,243 / 35,191,000 \times 2,009,520$	

Actual Share of Overhead

[Actual Revenue / Actual Corp. Planned Revenue] x (Actual G&A Costs)	- \$443,367.32
$6,330,473 / 28,692,264 \times 2,009,520$	

Unabsorbed G&A Costs	<u>\$48,990.67</u>
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District Position

The District contended that the Department agreed to an estimated project revenue over the entire contract time frame, not a revenue per week, month or year when the contract was signed. Since more than the total original contract cost had been paid by the original contract

completion date, the District could not agree that GLCC was entitled to unabsorbed home office overhead.

The total of the construction estimates paid to GLCC each year was as follows:

1996	\$ 5,496,833
1997	18,327,580
1998	10,447,261 (by the original completion date 10/31/98)
	973,704 (1998 after the original completion date)

The above shows that GLCC was compensated a total of \$34,271,674 by the original project completion date. This amount is 106.2% of the original contract cost of \$32,284,291.

Board Decision

The Board decided against the Contractor's claim. The Board decided that because the Department paid GLCC the original contract bid price by or before the original contract completion date, the Department discharged its payment obligation, in so far as absorption of Home Office Overhead costs was concerned. Generally, the Department is legally obligated to pay for work performed only after that work has been performed. Additionally, the Department is responsible for owner's caused delay when properly notified.

Here, the Contractor is taking a "snapshot" of a project at a particular time and in a vacuum in an attempt to lend credibility to its claim. The Board rejected this "snapshot" approach. When viewed in its entirety the project reflects that the Department fulfilled its legal obligation for timely payment. This obligation to pay does not require the Department to guarantee the Contractor a certain cash flow for each contract year.

Arbitrator Name Richard P Turner, P. E.
Arbitration Date: March 24, 1999
Contractor: Blaze Construction Incorporated
Project Number: 950042
Demand Amount: \$759,519.00
Award Amount: \$262,160.00
Arbitrators Fee: \$11,592.05

General

This \$3,996,000 project widens 1.75 miles of Bagley Road (C.R. 27) with reinforced concrete pavement on an aggregate base in the Cities of Berea and Olmstead Falls in Cuyahoga County. The project was administered by ODOT and staffed by County personnel. The project plans specified that the work be performed in four stages with traffic maintained at all times on two lanes of existing and/or temporary pavement.

Existing Cleveland Electric Illuminating Company aerial lines were located on both sides of the existing road. Ameritech and cable television lines were in joint use on the poles. All of those facilities had to be relocated so that the project could be constructed. A detailed note in the project proposal informed all bidders that utility relocation would not be complete at the time of award. The note set forth specific dates when utility work would be completed as follows:

Cleveland Electric Illuminating (CEI) Aerial- February 28, 1995
Ameritech- 30 days after CEI's Completion

The utility relocation work was not complete until May 5, 1995.

In addition there was Northeast Ohio Regional Sewer District work that required shafts along the north side of Bagley Road. There was no mention of the sewer work in the plans or proposal.

Contractor Position

The Contractor Blaze Construction Incorporated (BCI) claimed that because of the above utility interferences, they were not able to perform work in accordance with the plan staging. Early in the project BCI submitted an alternate sequence of work but it was rejected by ODOT and the County due to traffic conflicts.

Eventually alternate directions were issued by ODOT and work proceeded. The original contract completion date of October 31, 1995 was extended to July 23, 1996 because of the utility delays, weather and extra work.

BCI claimed that they suffered significant additional costs because the described interferences, delays and changes in the work sequence and presented a claim to ODOT

seeking reimbursement of those costs in the amount of \$759,519.

District Position

Both ODOT and the County agreed that the project was delayed. They processed change orders compensating BCI for additional project overhead costs. The fact that work could not proceed as planned was recognized and by an April 13, 1995 letter which provided direction regarding project sequencing. This letter indicated how work was to proceed at various decision points, depending on the status of the utility relocation work.

The County and ODOT agreed that BCI suffered additional costs. An analysis concluded that they were willing to provide additional compensation for BCI's labor inefficiency in the amount of \$138,885. There was a stipulation that no claim for other costs would be recognized. BCI rejected ODOT and the County's offer to settle the claim. Since negotiations could not resolve the claim, all parties agreed to binding arbitration. Mr R. .P. Turner, P.E. was selected as the Arbitrator.

BCI's claim, as prepared by R.V. Buric, Construction Management Consultants Inc. dated May 22, 1998, was transmitted to ODOT by letter dated May 28, 1998 from BCI. This document was provided to the Arbitrator.

Buric's Analysis of the Claim

BCI claim involved ten (10) separate issues which are explained below:

1. Labor Productivity Interferences by utilities prohibited BCI from working efficiently within the guidelines stipulated in the contract. BCI's work progressed measurably slower because they had to work around the utilities which should have been relocated. Utility delays caused impact costs due to slower progression than planned through a major portion of the project. BCI was required to perform piecemeal and non-sequential work between stages which caused significant impact to the labor productivity and equipment utilization.

BCI used the "measured mile" method to establish the additional cost due to lost labor productivity. They divided the work into four periods as follows:

- | | | |
|----------|---------------------|---|
| Period 1 | 04/01/95 - 06/17/95 | During this period work on Stage 1 was performed. BCI claimed the greatest impact to labor productivity for this period. BCI constructed 7735 square yards (s.y.) of reinforced concrete pavement and the average labor cost was \$24.96 per s.y. |
| Period 2 | 06/18/95 - 07/29/95 | During this period work in Stages 1,2 and 4 was performed. There was 11,127 s.y. of concrete pavement |

constructed and its average labor cost was \$15.80 per s.y.

- Period 3 07/30/95 - 08/12/95 During this period BCI worked on Stage 2 and was able to proceed un-impacted and constructed 5,059 s.y. of concrete pavement with an average production cost of \$10.71 per s.y.
- Period 4 08/13/95 - 11/11/95 During this period BCI worked in Stages 3 and 4 and was able to work un-impacted constructing 21,963 sy of concrete pavement with an average production cost of \$12.39 per s.y.

Period 1 and 2 were the impacted periods and Periods 3 and 4 were used as the "measured mile". The average cost to produce a square yard of reinforced concrete pavement in Periods 3 and 4 was \$12.08 per s.y. which was used in BCI's analysis to determine the total claimed cost for labor inefficiency.

The above figures resulted in the \$99,627 in additional cost for Period 1 or 52% rate of inefficiency. Period 2 resulted in \$41,396 in additional cost and a 24% rate of inefficiency. The total claimed cost is therefore \$141,023 for labor inefficiency.

2. Owned Equipment Utilization BCI claimed equipment utilization suffered the same inefficiencies as labor did on the project. Eight of the primary pieces of owned equipment were analyzed and the same inefficiency percentages were applied to that owned equipment. The analysis claimed \$64,175 as the owned equipment utilization cost.
3. Truck Rental- Utilization BCI claimed that their two trucking companies used to haul away construction debris suffered the same inefficiency as labor did on the project. BCI was charged by the hour for renting trucks for hauling. The same inefficiency factors were applied to the trucking costs which resulted in a claimed cost of \$41,000 for truck rental inefficiency for Periods 1 and 2.
4. Owned Extended Equipment BCI claimed that there was a power broom that was required to be on the project an additional 23 weeks due to project delays resulting in \$15,465 in claimed cost. In addition a concrete paving machine was required an additional 6.5 weeks and that this equipment would not have been required on the project for that time had the project not been delayed. BCI's analysis claimed \$8,398 for the extended idle time. The total claimed for owned extended equipment costs was \$23,863.
5. Extended Paving Operations BCI claimed that there were many extra concrete placements required than bid for the outside lanes of Stages 3 and 4. Stage 3 was constructed by utilizing two hand-formed and three slip-formed placements and Stage 4 was constructed utilizing four hand-formed and five slip-formed placements.

BCI claimed they demonstrated their ability to slipform extensive lengths of pavement when it placed 5000 feet of pavement on September 14, 1995 and approximately 5000 feet of pavement October 9, 1995 (this work was the center lanes in each stage).

The extra concrete placements resulted in added costs for the concrete paver in the amount of \$2,845. BCI claimed additional labor costs associated with the added pours for the paver operator and other paving labor in the amount of \$5,641.

6. Winterization Activities Delays by utility interferences pushed the project into winter months which resulted in added costs for winter curing and heated concrete that were not anticipated at the time of bid. BCI claimed \$1,287 for winter curing and \$169 for heated concrete.
7. Steel Bridges BCI proposed to ODOT that steel bridges be utilized to maintain access to commercial drives in lieu of 410 material (traffic compacted surface) specified. The Department allowed the use of the steel bridges. BCI anticipated that they would be compensated for the rental costs and moving costs for each of the bridges to the 87 drives as required. BCI's analysis of costs for this item was \$54,678 for rental and labor.

ODOT compensated BCI by Change Order No. 8 in the amount of \$20,055 for the plan specified 410 material that would have been required for maintaining traffic at the drive locations.

8. Extended Home Office Overhead BCI used the Eichleay Formula to determine the amount of unabsorbed home office overhead that was owed to them. Their calculations indicate a claimed amount of \$261,212.
9. Extra Bonds and Insurance BCI claimed included additional bonding and insurance costs. The claimed amount for insurance was based on the claimed labor productivity, winter curing labor and steel bridge labor which resulted in \$2,147 in extra insurance cost. The bonding claimed amount was \$3,147. The total amount claimed for this item was \$5,294.
10. Interest Expenses BCI claimed interest on the above 9 issues from January of 1996 through May of 1998 at a 10% rate. This resulted in \$158,117 for interest charges.

Arbitration Decision

The Arbitrator reviewed each issue of BCI's claim as submitted by R.V. Buric. The following is the Arbitrator's decision on each issue:

1. Labor Productivity The Arbitrator indicated that in order for a calculation using the "measured mile" method to be a fair assessment of the additional cost for labor productivity, the work in each period must be comparable. During Period 1 the work for Stage 1 was completed but in addition excavation and preparatory work was performed for the curb lane in Stage 4. The total labor for Period 1 was divided by the pavement area placed in Stage 1 resulting in an inordinately high unit cost per s.y. To correct this inaccuracy the Arbitrator reduced the unit cost for Period 1 by 20%.

During Period 3, the curb lane of Stage 2 was placed. Little excavation was performed during that period as the bulk of the excavation for Stage 2 of Bagley Road was performed during Period 2. The resulting unit cost for Period 3 was considered to be unrealistically low and was increased by 10%.

During Period 4 the center lane of Stage 3 and both lanes of Stage 4 were constructed. All lanes were 5000 feet long and the center lanes had no curb or catch basin blockouts. The volume of work available, and with no intersection work, is not comparable to Stages 1 or 2. The Arbitrator determined that the unit cost calculated for Period 4 should be increased by 10%.

The Arbitrator reduced the allowance for overhead used in Buric's calculations to 35.5% to conform to ODOT policy.

The Arbitrator's figures resulted in the \$50,519 in additional cost for Period 1 or 33.4% rate of inefficiency. Period 2 resulted in \$27,486 in additional cost and a 15.9% rate of inefficiency. The total awarded amount determined by the Arbitrator was \$78,305 for labor inefficiency.

2. Owned Equipment Utilization The Arbitrator calculated the additional cost of Owned Equipment Utilization by applying rates of inefficiency used above to determine the award for Labor Productivity. The Arbitrator's calculations resulted in \$40,279 as the awarded amount for owned equipment inefficiency.
3. Truck Rental- Utilization The Arbitrator stated that since the trucks were rented, BCI had the opportunity to reduce the number of trucks to reflect the lower production rates. Because of that possibility, the lower inefficiency rates from the Labor Productivity analysis were used in calculating the additional Truck Rental Utilization. The award calculated by the Arbitrator was \$26,671 for this item.
4. Owned Extended Equipment The Arbitrator rejected any compensation for the power broom and concrete paving machine for the extended time of 23 weeks and 6.5 weeks respectively. Since the power broom was used for maintaining traffic it was the Arbitrator's determination that its cost should have been included in the bid item of Maintenance of Traffic or included in a change order which paid for additional

maintenance of traffic for the extended period. As for the paving machine, it was the Arbitrator's position that there was no pavement pour of a size to effectively use a slip-form paver available until June 14, 1995 which was 5 to 6 weeks later than BCI had originally scheduled.

5. Extended Paving Operations No compensation was recognized by the Arbitrator for this item.

The slipform paving work performed on September 14 and October 9, 1995 was designated the measured mile of productivity. On each of these days one of the center lanes of Stage 3 or Stage 4 was placed. Eighteen and seventeen hour days were required to complete those pours which were each 12 feet wide and 5000 feet long. These placements had only a few water valve blockouts.

BCI's claim contends that, had work proceeded as planned, the outside lanes in Stages 3 and 4 would have also been placed in eighteen hour days in lieu of the multiple pours that were actually required. While the outside lanes were 5000 feet long, they were 14.5 feet wide, contained an integral curb and had numerous catch basin blockouts. Twenty-three (23) percent more concrete was required in the outside lanes. While the efficiency of working an 18 hour shift was questionable, it is not reasonable to expect that 5000 feet of outside lane could be completed in the same time period as 5000 feet of center lane.

6. Winterization Activities The arbitrator recognized the claimed costs of winterization activities because the work was delayed into the winter season. The Arbitrator recalculated the labor and material costs presented in BCI's claim using overhead allowances consistent with ODOT policy. The award was \$1,308 for labor and \$165 for heated concrete.

7. Steel Bridges BCI contends that they agreed to use steel bridges provided that the rental cost would be borne by ODOT with the cost of moving them to be borne by BCI. ODOT contends that the agreement was that payment would be limited to the cost of comparable quantity of 410 material that was specified to be used. ODOT processed Change Order No. 8, without BCI's signature, for \$20,055. ODOT used the theoretical volume of 410 material and BCI's bid price, which was admittedly low. BCI's claim requested payment for rental of the bridges for 8 months plus labor required to move them. It was later determined that BCI did in fact purchase the bridges. The Arbitrator decided that BCI should be compensated only for the actual cost of the bridges with no payment for the labor to move them. An allowance was made for the payment already received by Change Order No. 8. The resulting award for this item was calculated to be \$24,633.

8. Extended Home Office Overhead Because the project was delayed, the Arbitrator determined that BCI suffered a reduction in revenue during calendar year 1995 and

therefore, incurred additional cost due to unrecovered home office overhead.

BCI claimed additional home office overhead over the entire contract period using the Eichleay Formula. This method used unrealistic results when the time period covered includes long periods of shutdown (such as normal winter shutdown) where company revenue would have been reduced even if the delay had not occurred. Even though the entire project duration was covered by time extensions, a review of estimate payments indicated that the rate of production during 1996 was slow, prolonging project completion and increasing the cost using the Eichleay Formula. Finally, the Arbitrator indicated that the performance of the remaining work on this project during 1996 did not appear to have affected BCI's ability to obtain other work for the 1996 construction season.

Based on the above the Arbitrator concluded that no additional home office expenses were incurred in 1996 because of project delays on this project. The additional cost of home office overhead incurred was recalculated by the arbitrator using audited statements of Income and G&A expense provided by BCI. The calculated amount of unrecovered home office overhead awarded was \$39,792.

9. Extra Bonds and Insurance No compensation was recognized by the Arbitrator for this item. The additional cost of bond is a matter that ODOT routinely handles with payment based on final invoice and is not a matter for claim consideration. Liability Insurance is specifically included in overhead markup to labor and was considered by the Arbitrator to be included in the awarded productivity total amount.
10. Interest Expenses ODOT normally recognizes payment of interest commencing 30 days after an acceptable invoice is received by ODOT. In this instance an acceptable invoice was never submitted nor was agreement ever reached on the amount due. Both parties contributed to this failure. BCI by submitting an unrealistic high claim and ODOT by refusing to recognize any cost other than labor inefficiency.

The Arbitrator awarded interest on the awarded additional expense for the time period from January 1, 1997 to May 31, 1999. The awarded additional expense was determined to be \$211,153 for items 1 through 9 above. An interest rate of 9% was used and the awarded amount for interest was calculated to be \$51,007.

Summary of the Arbitrator's Award

The following table summarizes what BCI claimed amount for each item and what was awarded by the Arbitrator:

Summary of Claim

Item	Description	Claimed by BCI	Awarded Amount
1	Labor Productivity	\$141,000.00	\$78,305.00
2	Owned Equipment utilization	64,175.00	40,279.00
3	Truck rental utilization	41,215.00	26,671.00
4	Owned extended equipment	23,863.00	0.00
5	Extended paving operations		
	Owned equipment	2,845.00	0.00
	Labor	5,641.00	0.00
6	Winterization activities		
	Winter curing	1,287.00	1,308.00
	Heated concrete	169.00	165.00
7	Steel bridges for traffic access	54,678.00	24,633.00
8	Home office overhead	<u>261,212.00</u>	<u>39,792.00</u>
	Subtotal	\$596,108.00	\$211,153.00
9	Extra bonds & insurance Expenses	<u>5,294.00</u>	<u>0.00</u>
	Sub-total	\$601,402.00	\$211,153.00
10	Interest	<u>158,117.00</u>	<u>51,007.00</u>
	Total amount	\$759,519.00	\$262,160.00

Arbitrator Name Richard P Turner, P. E.
Arbitration Date: January 13, 1999
Contractor: Bay State Painting, Subcontractor to The Velotta Company
Project Number: 940613
Demand Amount: \$1,252,001.12
Award Amount: \$318,212.00
Arbitrators Fee: \$18,393.74

General

This \$14.3 million contract improves 5.02 miles of IR-277 in Summit County in the City of Akron. The project involved repairing pavement, constructing 50 inch concrete median barrier wall, resurfacing with asphalt concrete, improving traffic control and lighting, and repairing and rehabilitating structures.

The low bidder was the Velotta Company. Bay State Painting, Inc (BSP) was Velotta Company's sub-contractor for the painting of structural steel on the bridge structures. The amount of the subcontract was \$1,348,914.50. The painting work was done during the 1995 and 1996 construction seasons.

Contractor Position

BSP alleged that ODOT inspection forces insisted on perfection in the performance of the bridge painting, was overzealous in their inspection, dictated methods of performance and in general interfered with their performance causing them to incur significant extra costs. The claim presented to ODOT was for the following amount:

1995 Additional Labor and Equipment for Painting	\$357,136.22
1996 Additional Labor and Equipment for Painting	473,560.95
Excess Sandblasting	391,786.50
Excess Material	<u>29,517.45</u>
Total Claimed Amount	\$1,252,001.12

District Position

ODOT denied the allegations of over-inspection and maintains that the problems resulted from BPS's failure to perform which resulted in rework and additional contractor expense.

Arbitrator's Decision

This claim was heard by the Director's Claim Board but no decision was rendered. Both parties agreed to resort to binding arbitration to resolve the claim. The arbitrator agreed on by both parties was Richard P. Turner (RPT). The following is the result of the arbitration proceedings:

Additional Labor and Equipment for Painting Operations

The contract required that the structural steel painting to be performed in accordance with a note in the proposal entitled "Field Painting of Structural Steel, System OZEU" dated 04/06/94. This specification requires the contractor to designate an individual as the "Quality Control Specialist" (QCS). This person is not to be a part of the production staff or be involved with any other tasks. The person must have received verifiable formal training and is responsible for assuring that all facets of the work are in compliance with the specification requirements. He has the authority to stop production when a non-conformance is found.

The specification requires that the work be inspected at 10 specific Quality Control Points by both the QCS and the ODOT inspector. Proper performance and documentation of inspection by the QCS is intended to assure quick inspection by ODOT with final documentation of substrate profile, dry film thickness and general compliance with specification requirements.

BSP provided the RPT with copies of spiral bound notebooks of the daily documentation prepared by the QCS. A review of the reports revealed wide inconsistency in their content. None of the reports were signed or otherwise identified and study of them indicated that as many as six individuals were involved in their preparation. With the exception of reports prepared from 7/22/95 to 9/4/95 the bridge being worked on each day was not identified. Reports prepared from 6/2/96 to 6/14/96 list weather conditions and discuss the work in progress. The emphasis in most of the reports is to document and criticize the activity of the ODOT inspectors and record confrontation with them. During the periods from 9/4/95 to 10/13/95 and from 9/13/96 to 9/26/96 no reports were provided.

In general RPT determined the reports did not document the activity of the QCS or the compliance of the work with the specification at the various quality control points.

ODOT provided copies of their daily reports prepared by their inspector. Those reports document detailed inspection of the work and confrontations with BSP personnel. It was noted by RPT that one inspector signed the reports from the onset of the bridge painting work until 7/13/96 when directions were given that he was to perform no more inspections because of high lead concentration in his blood. From that point on this inspector signed the daily reports and ODOT stated that his duties were only to maintain documentation. BSP stated this inspector was observed inside the containment subsequent to 7/13/96 and also influenced the judgement of the inspector that followed him. Notation is made in the ODOT daily reports of 8/31/95 and 6/27/96 that the contractor's QCS was not doing his job.

After studying the submitted claim documents, the above described documentation and interviewing both BSP and ODOT personnel, RPT reached the following conclusions.

The specification state that it is the Contractor's responsibility to provide a competent QCS that

will perform the duties set forth therein. Had the QCS performed, the duration of ODOT inspections would have been shorter. Corrective work found necessary by the QCS could have been done using procedures selected by BSP rather than the dictates of the inspector. Though some hand work, painting of steel flanges (stripping), would have been necessary, the total performed would have been less.

ODOT has the authority and the obligation to approve or disapprove the QCS and to order replacement of this person if not qualified or if the person does not perform. ODOT failed to exercise their authority to require a competent QCS. Instead they chose to ignore the QCS's shortcomings and perform detailed inspections of the work with their forces, the very activity the QC specification was intended to prevent. In fact, project documentation indicates that inspection beyond the realm of substantial compliance was not uncommon.

Because of the failure of both parties to comply with contract requirements, there was a lack of cooperation and a continual state of mistrust that adversely effected the progress and cost of the work. RPT determined that since both parties were at fault the only equitable solution was to share the cost on an equal basis.

The arbitrator did not concur with all of the costs claimed by BSP which were presented at the arbitration hearing. RPT took exception to equipment charges listed that were grossly overstated. Since equipment was idle during stripping operations, the cost is correctly calculated using 50% of the equipment rates. In the case of over inspection, 100% of the equipment rates were used even though the equipment was idle. In both cases operating costs were charged. Operating costs are not eligible for reimbursement when equipment is idle.

The equipment rates used by BSP are hourly rates calculated as 15% of the daily rates from Contractor Owned Equipment Rates as published by Professional Coating Management, Inc., 1993 Issue. The requirements for Extra Work and Force Account Work, as presented on page 14 of the Proposal, specify that the hourly rate to be used will be the monthly rate divided by 176. The rates used by BSP are in excess of 45 % too high. When work was completed for a season or at the conclusion of the project, the Contractor is expected to demobilize equipment. It can not be charged as idle when no longer needed Blasting operations were completed for the 1995 season on 9/25/95 and at the conclusion of the painting on 9/23/96. No charge for idle blasting equipment is allowed after those dates in each season. The amount for Additional Labor and Equipment for Painting Operation for each season awarded by the Arbitrator after corrections for the above was as follows:

YEAR	Total Corrected Amount	50% Reimbursable to Contractor
1995 Additional Labor and Equipment for Painting	\$ 96,535.00	\$ 48,268
1996 Additional Labor and Equipment for Painting	179,934.00	<u>89,967</u>
Total Awarded		\$138,235

Excess Sandblasting

The specifications require that the structural steel be blasted to SSPC-SP10, near white condition. An exception is that the backside of end frames receive a commercial blast in accordance with SSPC-SP6.

BSP maintained that the inspector required SP10 blasting on all areas. It should be noted that the ODOT inspector's Daily Reports state blasting to SSPC-SP10 and indicate work in backwall areas on some dates. There are repeated references in both ODOT and BSP reports to reblasting areas already prepared for various reasons. The specifications require that the blasted steel have a profile of 1.0 to 3.5 mills. ODOT reported an actual average profile of 3.7 mills.

The arbitrator concluded that there was sufficient evidence to conclude that overblasting was required. The arbitrator did not agree however with costs that BSP submitted for excessive sandblasting. In calculating the theoretical blasting coverage, BSP used 124 square feet per hour as the production rate. That rate, while it is theoretically correct, cannot be used to calculate the additional cost because it makes no provision for the fact that a certain amount of reblasting would be required in the normal course of events. The arbitrator used in the calculation of his award the actual production rate of 108 sf/hr which was the production rate of an I-77 bridge on this project. Any normal reblasting was reflected in that rate. It was generally agreed by both parties that work, especially the blasting, proceeded as anticipated and without delay on that I-77 bridge.

The arbitrator used 108 square feet per hour to calculate an amount of equivalent square feet prepared by BSP using their actual nozzle hours on their other bridges. The actual structural steel area was deducted from this equivalent square footage to determine the excess number of square feet that was blasted. This amount of excessive square feet was multiplied by the bid price for surface preparation which was \$3.50 per square foot. The calculation by the arbitrator resulted in an award of \$179,977 for the additional cost for excess blasting.

Excess Material

BSP maintains that excessive amounts of paint was used because of the events previously discussed. The calculations provided by BSP were in error. The application rates used were not consistent with manufacturer's data sheets. In addition, no allowance was made for application loss. BSP's submittal shows that the actual quantity of paint purchased is consistent with the amount required for the specified dry film thickness. Actually less epoxy was purchased than the calculated required amount. The difference could be explained by a variation in the application loss. It was the decision of the arbitrator that no additional compensation was warranted for this item.

Summary of Award

	Claimed	Awarded
1995 Additional Labor and Equipment	\$357,136.22	\$ 48,268
1996 Additional Labor and Equipment	473,560.95	89,967
Excess Sandblasting	391,786.50	179,977
Excess Material	29,517.45	0
Total	<u>\$1,252,001.12</u>	<u>\$319,212</u>