**STATE OF MARYLAND**
**BOARD OF CONTRACT APPEALS**
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## SUMMARY ABSTRACT
## DECISION OF THE MARYLAND STATE BOARD OF CONTRACT APPEALS

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| Docket No. 2402 | Date of Decision: 08/22/05 |
| Appeal Type: [ ] Bid Protest | [X] Contract Claim |
| Procurement Identification: | Under Maryland Aviation Adm. - BWI Pier A. Airfield Improvements Contract No. MAA-CO-01-005 |
| Appellant/Respondent: | P. Flanigan & Sons, Inc.<br>Maryland Aviation Administration |

Decision Summary:

Differing Site Condition – When examining a claim for an equitable adjustment due to a differing site condition, two questions need to be addressed: (1) whether the site conditions were, in fact, different from what the contractor was led to expect; and (2) whether it was reasonable for the contractor to rely on the information supplied by the State. In partially granting Appellant's claim (on behalf of its subcontractor) for equitable adjustments concerning tunnel work, the Board found that the Appellant and its subcontractor reasonably relied on representations contained in the Geotechnical Baseline Report and the Geotechnical Data Report.

**BEFORE THE**
**MARYLAND STATE BOARD OF CONTRACT APPEALS**

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| **In The Appeal of P. Flanigan & Sons, Inc.** | ) | |
| **Under Maryland Aviation Adm. - BWI Pier A. Airfield Improvements Contract No. MAA-CO-01-005** | ) | **Docket No. MSBCA 2402** |

**APPEARANCE FOR APPELLANT:** **Lewis J. Baker, Esq.**
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**OPINION BY CHAIRMAN HARRISON**

Appellant timely appeals the denial of its claims for an equitable adjustment involving tunneling operations under a runway at Baltimore-Washington International Airport (BWI).

**Findings of Fact**

1. On or about July 19, 2001, the Maryland Aviation Administration (MAA) awarded the above referenced Contract to Appellant in the amount of $45,832,441.61 for certain airfield improvements at BWI.
2. On or about July 23, 2001, Bradshaw Construction Corporation (Bradshaw) entered into a subcontract with Appellant (Subcontract) in the amount of $1,295,125.00 ($1,267,500 earth tunneling; $10,926.00 subcontract bonds), wherein Bradshaw was to perform portions of Appellant's obligations under the Contract involving tunnel work. Bradshaw was founded in 1963 as Eastern Tunneling and is a second generation heavy construction contractor specializing almost exclusively in utility tunneling.

Bradshaw is recognized as a leader and is well respected in the tunneling industry. Bradshaw is the real party in interest herein.

3. The Subcontract specifically incorporated the terms and conditions of the Contract.
4. The MAA retained URS to perform the design work for the airfield improvements Contract. URS prepared the Contract plans and specifications, the engineer's estimate, the Geotechnical Baseline Report (GBR), the Geotechnical Data Report (GDR), and reviewed the key tunnel submittals on behalf of the MAA. Mr. Robert Goodfellow of URS was responsible for overseeing the preparation of the tunnel plans and specifications, the GBR and the engineer's estimate for the tunnel.
5. The MAA engaged Parsons Infrastructure & Technology, Inc. (Now Parsons Transportation Group) (Parsons) as the Construction Manager for the Contract work with Mr. Scott Wardle as the Resident Engineer.
6. The Contract requires the construction of a 72-inch internal diameter storm water tunnel crossing under existing Runway 15R-33L at BWI. This is an active runway, and as a result of safety concerns the Contract documents limited surface settlement to one inch at the Runway Safety Area (runway shoulders on each side of the runway) and 1/8 inch at the runway. Construction of the tunnel was required to be conducted in a manner that would reduce flowing soils and water which could destabilize the ground and cause runway subsidence.
7. The Contract documents include the mandatory Differing Site Conditions and Changes clauses and also include the GBR and the GDR.
8. Pursuant to the Contract documents, if there are any inconsistencies between the GBR and GDR, the GBR terms shall take precedence.
9. The GBR establishes a contractual understanding of the

subsurface geotechnical site conditions, referred to as the baseline conditions. A stated purpose of the GBR is to set baselines for tunnel construction in order to provide a basis for resolution of disputes that may arise concerning subsurface conditions. The GBR is intended to be used to avoid differing site condition disputes.

10. The GBR expressly states that it "is the sole document for geotechnical interpretations of the available data and information upon which the contractor should and may rely."

11. The GDR contains boring logs and information on the laboratory testing of soil. The stated purpose of the GDR is to present and describe the conditions revealed by the subsurface exploration and laboratory testing program.

12. Pursuant to the Subcontract, Bradshaw was to carry out the earth tunneling work set forth in Item X-90 of the MAA Specifications and the high temperature hot water underground pipe installations set forth in Item U-40 of the MAA Specifications.

13. Pursuant to Section X-90-1.1 of the Contract Technical Provisions, the tunnel was to be constructed by pipe jacking, a technique wherein pipe (in this instance a 72-inch reinforced concrete pipe) is used to push a steerable tunnel boring machine (TBM) into the soil face at the head of the tunnel.

14. The tunnel was to span 665 feet, commencing at the jacking shaft running on a line starting southwest of the runway and ending at a receiving shaft running through the runway and proceeding northeast of the runway. Upon completion of the tunnel work, manhole structures were to be installed in the two shafts and connected to the pipe. The latter manhole was not part of Bradshaw's scope. A total of 649 linear feet of jacked concrete pipe was to be installed, and as noted the tunnel was to cross under an active runway raising extreme safety concerns that the tunneling not create subsidence under the runway or runway safety areas (shoulders) on each side of the runway.

15. On June 1, 2001, the MAA opened competitive bids on the project. Five bids were received. Appellant was identified as the low bidder in the amount of $45,832,441.61.
16. Prior to award of the Contract to Flanigan, URS conducted a pre-award assessment for purposes of making a recommendation to the procurement officer as to responsibility.
17. During this assessment, Mr. Jack Deter of URS directed Mr. Goodfellow to call Appellant and inquire as to why Appellant's bid price was higher than the other bidders for tunneling.
18. Mr. Goodfellow spoke to Mr. Kevin Mullen, the lead estimator for Appellant, regarding Appellant's bid for the project, and specifically the tunneling portion of the project. Mr. Goodfellow asked why Appellant's tunneling price of $3,400,000 was two to three times the Engineer's Estimate prepared by URS and expressed concern that Appellant's bid was front-loaded, wherein Appellant might have taken income from construction work that would occur late in the project and placed it in items that were paid early in the project.
19. Mr. Mullen, however, advised, as discussed below, that Appellant did not front-load its bid and addressed the amount of the bid for tunneling.
20. The technical specification for mobilization and demobilization on the Project mandated that the lump-sum price for mobilization and demobilization not exceed five percent of the total contract bid amount for base bid items, less the bid price for mobilization and demobilization. If the total costs for mobilization exceeded the five percent, the contractor was directed to include the excess in the unit price of other items of work.
21. Appellant's estimated price for mobilization costs was in excess of the five percent of the base bid price. Therefore, Appellant reduced the mobilization price to be in accordance with the

specifications, and moved portions of it into bid items for tunneling, temporary wiring, and quality control.

22. As evidenced by contemporaneous notes, during the pre-award assessment phase, Mr. Mullen identified how Appellant determined its bid estimate to Mr. Goodfellow, including the mobilization costs, and noted the inadequacy of the five percent allowance for mobilization. It was explained that Appellant's bid price for the tunneling included both Bradshaw's quote for tunneling in the amount of $1,267,500 and excess mobilization/demobilization costs. The high degree of risk and the potential for liquidated damages involved in tunneling under an active runway was also discussed. Sometime after this conversation, URS recommended that the MAA award the Contract to Appellant.

23. Appellant and Bradshaw relied upon the Contract documents, including the GBR, in developing bid pricing, ordering equipment and developing a work plan.

24. On or about May 31, 2001, Bradshaw submitted a proposal to Appellant for the tunneling portion of the Contract.

25. Mr. Richard Hawes, a senior project manager, prepared Bradshaw's proposal. Prior to submitting Bradshaw's proposal, Mr. Hawes reviewed and analyzed the Contract documents including the relevant specifications, the GBR and the GDR.

26. In addition, Bradshaw's President, Mr. Lester Bradshaw, reviewed the proposal prior to submission, particularly with respect to the assumptions regarding equipment selection, and profit markups.

27. In accordance with the specifications and the GBR, Bradshaw elected to use an Akkerman TBM with a closed face cutter head, and priced this equipment in its proposal. Based on Bradshaw's experience with similar tunneling projects, and specifically a project, known as Potomac Yard, where the same TBM as planned for BWI was used, Bradshaw's proposal assumes a tunneling

productivity average of 40 feet of pipe per shift based on a single shift operation, or 40 feet per day. The Board finds this assumption to be reasonable.

28. The average production of 40 feet per shift took into account anticipated normal delays or inefficiencies such as the launching of the TBM, occasional breakdowns of equipment, and the impact of weather on the operation of the crane.[1] By February 18, 2002, six days after the tunneling commenced at BWI, Bradshaw succeeded in achieving 40 feet of pipe production.

29. With respect to contemplated groundwater control, Bradshaw assumed that no dewatering would be necessary, other than a sump in the jacking shaft. This bid assumption was premised on Bradshaw's interpretation of the Contract documents, including the GBR and GDR. There were no costs for dewatering included in Bradshaw's bid estimate. Bradshaw reasonably concluded from the Contract documents that the groundwater table would not be above the crown of the tunnel. Therefore, any water at the tunnel face would not be under pressure and cause the soils to flow. For this reason, Bradshaw did not consider dewatering wells or well points necessary to lower the water table; and consistent with its bid assumption, Bradshaw concluded that there was no need to submit a dewatering plan for the tunnel area.

30. On October 22, 2001, prior to commencement of any tunneling activities, and before encountering any water, Bradshaw submitted a letter to Appellant confirming that they did not intend to submit a dewatering plan. Appellant's submittal log, maintained on a Parsons standard form, also indicated that no dewatering submittal would be made.

31. Pursuant to the GBR, there were certain requirements that could not be varied, including the use of closed-face fully shielded microtunneling/pipe jacking equipment to directly install the

1 The crane was located on the surface near the jacking shaft. The crane lowered pipe sections down to the jacking pit and removed excavated soil carried from the face through the back of the TBM by a muck car.

pipe. The GBR identifies use of the closed-face, fully shielded tunnel boring machine (TBM) as the means and methods to prevent flowing soils from entering the excavation. Specifically, the GBR states that a closed-face, fully shielded TBM will provide the desired protection at the face of the tunnel. Similar to the GBR, the Contract mandated use of tunneling equipment described as a shield or Tunnel Boring Machine (TBM) capable of installing 72-inch internal diameter reinforced concrete pipe.

32. The Akkerman TBM furnished by Bradshaw had a cutter head for excavation and a conveyor system for removing excavated soil through the completed portion of the tunnel. The TBM was also equipped with a hydraulic jacking system to advance both the pipe and the TBM forward into the tunnel face. The head of the TBM, in this instance, was configured with closeable doors to provide groundwater control and face protection in the event of unstable ground conditions. Depending on ground conditions, the doors could be partially closed to restrict the flow of material into the TBM. Water was capable of draining from the tunnel face through and under the TBM and back to the jacking pit where a sump and pump would capture the water and remove it.

33. The tunnel equipment was to provide flood doors or pressurized plenum capable of maintaining a stable face of excavation and positively supporting the face during non-mining periods. The GBR approved use of a closed face tunnel boring machine, as an appropriate method for controlling groundwater. The TBM utilized by Bradshaw on the project is a closed-face, fully shielded tunnel boring machine and it complied with the requirements of the Contract specifications.

34. URS wrote both the tunneling specifications and the GBR. Therefore, URS knew what was intended by the term “closed face, fully shielded tunnel boring machine (TBM).” When preparing the Engineer’s Estimate prior to bid, URS assumed use of the same Akkerman machine with a closed face attachment as was used by

Bradshaw on the Project.2 Consistent with the Contract documents, Bradshaw selected the Akkerman Tunnel Boring Machine Model WM 72C with the optional closed face attachment. The TBM is powered by (4) 57 CID hydraulic drive motors producing 96,588 Ft-Lbs of cutting torque and a cutting speed of 0-8 RPM. For the pipe jacking, Bradshaw selected the Akkerman jacking frame, Model SP-400 Jacking System, which has a maximum thrust capacity of 400 tons. To lubricate the pipe during pipe jacking operations, Bradshaw selected the Akkerman Electric Bentonite Pump Model EH2250.

35. In preparing its Engineer's Estimate, URS determined that the closed face, fully shielded TBM would be the sole means of controlling groundwater and the flow of materials, consistent with the terms of the GBR. URS did not include any monies for deep wells, well points or compaction grouting.

36. Section 6.2.3 of the GBR addresses Groundwater Control for Microtunneling/Pipe Jacking. The latter section specifies the use of a close-face, fully shielded TBM as the sole means of groundwater control for the tunnel. In contrast, for portals (i.e., the jacking and receiving shafts), specific means of groundwater control are set forth. Beyond specifying that groundwater control will be required, the groundwater control section for portals specifies that dewatering can be accomplished with deep wells or well points.

37. URS did not include any dollars in the Engineer's Estimate for groundwater control and there were no monies in the URS estimate for dewatering wells or well points. There was no money in the URS estimate for compaction grouting.

38. The contractor was required to submit a tunnel construction work plan to include the tunneling machine, pipe jacking system, intermediate jacking stations and to provide a manufacturer's

2 URS was familiar with the tunneling equipment that Flanigan/Bradshaw intended to use on the BWI project. Mr. Goodfellow had worked with Bradshaw on the Potomac Yard project in 2000, wherein a 72-inch RCP was installed using

drawing and specifications for the tunneling machine and the means for stabilization of the tunnel face. URS was responsible to review and analyze the contractor's submittal to ensure that the submission was compliant with the contract specifications. If URS determined that the contractor's plan or means and methods were not compliant, URS could have stopped the contractor from proceeding. Bradshaw's selection of an Akkerman TBM with a closed face cutter head was based on the Contract documents, including the GBR and the specifications. The Akkerman machine is defined as a closed face, fully shielded tunnel boring machine. URS, received and approved Bradshaw's submittal for the tunneling equipment. URS did not question Bradshaw's selection of tunneling equipment. Similarly, Parsons in its role as Construction Manager could have prevented Bradshaw from proceeding. Nevertheless, URS and Parsons allowed the tunneling work to proceed without an approved dewatering plan or any other form of dewatering in place.

39. If the drafter of the GBR contemplated flowing soils and significant quantities of water above the crown of the tunnel, the document would not have told the contractor to use the TBM specified in the specifications; nor would the GBR have stated that groundwater control could be achieved with the use of a fully shielded, closed face TBM, as described in the specifications. The GBR provides that groundwater and wet soils will be present within the tunnel invert. However, Section 6.2.3 of the GBR tells the contractor how to address the water to be encountered. It provides:

> Groundwater and wet soils will be present within the tunnel interval. As a means to prevent flowing soils from entering the excavation, the Specifications require the use of a close-face, fully shielded TBM. The tunnel drive will progress on an upward grade; hence, water is not expected to pond at the heading.

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the same TBM with closable doors. Bradshaw performed the work on that project and was successful.

The critical factor for the contractor at bid time was to determine what was necessary to control groundwater and flowing ground tendencies to lower the risk of runway subsidence that could occur from the disturbance of the soil.

40. Pursuant to the GBR, only silty-sand deposits encountered below the groundwater table were identified as exhibiting flowing behavior.

41. Piezometer readings were taken at JB-1 and JB-4. The piezometer reading at JB-1 was at 99 feet, below the invert of the tunnel. The piezometer reading at JB-4 was at 107.8 feet, which is at the springline (line halfway between the invert and the crown) of the tunnel.

42. The GBR does not identify where the groundwater table is located between these boring locations. Further, the boring log notations in the GDR of wet soil are not a reliable indication as to the location of the groundwater table. However, the moisture content readings of the material samples reported in the GDR indicate that the ground was not fully saturated at the locations where wet soils were reported above the piezometer readings and that fully saturated conditions were only experienced below the groundwater table.

43. Because of the permeability of the soil as reflected in the GDR, any moisture would tend to flow down by gravity to the groundwater table, and the groundwater table should be anticipated to be relatively flat between borings.

**Southwest of the Runway**

44. Bradshaw commenced tunnel work on the southwest side of the runway on February 11, 2002, and on February 12, 2002, actual production mining with the TBM began.

45. On February 18, 2002, Bradshaw unexpectedly encountered substantial water and had to cease tunneling operations.

However, prior to encountering excessive water, the tunneling operation was progressing as expected. Indeed, on February 18, 2002, prior to being impeded by the water, Flanigan/Bradshaw successfully mined 40 feet of pipe.

46. On February 19, 2002, Bradshaw provided timely written notice to Appellant that it had stopped work due to the discovery of a differing site condition on the southwest side of the runway, in the form of groundwater at levels above the tunnel invert. The following day, Appellant forwarded Bradshaw's letter to Parsons. Additionally, the encountering of water and Bradshaw's belief that it constituted a differing site condition was discussed at a Progress Meeting held on February 19, 2002.

47. On February 19, 2002, immediately after the Progress Meeting, Mr. Wardle responded to Appellant regarding the stopped work. Mr. Wardle stated that the stoppage of work was self-imposed by Bradshaw. However, the record reflects that Bradshaw was forced to cease production mining because it was unsafe to continue. Mr. Wardle further directed the implementation of a dewatering system at Bradshaw's expense. Mr. Wardle did not respond to Bradshaw's assertion that a differing site condition had been encountered.

48. On February 22, 2002, in compliance with Mr. Wardle's directive, Bradshaw, through Appellant[3], submitted a dewatering plan proposing two deep wells northeast of the runway with submersible pumps in each well. Wells initially were not proposed on the southwest side of the runway because the water flow appeared to be slowing. On February 25, 2002, Mr. Wardle rejected Bradshaw's dewatering submittal. By this date, Mr. Wardle had not yet responded to Bradshaw's contention that a differing site condition had been encountered. Following receipt of the rejection of the dewatering plan, on February 25, 2002, Bradshaw submitted a modified plan. This plan called for

3 Bradshaw's submittals were through Appellant as the party to the Contract with the State.

two deep wells on the southwest side of the runway and two deep wells on the northeast side of the runway. On February 26, 2002, Parsons (through Mr. Wardle) approved Bradshaw's submittal as a preliminary dewatering plan. Parsons' permission for work to proceed was contingent upon receipt of a final dewatering submittal with a design performed and stamped by a professional engineer registered in Maryland, specialized in hydrogeology or geotechnical engineering. This contingent approval permitted well drilling to commence. On February 28, 2002, Bradshaw (through Appellant) submitted a final dewatering system design and installation procedures stamped by Daniel Swanson, P.E., which included the installation of the four deep wells. On March 1, 2002, Parsons' accepted Bradshaw's dewatering submittal. On March 2, 2002, upon installation of the required wells, Bradshaw was permitted to continue with the tunneling operations.

49. On March 4, 2002, Parsons issued a stop work order because the settlement threshold set forth in the Contract had been exceeded. Bradshaw was directed to stop all work, except that which prevented further settlement or damage. On March 5, 2002, the stop work order from the previous day was rescinded and work was allowed to recommence. However, later that day, another settlement occurred that exceeded the contractual threshold standard. A Corrective Action Report, issued by Mr. Wardle, required the geotechnical engineer of record be onsite before pipe jacking resumed. Further, Mr. Wardle mandated that this engineer issue a report explaining the cause of the sinkholes, corrective action to be taken, and preventative measure to ensure no further failures.

50. Following an inquiry by Bradshaw, Parsons stated that Flanigan/Bradshaw was expected to provide a geotechnical engineer to report on the cause of the settlement and propose a course of action to avoid similar occurrences. In response to

the MAA's requirements, Bradshaw brought Dr. Ronald Heuer, a geotechnical engineer, to the site on March 7, 2002. Dr. Heuer submitted a preliminary report addressing the cause of the settlement. Dr. Heuer explained that time was of the essence in reaching agreement on how to proceed. In a pipe jacking operation, the pipe will seize due to the frictional forces of the surrounding soil, unless it is constantly being advanced. Dr. Heuer indicated that he was discussing with Hayward Baker (Appellant's grout subcontractor) a remedial plan that would allow work to proceed. Dr. Heuer concluded that Flanigan/Bradshaw had encountered a differing site condition on the southwest side of the runway and that the unanticipated groundwater conditions had caused flowing soils and ground losses during tunnel excavation. These ground losses propagated to the surface and caused settlement.

51. Concurrent with the foregoing efforts of Dr. Heuer, Bradshaw retained Mr. Michael J. Walkley to review the existing dewatering plan and to make comments concerning an immediate plan of action that would permit the advancement of the TBM into the jet grouted zone under the runway[4]. Mr. Walkley, a registered engineer in Maryland, visited the site on March 8, 2002, and on the next day, he submitted a letter through Appellant to Parsons concurring with Dr. Heuer's proposed plan to have Hayward Baker (Appellant's grout subcontractor) perform compaction grouting in front of the TBM until the TBM entered into the jet grout zone. Mr. Walkley concluded that this procedure should permit tunneling operations to resume immediately.

52. Notwithstanding the recommendation of Mr. Walkley, Mr. Wardle wrote back on March 11, 2002, refusing to allow Bradshaw to resume tunneling operations until a written explanation for the

prior subsidence was received and a supplemental plan for dewatering northeast of the runway was provided. At this point, the tunneling operation was still in the area southwest of the runway.

53. On March 13, 2002, Bradshaw submitted a revised dewatering plan (submittal) for northeast of the runway in response to Mr. Wardle's letter of March 11, 2002. Parsons returned Bradshaw's submittal marked Returned No Action. Prior to resuming production tunneling, Parsons required that Bradshaw (1) install all dewatering wells and observation wells; (2) lower the groundwater below the tunnel invert; (3) monitor and record daily the volume of water pumped per day from shaft and trench excavations using a flow meter and record and submit occurrences of water in the tunnel; and (4) report on the cause of previous earth settlement and precautionary measures to be implemented to prevent further settlement or damage for future tunnel boring.

54. On March 15, 2002, Bradshaw submitted a report to Parsons prepared by Dr. Heuer setting forth the reasons for the subsidence that had occurred southwest of the runway. Dr. Heuer repeated his conclusion of March 7, 2002 that Bradshaw experienced a differing site condition on the southwest side of the runway due to the encountering of fill materials which were materially different from what was represented in the GBR and due to the presence of groundwater in the face of the tunnel of sufficient magnitude to cause flowing soils. The differing site condition, in Dr. Heuer's view, resulted in the subsidence problem. Dr. Heuer also concluded that dewatering wells would be of no effect in reducing the quantity of water being experienced southwest of the runway. In his analysis, the groundwater table appeared to be located below the invert of the tunnel on the southwest side of the runway. This was indicated

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4 Jet grouting was used in the projected tunnel path area beneath the runway to help stabilize the soil and reduce the risk of subsidence from the tunneling operation. This work was performed by Hayward Baker on behalf of Appellant prior to the

by the piezometer reading at boring JB-1 and his conclusions taken from the moisture contents of the soils at boring JB-2, together with the high permeability of the soil in this area. The two taken together indicated a relatively flat groundwater table. The location of the groundwater table below the invert of the tunnel suggested that the water being experienced was perched. Because deep wells and well points are designed to lower the groundwater table and are not effective to drain isolated pockets of perched water, Dr. Heuer concluded that the dewatering wells ordered by Parsons would not be effective. He therefore recommended that compaction grouting be used to advance the tunnel into the jet grouted zone.

55. As noted, on March 13, 2002 Bradshaw submitted the revised dewatering plan prepared by Mr. Walkley, and, upon receipt of Dr. Heuer's March 15, 2002 report, Bradshaw was permitted to resume tunneling on March 18, 2002.

56. Hayward Baker performed compaction grouting in advance of the TBM in accordance with the recommendations made by Dr. Heuer and Mr. Walkley. No further dewatering was conducted on the southwest side.

57. During the foregoing events, the tunneling operation was essentially stopped from February 18, 2002 until March 2, 2002 and then again from March 5, 2002 until March 18, 2002. All that Bradshaw was permitted to do was "bump" the pipe daily, moving it about 18 inches, to keep it from becoming seized by the frictional force of the surrounding soil matrix. The tunneling operation never achieved the anticipated productivity because of these delays and the impact of the start-stop nature of the job on the learning curve.

**Northeast of the Runway**

58. Bradshaw also encountered different soil conditions and increased groundwater from that represented in the GBR, on the

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tunneling operations.

northeast side of the runway. Approximately 200 feet of tunneling was performed northeast of the runway. Bradshaw reasonably concluded from the GBR that the groundwater to be encountered on the northeast side of the runway could be controlled reliably by employing a closed-face, fully shielded TBM. No other form of groundwater control was deemed necessary or included in the Bradshaw bid. However, the groundwater levels were higher than expected, resulting in flowing soils that could not be controlled solely by use of a TBM with closeable flood doors. The apparent cause of the problem was the existence of sand over clay interfaces northeast of the runway, and intermittent clay layers that resulted in perched water. The existence of these layers was not as shown on Figure 3, attached to the GBR.

59. Based on the GBR and GDR, Dr. Heuer was of the opinion that dewatering should not have been necessary in order to permit the tunneling to proceed through the area northeast of the runway and that it should not have been necessary to install wells. The information provided by the MAA indicated that the groundwater table was about at springline. This level of water ponding in the face can effectively balance or offset the external water pressure, therefore precluding the flow of material into the TBM. Bradshaw's management had drawn the same conclusion prior to bid.

60. Dewatering would not be effective in the area northeast of the runway since deep wells or well points could not intercommunicate and reduce the level of the water being encountered; i.e., the pockets of water in unanticipated lenses in the undulating clay were not connected such that wells could not effectively draw down the water in the ground.

61. On March 19, 2002, Parsons, URS, Appellant, Hayward Baker and Bradshaw met to discuss procedures for tunneling on the northeast side of the tunnel in light of the concern Bradshaw

would encounter water upon exiting the jet grout zone under the runway[5]. Bradshaw brought in Dr. Heuer to provide a recommendation. Bradshaw presented a recommendation to employ either jet grouting or compaction grouting at a meeting on March 19, 2002. No decision was made by the MAA or its representatives at this time.

62. On March 20, 2002, the parties attended another meeting, and in response to Parsons' request, Bradshaw submitted a letter formally suggesting possible remedial procedures to protect against settlement on the northeast side of the runway. The options presented to Parsons detailed the means and methods as well as the anticipated costs to implement the procedures. The options presented were: (1) additional jet grouting; or (2) compaction grouting in conjunction with continued dewatering and tunneling operations. The letter submitted made clear that these procedures were being considered as a result of encountering a differing site condition.

63. Compaction grouting involves placement of a pipe into the soil and pumping in a thick grout. Grout is a mixture of cement and a silt or sand material. The idea is to compact the ground around the pipe, and at the same time make up any lost volume of soil by adding the grout. Compaction grouting is not groundwater control. Instead, it is a remedial measure that is undertaken in the belief that there is either a void overhead or loosened soil that has resulted from excess soil flowing into the TBM. The proposed compaction grouting was to be completed in two phases. Phase I involved the squaring of the jet grouted zone with the tunnel face, allowing the TBM to exit the grout zone in uniform conditions. A proper design would have provided for such uniform conditions regardless of the site conditions. The second phase of the compaction grouting involved retaining

5 By March 19, 2002, Parsons already had required the installation of wells on the northeast side of the runway for the control of water, as a condition of allowing the tunneling on the southwest side to resume.

Hayward Baker on a standby basis to perform compaction grouting if necessary.

64. Dr. Heuer concluded that there was a differing site condition on the northeast side of the runway, based on the nature of the clay interface being more complex, creating a series of little bathtubs. The other unanticipated condition was that the groundwater water table measured at standing observation level was much higher than what was indicated by the pre-bid information from boring JB-4. Water levels determined when the dewatering wells were drilled appeared to be higher than the crown of the tunnel. Additionally, Dr. Heuer concluded that the GBR represented in Section 6.2.3 that regardless of whether water encountered was within the groundwater table, perched, or otherwise was being held as a result of the capillary action of the soil, it should have been controllable using a closed face, fully shielded TBM. However, as with the area southwest of the runway, the TBM alone could not control the flowing soil conditions that resulted from the quantity and location of the water encountered.

65. As of March 19 and 20, 2002, Appellant and Bradshaw were extremely concerned with the delays in addressing the potential solutions. Of particular concern was the continuing possibility that the pipe could seize. If this were to occur, Bradshaw could be forced to abandon the tunneling operations.

66. On March 22, 2002, Mr. Wardle responded to the recommendations of Bradshaw and Dr. Heuer, reiterating that Bradshaw should modify and adjust its dewatering system and take all efforts necessary to avoid future settlement. Subsequently, on March 25, 2002, Bradshaw responded to Mr. Wardle's letter and noted that in light of the differing site condition encountered on the northeast side of the runway, Bradshaw had alerted Parsons and the MAA that there was a potential for localized settlement.

Bradshaw put Parsons on formal notice of the differing site condition encountered on the northeast side of the runway, the plan to perform compaction grouting, and of its intent to track all costs incurred in performing the remedial work for submission to the MAA. On March 29, 2002, Mr. Wardle acknowledged receipt of Bradshaw's letter without offering any comments.

67. The quantity of water encountered on the northeast side of the runway and its impact on the tunnel face could not have been contemplated, and, based on the GBR, Bradshaw reasonably assumed that it would be able to use the closed face TBM to tunnel safely without any additional groundwater control.

68. On April 3, 2002, Dr. Heuer submitted another report explaining his conclusion that a differing site condition was encountered on the northeast side of the runway. Dr. Heuer concluded that the actual soil and water conditions present northeast of the runway were much more complex and adverse than Contract indications. Actual conditions included water levels sufficiently higher than represented in the Contract and actual water heads (hydrostatic pressure) that were too large to be controlled simply by the closeable face of the TBM. These conditions were created by the more complex soil layering than was indicated in the GBR.

**Under the Runway**

69. On March 20, 2002 the pipe showed evidence of a crack at section 6 as it was being advanced in the jet-grouted zone beneath the runway. At the direction of the pipe manufacturer, Hanson Pipe and Products, a steel band was placed in the pipe around the entire circumference offering support to the cracked area.

70. On March 26, 2002, Bradshaw notified Appellant that it was experiencing high jacking forces in the jet grouted zone under the runway. Parsons was asked to request an analysis of the cause by URS personnel. This never was done.

71. Despite the remedial repair measures, pipe section 6 again cracked on April 2, 2002, causing pipe-jacking operations to be halted and necessitating the removal of the failed section. On April 3, 2002 Bradshaw notified Appellant by letter that the pipe jacking operations were suspended and forwarded a submittal outlining the procedure to remove the damaged pipe section for review and approval by Parsons. The removal process required the use of intermediate jacking cans as a shield, with saws being used to cut or break the pipe into eighteen inch pieces that could then be removed. By April 11, 2002, Pipe Section 6 was removed and pipe-jacking operations resumed.

72. On April 12, 2002, pipe-jacking operations once again came to a halt when pipe section 5 cracked. Parsons instructed Bradshaw not to begin removing pipe section 5 until Mr. Edward Page, the Chief Engineer of Hanson Pipe and Products, had the opportunity to inspect the failed pipe. On April 13, 2002 a meeting was held with representatives from Hanson Pipe and Products, Parsons, URS, Appellant and Bradshaw to inspect portions of removed pipe section 6, discuss the status of pipe section 5, and the possible causes for the cracking.

73. On April 13, 2002, removal of cracked pipe section 5 began, using procedures similar to those employed in the removal of section 6.

74. Based on his visit to the site and inspection of the failed pipe section, Mr. Page issued a letter stating that the pipe failed due to an extreme external point load exerted from the outside. Mr. Page further concluded that the pipe had achieved the requisite design strength and the crack pattern in pipe section 5 was not consistent with axial loading or vertical loading stresses.

75. On April 20, 2002, section 5 was successfully removed and pipe-jacking operations resumed.

76. During the removal of pipe sections 5 and 6, samples of cobbles were recovered by Bradshaw crew members. In addition, photographs of the jet grout matrix and cobbles found within the soil were taken when removing pipe section 5. Mr. Joe Bradshaw, an owner-officer of Appellant, took additional photographs of the cobble samples accompanied by a ruler demonstrating that the rock samples were cobbles. Some of the samples included pieces of cobble that fit together, illustrating that the cobbles were crushed from the pressure of the load they experienced. A cobble or cobbles became trapped in the overcut above the pipe and wedged between the pipe and the jet grouted soil mass.

77. The tunnel equipment specification required the TBM to be capable of digesting boulders or obstructions greater than 18 inches in diameter. Obstructions are defined as boulders that appear partially or completely within the profile of the tunnel and that prevent forward progress of the tunnel excavation.

78. Section 6.2.2 of the GBR states that exploratory borings did not reveal the presence of any cobbles or boulders in the soils encountered. A cobble is defined as a rock that ranges from a nominal 3-inch dimension to a nominal 12-inch dimension. A boulder is a rock that exceeds a nominal 12” diameter.

79. Cobble wedging need not preclude the TBM from advancing. With the use of the intermediate jacking stations, it is possible to encounter a wedged cobble somewhere along the pipe stream and still use an intermediate jacking station to advance the TBM, notwithstanding the fact that the string of pipe behind could be impeded.

80. Section 3.4 of the GBR shows the geological profile to be two soil layers, silty-sand facies and sandy-clay facies and subordinate amounts of gravel. The GDR states the soils would have occasional subordinate gravel. This is reflected in the boring logs that are attached to the GDR. Gravel is material that measures from one to three inches. Based on this soils

data, Bradshaw testified that it only expected to encounter gravel. However, the soils data would not rule out that boulders or cobbles, and clusters thereof, might be encountered. The presence of cobbles, including cobbles clustered together, presented a hindrance to the progression of the project. However, assuming *arguendo* that the presence of cobbles constituted a differing site condition, such condition was not the sole reason that the pipes cracked.

81. Mr. Philip Sharff, a professional engineer and associate at Simpson, Gumpertz and Heger, Inc., conducted a finite element analysis of pipe section 6 to determine whether the jacking loads caused cracking of the pipe. A finite element model was constructed using the steel and concrete properties of the pipe. Mr. Sharff concluded from the finite element analysis that the jacking loads did not create sufficient strain to cause visible cracking. The finite element model revealed a maximum strain of 237 micro-strains with peak strains at the top, bottom and two sides of the pipe. The strains dissipated rapidly just inches from the end of the pipe, measuring 24 to 50 micro-strains in the body of the pipe. The cracks in sections 5 and 6 originated several feet away from the ends of the pipe, near the center of the pipe. Strain levels yielded from the finite element analysis would result in softening and micro-cracking, not visible cracking, since the yielded strain levels are well below the required level that causes visible cracking.

82. Mr. Sharff was also asked to determine if the reinforced concrete pipe could have cracked due to the wedging of a cobble or cobbles. In this regard, he first determined the strength of a cobble. Mr. Sharff obtained a cobble sample from the cobbles recovered during removal of pipe section 5 and performed a petrographic analysis. This analysis determined that the rock had a strength ranging from 11,000 to 40,000 psi. Since the low strength, 11,000 psi, was significantly higher than the strength

of the jet grout or the pipe, it was not necessary to determine the actual rock strength. Once the range of rock strength was identified, the load necessary to create the necessary strain to produce visible cracking could be determined. Mr. Sharff utilized a finite element analysis to determine the external point load necessary to produce a strain that would cause visible cracking. Mr. Sharff's analysis determined that the reinforced concrete pipe used on the project would visibly crack if an external point load of 112 Kips (a Kip is 1,000 pounds) were imparted on the pipe.[6] It was then necessary to determine whether the soil matrix (jet grouted soil) could create sufficient bearing capacity to resist a load of 112 Kips. If not, any wedged cobbles would simply be pushed back into the soil mix and therefore would not impart a point load on the pipe.

83. Mr. Sharff determined that to develop a 112 Kip load with a 6-inch diameter cobble (the size of cobble found in removal of pipe section 5) or group of cobbles, soil bearing capacity would have to be at least 3,624 psi. Three conditions were analyzed: 1) Contract maximum per specifications of 250 psi soil jet grout, with no embedded cobbles, which resulted in a bearing capacity of 664 psi, yielding only 18% of the load needed to crack the pipe; 2) maximum field measured jet grout strength of 1,020 psi (as shown by core samples with jet grout strength up to 1,020 psi)[7] resulted in a load of 2,708 psi, 75% of the required force to cause the pipe to crack; and 3) 250 psi soil jet grout with nested cobbles 12 inches deep and 26 inches wide resulted in a bearing capacity that exceeded the required 3,624 psi by 10%. Mr. Sharff concluded that the external point load

6 The Respondent's analysis provided by Mr. Caiden also agreed that a 112 Kip point load would cause a visible crack.

7 The 28 day core samples results were 860 psi, 910 psi and 1020 psi. The specifications, however, require the jet grout to achieve an average unconfined comprehensive strength at 28 days of 150 psi within a range of 250 psi maximum and 75 psi minimum.

and cracking of the pipe from the outside-in was caused by the existence of embedded cobbles in the soil mix and loose cobbles found in the excavation and removal of pipe section 5. There was no other material found at the site that could have imparted a sufficient point load on the outside of the pipe. Under the specified maximum jet grout strength of 250 psi, without nested cobbles, the pipe will not crack.

84. Neither a soil matrix with 250 psi nor 1020 psi jet grout can produce a soil bearing capacity sufficient to crack the pipe. However, if cobbles are embedded, nested, 12 inches deep and 26 inches wide, in the soil matrix sufficient bearing capacity will develop. The record contains credible testimony that sufficient bearing capacity could develop with a cobble of approximately 7 ½ inches at 1020 psi. However, had the jet grout strength not exceeded the specified maximum of 250 psi, the potential for cracking resulting from embedded cobbles similar to those observed outside pipes 5 and 6 would have been minimized.

85. The actual dimensions of the embedded or nested cobbles cannot be precisely determined, and single cobbles may have been within the tolerance of the soil to absorb without yielding the load necessary to resist and crack the pipe.

86. The Contract specifications called for a maximum of 250 psi soil jet grout. This maximum was exceeded at the request of Bradshaw by Appellant's grout subcontractor who pumped jet grout with a strength as shown by core samples up to 1020 psi.

**Timeliness of Submission of Appellant's Claims**

87. On May 15, 2002, Bradshaw submitted its Request for Equitable Adjustment to Appellant in the amount of $358,081.00, addressing the differing site condition experienced when tunneling on the southwest side of the runway (Claim 1, Southwest of the Runway). On or about May 21, 2002, Appellant submitted Bradshaw's Request for Equitable Adjustment to the MAA. We find this claim and

notice thereof to be timely under the General Procurement Law and COMAR Title 21.

88. On April 18, 2002, Bradshaw provided written notice that it had encountered a differing site condition when tunneling through the jet grouted zone under the runway (Claim 2, Under the Runway). Subsequently, on May 15, 2002, Bradshaw identified the cause of reduced productivity and pipe breakage as rock wedging due to unexpected cobbles in the soil matrix. On July 12, 2002, Bradshaw submitted its Request for Equitable Adjustment based on encountering a differing site condition or defective specification when tunneling under the runway, in the amount of $306,975.00. We find this claim and notice thereof to be timely under the General Procurement Law and COMAR Title 21.

89. On March 25, 2002, Bradshaw provided written notice that it had encountered a differing site condition on the northeast side of the runway in the form of increased groundwater levels, the existence of intermittent clay or impervious strata, and a clay/sand interface in the tunnel reach extending for the length of the tunnel (Claim 3, Northeast of the Runway). In addition, Bradshaw indicated that the failure to prescribe jet grouting or consolidation grouting to permit the TBM to exit the jet grout zone into uniform conditions was a design defect. On June 19, 2002, Bradshaw submitted its Request for Equitable Adjustment to Appellant for this differing site condition claim in the amount of $255,512.00. We find this claim and notice thereof to be timely under the General Procurement Law and COMAR Title 21.

90. On February 19, 2004, the Procurement Officer issued a consolidated final decision denying all three of Appellant's (Bradshaw's) claims, and Appellant timely appealed to this Board on March 10, 2004.

**Quantum**

91. At the hearing of the appeal the amount alleged to be owed to Bradshaw (through Appellant) by the MAA for the three claims had been reduced to $928,302, broken down as follows:

> (1) The equitable adjustment allegedly due as a result of the alleged differing site condition southwest of the runway totals $363,142.00.
> (2) The equitable adjustment allegedly due as a result of the alleged differing site condition northeast of the runway totals $186,363.00.
> (3) The equitable adjustment allegedly due as a result of the alleged differing site condition related to work under the runway totals $378,797.00.

In addition to these asserted Bradshaw costs of the claims, Appellant is entitled to a 5% markup based on the Subcontract.

92. Pursuant to the Board's Order on Proof of Costs dated June 15, 2004 (Order), Appellant's Proof of Cost Statement was submitted to the MAA on or about July 28, 2004. In calculating its lost productivity damages, Appellant (Bradshaw) used a measured mile method of analysis. Subsequently, in accordance with the Board's Order, Bradshaw made its books and records supporting the statements contained in the Proof of Costs available for verification of the amounts claimed, and for a determination of the basis of the claim. Representatives of Rubino & McGeehin, the auditors retained by Respondent, visited Bradshaw's offices, reviewed the books and records and spoke with employees of Bradshaw.

93. Based on the review of the books and records, as well as relevant interviews with Bradshaw employees, Mr. William Kime of Rubino & McGeehin submitted a report to the MAA on November 5, 2004.

94. In his report, Mr. Kime took exception to $96,292 which consisted of the following: (1) $214 for labor inefficiency; (2) $2598 for equipment; (3) $82,574 for General & Administrative Expenses (G&A); (4) $10,218 for profit; and (5)

$677 for the bond. Bradshaw conceded the $214 for labor inefficiency and the $2598 for equipment.

95. As noted, Mr. Kime adjusted the G&A by $82,574. Recalculation of the G&A included a proper reduction under COMAR for payment of $103,000.00 for a covenant not to compete and an appropriate addition of $8,865.00 for a bad debt expense. The main adjustment made to the G&A was the result of a deduction for executive bonuses of $1,493,550. Mr. Kime determined that the amount attributed to executive bonuses was not reasonable, and therefore deducted $1,493,550 for the executive bonuses from the G&A. This amount is attributable to the two owner-officers, brothers Lester and Joe Bradshaw, who together earned approximately $2 million in executive compensation in 2002.

96. The record reflects that tunneling companies are unique and that certain equipment utilized in tunneling is expensive and may not be used over and over or otherwise leased to defray expenses. Additionally, a high degree of business risk is involved. Lester Bradshaw testified that he and his brother had been following the same procedure for the determination of bonuses for all employees, including the executives, for more than 17 years, since before his father retired and the brothers bought the business in 1988.

97. At the time of Mr. Kime's analysis, Bradshaw was a $12 million dollar a year company with 40 employees and was owned by the Bradshaw brothers. During the three year period 2001-2003, the Bradshaws received annual salaries of $500,000.00. The bonus in 2001 was approximately $1.1 million. There was no bonus paid in 2003. It appears that bonus payments for the three years depended on company profitability.

98. In analyzing the reasonableness of Bradshaw's executive compensation, Mr. Kime used the Perini Corporation (Perini) as a comparison. Mr. Kime used compensation (extracted from Perini SEC disclosures) for the years 1997 through 2001. The Bradshaw

brothers run a small, hands-on business, and this Board has no difficulty in finding the compensation paid to them for this risk-filled, difficult and expensive endeavor to be justified. We also note that there may be flaws in comparisons between companies like Perini and Bradshaw. However, we must find that the record compiled by Bradshaw does not overcome the restriction in COMAR 21.09.01.16C regarding a distribution of profits to the Bradshaw brothers since we find Bradshaw to be a closely held corporation of which the brothers are the owners.

99. Mr. Kime's report contained one mathematical error. Mr. Kime miscalculated profit at a rate of 10% instead of the correct rate of 10.2%. When properly calculated, the profit should have been $8,709 instead of the $10,218 contained in his report. This error in the profit rate also results in a miscalculation of the bond amount. With the appropriate modifications to the profit rate, the bond amount changes from $688 to $677. The mathematical errors result in a total difference of $1520. Thus, Mr. Kime takes exception to $94,772 out of the $932,376 amount claimed.

100. Accordingly, if Bradshaw prevails on entitlement on all three claims, Bradshaw, according to the Respondent's expert, would be entitled to recover $837,604, exclusive of pre-decision interest. In this regard, the Board notes that Respondent challenges on entitlement grounds an amount of $12,519.45 Bradshaw paid to Dr. Heuer. This challenge is based on the prohibition in COMAR 21.09.01.19E against costs related to litigation against the State. We find these costs to be primarily project related costs to deal with overcoming the differing site condition and not claim preparation expenses.

101. Respondent also challenges the Appellant's (Bradshaw's) assumed rate of progress of 40 feet per shift; the measured mile rate.

102. Bradshaw has utilized a measured mile approach to calculate lost labor productivity. Pursuant to this methodology, Bradshaw must

prove that there was a period of time on the project when it was able to perform the tunneling work in an unimpacted or relatively unimpacted manner. The presumption is that, at a minimum, the same productivity achieved when tunneling during this unimpacted period would have been experienced throughout the remainder of the tunneling operation, but for the differing site condition experienced. An approximation of lost productivity may be captured by comparing the reasonable cost that would have been incurred with the productivity obtained during the measured mile period with the actual cost for the work involved. This Board has recognized this approach in Fruin-Colnon Corporation and Horn Construction Co., Inc., MSBCA 1025, 2 MSBCA ¶165 (1987); and Corman Construction Inc., MSBCA 1254, 3 MSBCA ¶206 (1989). The measured mile rate and its basis was set forth in Appellant's Proof of Cost Statement. At one point in an area of the tunnel path relatively unimpacted by differing site conditions (flowing soils), the 40 feet per shift rate was achieved. Mr. Hawes testified that Bradshaw incorporated this average rate in its bid and that it had substantially exceeded this rate with identical equipment and crews on similar projects. The Board finds the fact that the rate was not achieved here was due to differing site conditions incurred that slowed production and never allowed a learning curve to develop. Mr. Hawes testified, and his bid estimate confirms, that the pricing of the tunneling work was premised on an average of 40 feet per day of tunneling, factoring in normal downtime events. The estimate pricing is based on the number of shifts of labor and equipment for production tunneling at this average rate. The 90 day calendar period covered all aspects of the work and was intended to protect against the imposition of liquidated damages. The pricing does not suggest that the proposal price was based on a period of more than 17 days of tunneling.

## Decision

Under COMAR 21.07.02.05[8], the differing site condition clause for construction contracts incorporated in the instant Contract, Appellant/Bradshaw is entitled to recover the additional costs incurred when differing site conditions cause work to be done under less favorable conditions than would have been encountered without the differing condition.

Before proceeding to the specifics of the claims regarding entitlement and quantum, a threshold defense raised by Respondent requires discussion.

To establish reliance in a case brought by a contractor on behalf if its subcontractor, the contractor must either prove that its own interpretation of solicitation documents indicated that subsurface conditions would be more favorable than those encountered, and that it relied upon its interpretation or that its bid reflected its subcontractor's reasonable estimates. *See, e.g.,* *Lamb Eng'g & Constr. Co.*, EBCA No. C-9304172, 97-2 BCA ¶29,207 at 145,336 (July 28, 1997). As the Board in *Lamb* described:

> Alternatively, a contractor may establish reliance upon a subcontractor's interpretation if it proves that it incorporated the subcontractor's bid into its own bid or proposal and that the subcontractor's bid was premised upon the advocated interpretation of solicitation documents. In this regard, it has been held that a contractor may also prove reliance by establishing that its bid "reflected" the subcontractor's estimates (see *Froeschle Sons, Inc. v. United States*, 891 F.2d 270, 272 (Fed. Cir. 1989)).

And as the Armed Services Board in Clearwater Constructors explained:

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8 COMAR 21.07.02.05 in relevant part provides:

> (1) The Contractor shall promptly, and before such conditions are disturbed, notify the procurement officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The procurement officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

> In a sponsored appeal, such as this (finding 39), we must have some evidentiary link, shown in bidding assumptions or otherwise, from which we can conclude that the subcontractor's alleged reliance was shared by the prime contractor. *E.g., Peter Kiewit Sons Co./J.F. Shea Co. (Joint Venture)*, ENGBCA Nos. 5086, 5097, 5147, 86-2 BCA ¶ 18,992 at 95,912 (holding that lack of evidence that prime contractor had the same interpretation of contract documents as subcontractor "means that an essential element of Appellant's case is missing and compels denial of the appeal").

96-2 BCA ¶28,495 at 142,292. In that case, the Board went on to hold that "[t]hus, while the record establishes that [the subcontractor] Jones Company relied upon contract indications that proved different from the conditions that it encountered on site . . ., the record is bereft of evidence of [the contractor] Clearwater's reliance. In these circumstances, an essential element of Appellant's case is missing and we cannot grant recovery." *Id.*

However, in these sponsored claims and appeal, we find that the record establishes that Flanigan to a material degree during the bidding and performance phases of this project shared and relied upon Bradshaw's interpretation; notwithstanding Flanigan may have occasionally passed on a directive (as it was required to do) from MAA (Parsons) containing the views of MAA as in a letter dated February 22, 2002 regarding control of water. Regarding the difference between Flanigan's $3.4 million bid amount for tunneling and Bradshaw's quote of $1,267,500, the Board is satisfied that such difference in large part reflects excess mobilization/demobilization costs for this $45 million project.

We shall now proceed to discuss specifics.

As noted by this Board in Richard F. Kline, Inc., MSBCA 2092, 5 MSBCA ¶479 (2000) at pp. 10-11, *citing* Weeks Dredging & Construction, Inc. v. United States, 13 Ct. Cl. 193, 218-219 (1987), to be entitled to an equitable adjustment under the differing site condition (DSC) clause, an Appellant must prove by a preponderance of evidence that:

(1) the solicitation affirmatively indicated or represented the subsurface conditions to be encountered;
(2) it acted as a reasonable, prudent contractor in interpreting the solicitation;
(3) it reasonably relied upon the indications of subsurface conditions contained in the solicitation;
(4) the subsurface conditions actually encountered differed materially from those indicated in the solicitation;
(5) the actual subsurface conditions must have been reasonably unforeseeable; and
(6) its claims for excess costs must be shown to be solely attributable to the materially different subsurface conditions.

When examining a claim for equitable adjustment due to differing site conditions, two questions need be addressed: (1) whether the site conditions were, in fact, different from what the contractor was led to expect; and (2) whether it was reasonable for the contractor to rely on the information supplied by the State. Department of General Services v. Harmans Associates Limited Partnership, 98 Md. App. 535, 551, 633 A. 2d 939, 947 (1993). See also, Hardaway Constructors, Inc., MSBCA 1249, 3 MSBCA ¶227 (1989) at p. 42. The record herein reflects that differing site conditions were encountered southwest and northeast of the runway, pursuant to an affirmative answer to the above two questions.

**Southwest of the Runway**

The evidence of record establishes that Flanigan/Bradshaw is entitled to an equitable adjustment of its Contract with the MAA for differing site conditions southwest of the runway.

The contract documents, specifically the GBR and GDR, set forth the ground conditions to be expected and the methods for groundwater control necessary in both the portals and the tunnel. Southwest of the runway, the groundwater table was shown below tunnel invert at boring JB-1. Although the location of the groundwater table at JB-2 was not depicted or otherwise described, the ground conditions were shown as silty sand. Given the high permeability of this soil and the moisture content samples in the GDR, it would be reasonable to

expect that the groundwater table in this area would be relatively flat.

Of significance to Bradshaw was the express representation in Section 6.2.3 of the GBR wherein bidders were told that groundwater and any flowing soils could be controlled solely with the use of a close-face fully shielded TBM. The use of this machine was made mandatory at pages 1-1 and 1-2 of the GBR. Bradshaw reasonably understood from these representations that the designer had interpreted the borings and other data set forth in the GDR and set a baseline that required the use of a close-face, fully shielded TBM, which was deemed fully capable of providing groundwater control and preventing flowing soils from adversely affecting the project. This representation was consistent with the depiction of the groundwater table on Attachment 3 to the GBR and in the GDR. Had flowing soils and groundwater above the crown of the tunnel been anticipated by URS, a pressurized plenum machine would have been mandated to contain or reduce flowing soils and water which could destabilize the ground and cause runway subsidence.

Second, Flanigan/Bradshaw was reasonable in interpreting the Contract references to the subsurface conditions. The record reflects that URS did not anticipate that dewatering would be necessary, other than the use of a sump and pump at the jacking shaft and that use of a fully shielded TBM with closeable flood doors would be adequate to control any groundwater and any minimal flowing of soils. Since URS was the drafter of the tunneling specifications and the GBR, Flanigan/Bradshaw's interpretation may be taken as reasonable in the absence of any contrary indications of actual subsurface conditions.

The GBR at page 1-2 recommends that bidders have a qualified geotechnical engineer or engineering geologist with prior experience carefully review and explain the information contained in the GBR, and, at the hearing, the MAA implied that Flanigan/Bradshaw should have retained the services of a geotechnical engineer to assist it in

determining the import of the GBR prior to bid. However, there was no legal duty to do so.

When such information was subsequently reviewed by Dr. Heuer, it was determined that Section 6.2.1.1 of the GBR provided the only reference to flowing soils, representing that silty-sand deposits encountered below the groundwater table would exhibit flowing behavior. However, southwest of the runway, given that the location of the groundwater table would reasonably have been assumed to be below the tunnel invert, there should have been no flowing soils. In any event, Section 6.2.3 of the GBR reasonably would have conveyed to an experienced tunnel contractor that a closed-face, fully shielded TBM would adequately control any groundwater experienced in the tunneling operation.

Flanigan/Bradshaw must also establish that it relied on the contract indications of subsurface conditions. To establish reliance, a contractor must prove that it interpreted contract documents as indicating subsurface conditions would be more favorable than those encountered and that it relied upon its interpretation. Lamb Eng. & Const. Co., *supra*; Richard F. Kline, Inc., *supra*. Here, Flanigan/Bradshaw did not include any money in the bid for dewatering or compaction grouting, other than to include a sum for a sump in the jacking pit, together with a pump, and Bradshaw did not submit a dewatering plan for the tunneling operation. Indeed, Bradshaw wrote to Flanigan in advance of any dispute and informed them that a dewatering plan was not required since dewatering would not be performed. Flanigan then reflected this information on its submittal tracking form that Parsons, the MAA construction manager for the project, required that it submit, and Parsons did not insist on a dewatering plan prior to the commencement of tunneling.

Neither Flanigan nor Bradshaw had ever performed any underground work at BWI, and therefore did not have prior knowledge of the ground conditions. These factors indicate that when preparing its bid Bradshaw relied on the Contract indications of subsurface conditions

being such that use of a closed-face, full-shielded TBM would suffice regarding control of groundwater and any flowing soils so that subsidence would not occur.

During the course of performance of the work on the southwest side, the quantity of water experienced and its impact on the soils at the tunnel face could not be controlled solely by use of a fully shielded, closed face TBM. In order to perform the work without runway subsidence, compaction grouting became necessary. Additionally, Flanigan/Bradshaw was directed by Mr. Wardle to install deep wells on the southwest side of the runway. These measures were not contemplated at bid time by either MAA or Appellant and resulted in additional costs, and reduced productivity.

In a February 19, 2002 letter from Richard Hawes of Bradshaw to Keith Jones of Flanigan, notice was provided regarding the encountering of groundwater above the crown of the tunnel, including measured flow rates over 7.5 gallons per minute (GPM). The amount of water was characterized as "a lot" with a "considerable" flow coming through the tunnel. These conditions also were discussed during a progress meeting held on the same date. In a letter dated February 25, 2002, Bradshaw notified Flanigan that they had once again encountered increased groundwater and running material.

Finally, the record reflects, as will be discussed in more detail below, that by virtue of the differing site conditions experienced on the southwest side of the tunnel, Bradshaw was required to expend additional funds. Proof of these additional expenses was presented in the Proof of Costs Statement submitted to the Board. The MAA took only limited objection to these costs, as set forth in Mr. Kime's report.

In summary, the subsurface conditions Bradshaw actually encountered differed materially from what the Contract documents indicated. Bradshaw acted as a reasonable and prudent contractor in interpreting the contract indications as well as reasonably relying on the Contract documents provided by the MAA. The materially

different conditions Bradshaw encountered were reasonably unforeseeable and caused Bradshaw to incur extra costs and time in its performance of the Contract. Bradshaw encountered a type 1 differing site condition, pursuant to COMAR 21.07.02.05, that entitles Bradshaw through Appellant to an equitable adjustment for differing site conditions southwest of the runway.

**Northeast of the Runway**

Similarly, we conclude that Flanigan/Bradshaw is Entitled to An Equitable Adjustment to its Contract for Differing Site Conditions northeast of the Runway.

As noted above, the MAA furnished the geotechnical information, including the GBR and GDR, as part of the Contract. In fact, the GBR states that it is the sole document for geotechnical interpretations of the available data and information upon which the contractor should and may rely. The GBR establishes a contractual understanding of the subsurface geotechnical site conditions, referred to as the baseline conditions.

Figure 3 to the GBR and the GDR record a piezometer reading, at boring JB-4 on the northeast side of the runway, of 107.8 feet, or 21.5 feet below ground surface. Subject to seasonal fluctuations not material here, this reflects the approximate location of the groundwater table at that location, corresponding to the springline of the tunnel. Section 5.2 of the GBR acknowledges that the groundwater level was found in the lower half of the tunnel interval at boring JB-4. Figure 3 to the GBR also depicts a clay mound in the center of the tunnel alignment. Mr. Hawes and Mr. Lester Bradshaw concluded that the groundwater would dam up against the clay and be flat. Groundwater levels at or near the springline of the tunnel would not be of a concern because the water would flow by gravity back to the jacking pit where it would be collected in a sump and then pumped out. Further, because the water was not high enough to cause hydrostatic pressure on the face, problems with flowing soils were not expected.

Mr. Hawes, a Bradshaw senior project manager who prepared Bradshaw's proposal, testified that he relied on Section 6.2.3 of the GBR, and its representation that groundwater control could be accomplished by using a closed face, fully shielded TBM. He contrasted this language with that of Section 6.1.3, which expressly stated that groundwater control in the form of deep wells or well points may be required for the portal (jacking and receiving pits) excavations. For these reasons, Mr. Hawes and Mr. Lester Bradshaw concluded that no money should be included in the bid for dewatering the site on the northeast side of the runway, or for compaction grouting.

Although Dr. Heuer was not retained at the time of bid to explain the GBR representations, he verified Bradshaw's bid assumptions after the fact. The driller's notations of moisture in the soils at JB-3 and JB-4 above the piezometer reading at JB-4 are not indicative of the groundwater table given the moisture contents of the samples taken. Dr. Heuer found conclusive the representation contained in Section 6.2.3 of the GBR, wherein Bradshaw was told that all groundwater control could be accomplished by a closed-face, fully shielded TBM.

Again, URS reached the same conclusions regarding subsurface conditions when preparing the Engineer's Estimate for the MAA. URS, as the drafter of the specifications and the GBR, included no money in the Engineer's Estimate for dewatering or compaction grouting northeast of the runway.

Flanigan/Bradshaw were reasonable in interpreting the references in the Contract documents to the subsurface conditions. The record reflects that the designer URS had a similar interpretation of the subsurface conditions and premised its estimate on the same TBM as used by Bradshaw. URS did not anticipate the installation of deep wells, well points or use of compaction grouting. The contemporaneous interpretation of the geotechnical information by the drafter of the GBR, GDR and specifications we find demonstrates the

reasonableness of Flanigan/Bradshaw's interpretation of the Contract documents.

As with the claim southwest of the runway, Bradshaw did not include any money in its bid for the deep wells that were ultimately installed northeast of the runway, in accordance with the directive of Parsons after the problem arose. Likewise, no money was included in the bid for compaction grouting.

Also, as discussed above, Bradshaw did not contemplate a dewatering submittal, and there was no submittal prior to the encountering of water on the southwest side of the runway.

All of the foregoing factors establish that Bradshaw relied on its pre-bid understanding of the indications in the Contract documents outlined above. The costs incurred in the installation of deep wells and in the implementation of compaction grouting never were anticipated under Bradshaw's reasonable interpretation of the representations in the Contract documents.

The conditions actually experienced by Bradshaw on the northeast side of the runway were different from the Contract indications. Again, as with the southwest side of the runway, a fully shielded, close face TBM was not capable of controlling the groundwater and flowing soils that resulted. As a result, compaction grouting became necessary to permit the work to proceed without surface subsidence.

When substantial groundwater was encountered above the crown of the tunnel on the southwest side of the runway, Parsons required a dewatering plan that addressed the northeast side of the runway, as a condition of resuming work on the southwest side. Two deep wells and two observation wells were proposed as a result. Upon installation of these wells, Bradshaw was permitted to resume tunneling on the southwest side of the runway. Ultimately, the observation wells were converted to pumping wells when conditions on the northeast side of the runway impacted the tunneling operation. However, the wells were insufficient to preclude the water problems being experienced.

Dr. Heuer concluded that the water creating the hydrostatic

pressure northeast of the runway was perched within unexpected clay layers located above the crown of the tunnel. Because the pockets of water were not connected, wells or well points were incapable of drawing down the groundwater below the invert of the tunnel. These pockets of clay were not depicted on Attachment 3 to the GBR and were not otherwise represented.

Flanigan/Bradshaw proposed remedial measures that included additional jet grouting or compaction grouting on the northeast side of the runway. Parsons advised that Flanigan/Bradshaw should modify or adjust the dewatering system and take whatever action was necessary to prevent settlement.

In Dr. Heuer's report dated April 3, 2002, he noted that the GBR did show groundwater on the northeast side of the runway at about elevation 108, which would be above the tunnel invert. However, he also observed that the groundwater elevation appeared to be relatively flat, with minimal hydrostatic pressure. Dr. Heuer concluded that it was reasonable for Flanigan/Bradshaw to have concluded at bid time that, in light of the relatively low water head above the tunnel invert on the northeast side of the runway, adequate control of groundwater and perched water could be achieved by use of a fully shielded TBM, with closeable face doors, and that no prior dewatering would be needed.

Appellant and Respondent disagree as to whether a differing site condition was experienced. What is most probative here, however, is the position taken by URS at the outset, before any dispute occurred. URS did not include money in the Engineer's Estimate for dewatering or compaction grouting. Further, URS assumed the use of the identical TBM to that used by Bradshaw. URS expressly represented in the GBR that groundwater and any flowing soils could be controlled by use of a fully shielded, close face TBM. When it became necessary to use other means to control the groundwater and flowing soils, because of the unexpected nature of the water and soil layering, this demonstrated a material change from the contract indications, as

referenced by the mutual and contemporaneous expectations of Bradshaw and URS.

Neither Appellant nor Respondent anticipated the conditions that were actually encountered northeast of the runway. Moreover, without further subsurface investigations, which no bidder was obligated to perform, there was no way that Flanigan/Bradshaw, or any other bidder, could have foreseen the extent of the problems that were later encountered.

Appellant was obligated by the Contract to conduct a site investigation. A site investigation, however, does not obligate the contractor to perform its own subsurface investigations. The policy reflected in the differing site conditions clause is to encourage bidders to rely on the information furnished in the contract. In this case, the GBR provided extensive information upon which the contractor was told it could and should rely. In conjunction with the GBR, the differing site conditions clause is intended to eliminate the need for contractors to build in contingencies into the costs of their proposals. In this case, without further subsurface investigations, it was impossible to foresee the actual conditions of groundwater northeast of the runway.

As set forth above, Flanigan/Bradshaw encountered two conditions that were materially different from representations in the GBR. Consequently, four dewatering wells that were not contemplated at bid time were installed northeast of the runway. Additionally, extensive compaction grouting was performed in this area to prevent subsidence due to wet conditions. The differing site condition on the northeast side of the runway significantly impacted production, and caused Flanigan/Bradshaw to do additional work.

All of Bradshaw's costs related to this differing site conditions claim were set forth in a statement issued to the MAA pursuant to the Board's Proof of Cost Order. The exceptions taken by Mr. Kime will be addressed hereafter.

**Under the Runway**

Flanigan/Bradshaw argues that its claim for work performed under the runway similar to its claims southwest and northeast of the runway involves a differing site condition (Type I) as a result of the on-site conditions being materially different from those indicated in the contract documents relating to the conditions to be encountered. Alternatively, Flanigan/Bradshaw argues that the Board should find a constructive change relating to defective specifications. We do not accept either argument.

As stated in the Differing Site Condition clause, a Type I differing site condition exists when a contractor encounters subsurface or latent physical conditions at the site differing materially from those indicated in the contract. As set forth above, a claim based on a differing site condition requires proof of six elements. The record compiled herein, however, assuming *arguendo* that the first five elements of proof as set forth above are met, fails to demonstrate that the Flanigan/Bradshaw claim for excess costs under the runway are solely attributable to the materially different subsurface conditions.

Section 3.1 of the GBR described the regional geology to include gravel, sand, silt and clay. In addition, the GBR noted that natural soils were modified during prior construction with silty-sand, clay and silt-rich fill. GBR sections 3.4.1 and 3.4.2 provide additional detail about the silty-sand facies and the sandy-clay facies that are present at the Project site. However, neither of these GBR sections describe the presence of any rock-like material, other than gravel. In fact, the GBR states that exploratory borings did not reveal the presence of any cobbles or boulders in the soils encountered.

The GDR also provides information about the subsurface materials to be encountered. Again, the only rock-like material mentioned is gravel. Gravel is characterized as material one inch in size, but not larger than three inches. The material Bradshaw encountered was larger than three inches and constituted cobbles.

A cobble is characterized as rock material not smaller than

three inches, but not greater than twelve inches. GBR Section 6.2.2 states that cobbles or boulders were not encountered in the soils of the exploratory borings.

The record reflects that Bradshaw clearly encountered cobbles under the runway.

As discussed above, both the GBR and GDR identified the presence of gravel in the subsurface conditions, but not cobbles. Section 6.2.2 of the GBR expressly stated that "the exploratory borings drilled for the Project did not reveal the presence of any cobbles or boulders in the soils encountered."

Section 6.2.2 of the GBR also states that the TBM should be capable of digesting boulders or other obstructions up to 18 inches in diameter. The contract tunneling specifications define an obstruction as boulders that appear partially or completely within the profile of the tunnel and that prevent forward progress of the tunnel excavation. A cobble is not a boulder.

Cobbles were not forecast by the GBR. Indeed, the GBR specifically indicated that cobbles were not encountered in the prebid investigation. However, the information provided by the Contract documents does not guarantee that there are, in fact, no cobbles or nest of cobbles in the soil. In this regard, the Board notes that the GBR referred to soil modification with fill in prior construction raising the possibility that cobbles may have been present in the fill.

Bradshaw's bid estimate was premised on the absence of cobbles in sufficient numbers to impact the tunneling process. This is consistent with the representations set forth in the GBR and GDR.

Despite the information in the Contract documents, cobbles were encountered under the runway.

The record reflects that a cobble or group of cobbles would have been the only extraneous material, among those encountered, that was strong enough to apply a sufficient point load (112 Kips) to break the pipe.

The remaining issue was whether the surrounding soil matrix could provide sufficient bearing capacity to resist the tendency for the cobble(s) to be pushed back into the soil and conversely allow the cobble(s) to push back against the pipe and apply a load of 112 Kips. In this regard the record reflects that a 6-inch cobble of the type found at pipe section 5 could impart this load on the pipe, if cobbles also were embedded in the surrounding soil mix. The record further reflects that it is probable that a nest of cobbles was, in fact, encountered.

Assuming *arguendo* that the information provided by the Contract documents could reasonably be read to exclude the possibility of the existence of cobbles or a nest thereof in the soil under the runway, the actual existence of cobbles or a nest thereof must have been the sole cause of the problem (cracking of pipes) that resulted in additional cost. Hayward Baker placed, in consultation with Bradshaw, jet grout in excess of the contract maximum strength of 250 psi. The Board cannot find as urged by Appellant that this did not result in the breakage of the pipe. The bearing capacity of the soil mixed with 1,020 psi jet grout has not been shown not to have been high enough to resist a nest of wedged cobbles of the type and size discovered at the site.

From the evidence presented it is probable that Flanigan/Bradshaw encountered the presence of nested cobbles in the soil matrix and that this event, coupled with the jet grout in excess of the Contract maximum strength, caused a point load to be applied on the exterior of the pipe sufficient to break the pipe. The Board might be willing to accept that the presence of cobbles constitutes a differing site condition. However, cobbles were not the sole cause of the failure of the pipe that caused delay to the pipe jacking operation.

As an alternative argument, Appellant points out that when a contractor incurs additional costs in attempting to comply with defective specifications, it is entitled to an equitable adjustment

under the Changes clause. We agree that the State warrants that the plans and specifications that it furnishes are adequate and sufficient for the purpose intended. Martin G. Imbach, Inc., MSBCA 1020, 1 MSBCA ¶52 (1983).

We also agree that if a contractor is bound by a contract to build according to plans or specifications provided by the owner, a contractor will not normally be responsible for consequences of defects in the plans or specifications. If the contractor complied with the plans or specifications, and an unsatisfactory result nevertheless ensued, a contractor may still be entitled to an equitable adjustment.

In this case, Appellant notes that the MAA specified, under Section X-90-1.1 of the Contract Technical Provisions, that the tunnel was to be constructed by pipe jacking. Pipe jacking is a technique wherein pipe (in this instance 72-inch reinforced concrete pipe) is used to push a steerable tunnel boring machine into the soil face at the head of the tunnel. The TBM has a cutter head for excavation and a conveyor system for removing excavated soil through the completed portion of the tunnel. The Contract further mandated that the TBM be configured with closeable doors at the cutting head to provide groundwater control and face protection in the event of unstable ground conditions.

The outside diameter of the concrete pipe specified by the MAA is 87.5 inches. The Contract specified that there be an overcut annular space not to exceed 1 inch. Thus, the TBM excavates to a diameter greater than the pipe. In the area between the outside of the pipe and the surrounding soil, a slurry mix was to be pumped to limit the frictional forces imposed by the surrounding soil. In the area beneath the runway, the Contract also mandated that the soil mass be jet grouted. Jet grouting creates hardened soil mass columns to minimize the risk of surface subsidence.

The GBR expressly states that exploratory borings drilled for the project did not reveal the presence of cobbles or boulders.

Unfortunately, as noted above, cobbles were encountered in the area beneath the runway. The evidence of record suggests the probability that the cobbles became trapped in the overcut annulus above the pipe and wedged between the pipe and the jet grouted soil mass containing even more cobbles.

As a consequence of encountering cobbles, two pipe segments were stressed to the point of failure when cobbles became wedged in the overcut annular space. Appellant argues that pipe jacking was inappropriate given the presence of cobbles, and therefore the pipe jacking technique requirement represented a defective specification.

Flanigan/Bradshaw asserts it has established the two requisite elements to prove a defective specification. First, it asserts it fully complied with the requirements of the Contract. Based on the Contract documents provided by the MAA, Flanigan/Bradshaw employed a pipe jacking operation using the equipment specified. Second, it asserts that the two pipe failures clearly represent an unsatisfactory design (pipe jacking through a jet grouted zone) that resulted in the failure of two pipe sections and substantial delays and costs to the contractor. However, as with Appellant's differing site condition argument, its defective specification argument must similarly fail due to the fact that the jet grouting strength was in excess of the specified maximum strength of 250 psi which the Board has found contributed to the cracking of the pipes. Accordingly, Appellant's claim for an equitable adjustment for work under the runway is denied.

**Quantum**

We shall now discuss quantum flowing from Appellant's entitlement to an equitable adjustment based on having encountered a differing site condition northeast and southwest of the runway.

Pursuant to the Board's Order, Appellant submitted its Proof of Costs outlining its damages. Subsequently, the MAA was permitted to review Bradshaw's records and provide a responsive statement. Pursuant to the Board's Order, if the MAA failed to challenge the

accuracy of any items, figures, allocations, or computations contained in Bradshaw's statement, the MAA was deemed to have waived that right.

The MAA's response to Bradshaw's Proof of Cost was limited to a Report drafted by William Kime of Rubino & McGeehin. Mr. Kime challenged $96,292 in costs presented by Bradshaw. The exceptions taken were: (1) $214 for labor inefficiency; (2) $2,598 for equipment; (3) $82,574 for G&A; (4) $10,218 for profit; and (5) $677 for the bond. Bradshaw conceded the $214 for labor inefficiency and the $2,598 for equipment. Thus, the only remaining cost at issue is the $82,574 for G&A. As noted, Mr. Kime adjusted the G&A by $82,574 as a result of a deduction for the executive bonuses. Mr. Kime opined that the executive bonuses were not reasonable, and therefore deducted $1,493,550 for them. This reduced the overhead markup, resulting in the bulk of the $82,574 adjustment. The Board, as noted in the Findings of Fact, will approve the adjustment for the executive bonuses due to the Board's concerns about distribution of profits for small, closely held corporations under the constraints of COMAR 21.09.01.16C. *Compare* Delle Data Systems, Inc., MSBCA 2146, 5 MSBCA ¶493 (2001) at pp. 18-19. While we continue to recognize the risk reward balance in this specialized and difficult business, we note Mr. Kime's testimony that Mr. Lester Bradshaw himself referred to the matter as distribution of profits.

Based on the Board's determination on entitlement and considering adjustments to the amounts claimed as discussed above, the Board finds Appellant (Bradshaw) entitled to the following compensation for claims 1 and 3.

| **Description** | **Claim 1 Southwest of the Runway** | **Claim 3 Northeast of the Runway** | **Total** |
|---|---|---|---|
| Labor Inefficiency | $27,186 | $21,527 | $48,713 |

| | | | |
|---|---|---|---|
| Extended Supervision | $13,658 | $5,731 | $19,389 |
| Additional Per Diem | $3,498 | $1,579 | $5,077 |
| Materials & Subcontractors | $109,405 | $85,915 | $195,320 |
| Small Tools | $1,101 | $755 | $1,856 |
| Equipment | $95,668 | $13,057 | $108,725 |
| **SUBTOTAL** | $250,516 | $128,564 | $379,080 |
| G&A (17.84%) | $44,692 | $22,936 | $67,628 |
| **SUBTOTAL** | $295,208 | $151,500 | $446,708 |
| Profit (10.2%) | $30,111 | $15,453 | $45,564 |
| **SUBTOTAL** | $325,319 | $166,953 | $492,272 |
| Bond (72%) | $2,342 | $1,202 | $3,544 |
| **SUBTOTAL** | $327,661 | $168,155 | $495,816 |

With the accepted adjustments to the claims, Bradshaw is entitled to $495,816 for its claims. Flanigan, by contract, is entitled to a 5% markup on the Bradshaw award, or $24,791 (5% of $495,816 = $24.791). The total award is thus $520,607.

Appellant also seeks pre-decision interest. Appellant's counsel suggests that, in light of the "very minor" exceptions taken to Bradshaw's proof of costs, the amounts in dispute were liquidated no later than the date of Mr. Kime's Report, or by November 5, 2004. The Board will concur and awards pre-decision interest pursuant to *Section 15-222* of the *State Finance and Procurement Article* commencing on November 5, 2004. Post-decision interest shall run from the date of this decision.

The Board notes that Flanigan/Bradshaw "reserves the right to later request the award of attorneys fees." The Board observes,

however, that the record does not establish that Appellant (Flanigan/Bradshaw) is entitled to costs or attorneys fees pursuant to *Section 15-221.2* of the *State Finance and Procurement Article* and COMAR 21.10.06.32.

Accordingly, the appeal is sustained in part and denied in part, entitling Appellant (Flanigan/Bradshaw) to an equitable adjustment as set forth above.

Wherefore, it is Ordered this day of August, 2005 that the appeal is sustained as to claim 1 southwest of the runway and claim 3 northeast of the runway and denied as to claim 2 under the runway; and it is further Ordered that Appellant is awarded an equitable adjustment consisting of (1) $495,816 on behalf of Bradshaw; (2) 5% of $495,816 or $24,791 on behalf of Flanigan; and (3) pre-decision interest on $520,607 (the total of (1) and (2)) commencing November 5, 2004. Post-decision interest shall run from the date of this decision.

Dated:

_____
Robert B. Harrison III
Chairman

I Concur:

_____
Michael W. Burns
Board Member

_____
Michael J. Collins
Board Member

Certification

COMAR 21.10.01.02 **Judicial Review.**

A decision of the Appeals Board is subject to judicial review in accordance with the provisions of the Administrative Procedure Act governing cases.

Annotated Code of MD Rule 7-203 **Time for Filing Action.**

**(a) Generally.** - Except as otherwise provided in this Rule or by statute, a petition for judicial review shall be filed within 30 days after the latest of:

(1) the date of the order or action of which review is sought;
(2) the date the administrative agency sent notice of the order or action to the petitioner, if notice was required by law to be sent to the petitioner; or
(3) the date the petitioner received notice of the agency's order or action, if notice was required by law to be received by the petitioner.

**(b) Petition by Other Party.** - If one party files a timely petition, any other person may file a petition within 10 days after the date the agency mailed notice of the filing of the first petition, or within the period set forth in section (a), whichever is later.

* * *

I certify that the foregoing is a true copy of the Maryland State Board of Contract Appeals decision in MSBCA 2402, appeal of P. Flanigan and Sons, Inc. under Maryland Aviation Adm. – BWI Pier A. Airfield Improvements Contract No. MAA-CO-01-005.

Dated:

_____
Michael L. Carnahan
Deputy Recorder