COMMONWEALTH OF PENNSYLVANIA

MARSICO CORPORATION, in its own name and right, and MARSICO CORPORATION, ex rel., for the use and benefit of PAT IONADI CORPORATION AND COST COMPANY	:	BEFORE THE BOARD OF CLAIMS
VS.	:	
COMMONWEALTH OF PENNSYLVANIA, STATE SYSTEM OF HIGHER EDUCATION	:	
VS.	:	
RDG BUSSARD DIKIS, INC	:	DOCKET NO. 3438

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FINDINGS OF FACT

PARTIES

1. Plaintiff, Marsico Corporation ("Marsico") is a corporation authorized to conduct business in the Commonwealth of Pennsylvania with its principal place of business located in Allison Park, PA. (Marsico Complaint, para.1)

2. Defendant, Commonwealth of Pennsylvania, State System of Higher Education ("SSHE"), is an agency of the Commonwealth of Pennsylvania, located in Harrisburg, PA. (SSHE Answer, para. 3)

3. Additional defendant, RDG Bussard Dikis, Inc. ("RDGBD"), is a corporation organized and existing under the laws of the state of Iowa with its principal place of business at 303 Locust Street, Des Moines, IA 50309. (RDGBD Answer, para. 2)

4. Pat Ionadi Corporation ("Ionadi") is a corporation organized and existing under the laws of the Commonwealth of Pennsylvania with its principal place of business at 4615 Butler Street, Pittsburgh, PA 15201. Ionadi was retained by Marsico to perform concrete work. (Marsico Complaint, para. 23; N.T. 72)

5. Cost Company ("Cost") is a corporation organized and existing under the laws of the Commonwealth of Pennsylvania with its principal place of business at 2400 Ardmore Boulevard, Pittsburgh, PA 15221-5298. Marsico retained Cost as its masonry subcontractor. (Marsico Complaint, para. 24; N.T. 72)

6. Slippery Rock University ("SRU"), a Pennsylvania university that is part of the SSHE, desired to build a new recreation center on its campus (the "Project"). (Marsico Complaint, para. 8)

7. The SSHE entered into a construction management agreement with Turner Construction Company ("Turner") to provide pre-construction and construction management services during the design and construction phases of the Project. (N.T. 1205)

8. Livi Steel ("Livi") was a subcontractor to Marsico that manufactured the structural steel and the embed plates for the Project. Livi also had the responsibility for making and submitting the shop drawings for the structural steel and the embed plates. (N.T. 430, 1092-1094)

9. Titusville Fabricators, Inc. ("Titusville") was a subcontractor to Marsico for the design and fabrication of the rebar for the concrete in various portions of the Project including the caissons, the grade beams, the spine wall, slabs, and other concrete walls. Titusville also had the responsibility for making and submitting the shop drawings for the rebars. (N.T. 171, 283-284)

10. Louis Marsico is the president and sole owner of Marsico Corporation. (N.T. 63)

11. Marsico is a general contractor that performs commercial, light industrial and institutional construction work. (N.T. 64)

12. Earl Turner was the chief estimator for Marsico on this Project and was not presented as a witness at trial. (N.T. 65)

13. Jack Berthold was the project manager for Marsico on the Project. (N.T. 79)

14. Mark Herron was the on-site superintendent for Marsico on the Project. His job was to manage Marsico's self-performed work and to coordinate the subcontractors' work so the Project would be completed without disrupting the other prime contractors. He was not presented as a witness at trial. (N.T. 79, 80, 267)

15. Bruce McDonald was the on-site SRU representative for the Project and participated in selecting RDGBD as the Project architect. He was not presented as a witness at trial. (N.T. 267, 1397)

16. Herbert F. Carlson was assistant vice president for facility services at SRU. (N.T. 1376)

17. James Ravez, SRU's director of contracts, was the representative of SSHE and SRU who negotiated the SSHE-RDGBD contract. He was not presented as a witness at trial. (N.T. 1306)

18. Steven Manukas was the representative of Turner for the Project. (N.T. 267, 1203)

19. Dana Damon, a project executive with Turner, was assigned to the field office in June 1998. (N.T. 1353-1356)

20. RDGBD retained the services of Charles Saul Engineering ("CSE") to serve as RDGBD's structural engineering consultant for the Project. (N.T. 414, 2394)

21. Timothy Korpela worked as a structural engineer for CSE and is a licensed engineer in the states of Iowa and Kansas. (N.T. 2595-2597)

22. Paul Klein was RDGBD's Project director. (N.T. 1415)

23. Eric Campbell worked for Ionadi as a concrete superintendent. (N.T. 985-986)

24. Raymond Sekowski worked for Cost as the Project manager. (N.T. 1156-1158)

25. Al Gerzewski was the detailer employed by Titusville to prepare the rebar shop drawings for the concrete components of the Project. (N.T. 905)

26. Phillip M. Apprill, the vice president and lead consultant for the McCally Group, testified on behalf of plaintiff as an expert in construction schedule analysis. His report is P.Ex. 860. (N.T. 1598-1789)

27. Eric P. Kachele, president of Kachele Group, testified on behalf of plaintiff as an expert in the field of structural engineering. His report is P.Ex. 875. (N.T. 1468-1597)

28. Andrew B. Rhodes, a principal and co-founder of Duggan and Rhodes, testified as an expert on damages on behalf of Ionadi and Cost. His reports are I.Exs. 1, 2 and 3 and C.Exs. 1 and 2. (N.T. 1808-1977)

29. Daniel J. Hellman, the managing partner in Case, Sabatini and Stephens, testified on behalf of plaintiff as an expert in construction cost accounting. He prepared a report, P.Ex. 866. (N.T. 2047-2103)

30. Michael Rollage, a partner in McCrory and McDowell, testified on behalf of plaintiff as an expert in the field of construction cost accounting and delay damages. His report is P.Ex. 864. (N.T. 2011-2259)

31. James T. Bufano, a principal and the president of Theobald Bufano Associates, testified on behalf of RDGBD as an expert on the engineering construction of a building. (N.T. 2954-3119)

32. Francis Brennan, an employee of Capital Project Management, Inc., testified on behalf of RDGBD as an expert on construction scheduling and construction management. (N.T. 3120-3630)

33. William Wolf, Jr., an employee of Capital Project Management, Inc., testified on behalf of RDGBD as an expert on cost accounting analysis. (N.T. 3431-3530)

34. Marsico filed this action in its own name and for the use and benefit of Ionadi and Cost. Neither Livi Steel nor Titusville Fabricators were ever parties to this action. (Marsico Complaint Caption; Board Finding)

THE PROJECT

35. Marsico's claims against SSHE arise out of the construction of the Aebersold Student Recreation Center located at Slippery Rock University pursuant to Contract Number UP-141.1 ("Marsico-SSHE Contract"). (P.Ex. 758)

36. The Project was composed of three major areas: Area A was the weight room and fitness center area, which is at the lower elevation; Area B included a swimming pool, locker facility, mechanical area, sundeck and offices; and Area C encompassed the primary gymnasium area with the running track suspended above. (N.T. 84-85)

37. The order of work on the Project provided that Marsico first had to do bulk excavation to get the building pad to proper elevation, and then install the foundation caissons. The structural grade beams of poured-in-place concrete were placed on top of the caissons, and on top of the grade beams was a spine wall that ran through the center of the building on an east-west axis. (N.T. 86-87; P.Ex. 128)

38. The spine wall was a poured-in-place concrete structure approximately 512 feet long, 18 inches wide and 25 to 40 feet high. There was an arc at the top of the wall. (N.T. 86-87; P.Ex. 938)

39. The spine wall served as the bearing wall for the structural steel beams and trusses that comprised the roof system for the Project. (N.T. 86-87)

40. The spine wall had various openings at different elevations to allow access between different areas of the building. (N.T. 92; P.Ex. 938)

41. Various structural components, including the roof system and canopies attached to the spine wall via anchors embedded within the concrete of the spine wall. The anchors were cast into the concrete so that the only visible element of the anchor was the head of the bolt where the steel beam connected to the spine wall. (N.T. 1209; P.Ex. 938)

42. Insulation was sandwiched in the spine wall through the use of mechanical fasteners, which were used to hold together the two widths of the concrete wall in certain locations. (N.T. 88-92; P.Ex. 940)

43. The spine wall was unique from a structural and architectural standpoint because of the insulation sandwiched within the spine wall, and because of the embedded anchors within the concrete wall that served as connections for various steel members. (N.T. 1209)

CONTRACT BETWEEN SSHE AND RDGBD

44. On November 19, 1995, the SSHE entered into a professional agreement with RDGBD ("SSHE-RDGBD Contract") for the performance of the architectural and engineering services for the Project. (P.Ex. 948)

45. The SSHE-RDGBD Contract included Riders A through F. (P.Ex. 948)

46. Under the SSHE-RDGBD Contract, RDGBD was obligated to ". . . provide plans and specifications that are adequate and sufficient to accomplish the purpose of the project." (P.Ex. 948, Rider E, Standards of Practice)

47. The SSHE-RDGBD Contract provided that RDGBD will provide responses to the contractor's submittals of shop drawings for approval within 15 days. (P.Ex. 948, Rider B, 2.2.609)

48. RDGBD prepared the Contract Documents that included architectural and structural specifications for the Project. The Contract Documents were provided to Marsico and the other prime contractors for bidding of the Project. (P.Exs. 772, 759, 759A)

49. The Contract Documents prepared by RGDBD were dated June 20, 1997 and were supplemented by various addenda that became part of the Contract Documents. (P.Ex. 772)

50. The Contract Documents prepared by RDGBD were released for bidding on October 7, 1997. (N.T. 1574)

51. For the SSHE-RDGBD Contract, SSHE used its standard form agreement and the terms are the same as for all SRU's design contracts. (N.T. 2234)

52. Paragraph 2.2.608 of Rider B states that:

> "Should the System be called upon by any prime contractor for additional compensation, or should it become necessary during the course of construction to issue change orders increasing the cost of the project, by reason of the failure, in either case, of the professional due to design errors and omissions and/or produce proper and coordinated plans, specifications and drawings, or any portion thereof relating to the project, in accordance with accepted standards and procedures, the professional shall be liable to the System for the difference between the amount of such extra costs or compensation, and what the System would have incurred had the design been proper."

(P.Ex. 948)

CONTRACT BETWEEN MARSICO AND SSHE

53. Marsico Corporation entered into a contract with SSHE on December 10, 1997 ("Marsico-SSHE Contract") for construction of the Aebersold Student Recreation Center located at Slippery Rock University. (N.T. 77; P.Ex. 758)

54. The amount of the Marsico-SSHE Contract was $6,892,000.00 (N.T. 78; P.Ex. 758)

55. Marsico was contractually required to perform its work within 365 calendar days from the date of Notice to Proceed. (N.T. 78; P. Ex. 758).

56. According to Paul Klein of RDGBD, RDGBD originally felt the construction period should have had a duration of 16 months. However, Turner Construction, SRU's construction manager, opined that the Project could be completed in 12 months. (N.T. 2407-2408)

57. SSHE issued a Notice to Proceed to Marsico on January 7, 1998. Marsico was to complete the Project by January 7, 1999. (N.T. 147, 262, 286; P.Ex. 62)

58. Once Marsico was notified that they were going to be under contract to build the Project, the Marsico chief estimator, Earl Turner and president, Louis Marsico, created a budget for the Project that consisted of detailed cost codes for tracking and monitoring their costs for self-performed work and for their subcontractors. (N.T. 82)

59. Marsico had the responsibility as the general contractor to coordinate the work of its subcontractors. (N.T. 635; P.Ex. 759).

60. When Marsico bid this Project, they bid the job to self-perform the concrete work. (N.T. 73)

61. Marsico ended up subcontracting the concrete work to Ionadi. (N.T. 74).

62. Marsico went from January 7, 1998 to February 20, 1998 without having the concrete subcontractor for the spine wall on-site and without any questions being raised by Ionadi about the construction of the Project. (N.T. 147-148, 799-780)

63. Marsico did not schedule any meetings between itself, Ionadi and Titusville prior to February 20, 1998. (N.T. 148)

64. The daily log of Ionadi reflects the general occurrences and the performance of the contractor's work. This log shows that Ionadi was not on the Project site until February 20, 1998. (N.T. 146)

65. Eric Campbell of Ionadi was working on another job and did not arrive to start work on the Project until February 20, 1998, when he first started looking at the drawings. (N.T. 799-800, 1112-1113)

66. The Project Manual is a part of the Marsico-SSHE Contract and contains Bidding Requirements, Conditions of the Contract and General Requirements with which Marsico was required to comply as a part of its contract. (P.Ex. 758, Rider A and P.Ex. 759).

67. Under the Marsico-SSHE Contract, SSHE was obligated to provide Contract Documents from which the Project could be built. (P.Ex. 758 and 729)

68. The Marsico-SSHE Contract provided that the Professional (RDGBD), as SSHE's agent, had the duty to interpret the Contract Documents, to approve all shop drawings, to attend job conferences and review the progress of the construction. (P.Ex. 758, Rider B, 1.2)

69. Under the Marsico-SSHE Contract, Marsico was responsible for preparing construction and submittal schedules for the Project. (N.T. 79; P.Ex. 758, Rider B, 3.8 and 3.9)

70. The Marsico-SSHE Contract provided that Marsico had specific scheduling responsibilities that were set forth in two specification sections: 01300 Submittals, E. Contractors Submittal Schedule and 01315, CPM Schedules and Reports. (P.Ex. 758, Rider B, 3.8.103 and 3.9.100; P.Ex. 759, Project Manual, Div.1-General Requirements Sections 01300 and 01315)

71. Specifications in the Marsico-SSHE Contract required Marsico to engage a scheduling consultant experienced in CPM scheduling and knowledgeable in construction means, including methods used in mechanical and electrical construction. (N.T. 852; P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01315D, Quality Assurance)

72. The specifications required that Marsico was to submit for SRU approval a finalized Critical Path Method (CPM) Project schedule, approved and authorized by all of the prime contractors within 30 days of the Notice to Proceed, i.e. February 6, 1998. The CPM Project Schedule was to be a time-scaled summary network diagram that indicated for each task

the description, duration, early and late start and finish dates, float time, and critical path for completion. Marsico was to update the CPM schedule monthly and provide a written narrative report. (P.Ex. 759, Project Manual, Div. 1-General Requirements, Sections 01315 H and I)

73. Marsico failed to engage a qualified scheduling consultant of the type described by the contract. Instead, Jack Berthold, Marsico's project manager, prepared the Construction Schedule. The schedule gave beginning and end dates for critical items of work but no critical path or float time information. (N.T. 852; P.Ex. 128)

74. In his testimony, Mr. Berthold did not place much credence in the scheduling process. When asked about the problems with the Construction Schedule and its revisions, he stated, "They weren't realistic. We reduced some times just to appease the owner and get the schedules completed on time." (N.T. 602)

75. Marsico distributed its initial preliminary project schedule, dated January 27, 1998, to all prime contractors at Job Meeting #1 on January 27, 1998. This schedule contained 85 activities, without reference to any specific area, and a Project finish date of January 7, 1999. (P.Ex. 71- Turner's Job Meeting #1 minutes dated Jan. 27, 1998; D.Ex. 315)

76. On February 26, 1998, Marsico transmitted its revised preliminary schedule to all other prime contractors. This schedule contained 164 activities, with reference to Areas A, B, C, and D. (A, B and C referring to areas of the building and D referring to site work around the building such as paving and landscaping). (D.Ex. 315, p.18)

77. On March 24, 1998 at Job Meeting #5, Marsico provided its completed project schedule ("Construction Schedule") in chart form to SSHE and all prime contractors. This schedule also contained 164 activities with references to the four construction areas of the building and was subsequently signed by the other prime contractors, as well as SRU and Turner. (P.Ex. 128, 921; D.Ex. 315, p.19)

78. Marsico failed to include any procurement activities (submit, approve, fabricate and deliver) in the Construction Schedule. (P.Ex. 128; D.Ex. 315)

79. Marsico failed to prepare the Construction Schedule required for the Project in a timely or complete way. It was not a CPM schedule prepared by a CPM knowledgeable consultant. It was not until March 24, 1998, that Marsico finally distributed a copy of a complete Construction Schedule to all parties. That was one and a half months late. (P.Ex. 128; D.Ex. 315; Board Finding)

80. As of March 24, 1998, Marsico's work was already several weeks behind. This delay made the Construction Schedule unrealistic as soon as it was produced, and not useful for determining how far behind the Project was, or how to catch up. For instance, the March 24, 1998 Construction Schedule indicated that Ionadi was to start the spine wall in Area C on March 18, 1998, but on that date Ionadi's crew was still working in Area C on the interior grade beams. Ionadi did not finish those interior grade beams until April 24, 1998. (P.Ex. 128; D.Ex. 315; Board Finding)

81. The Construction Schedule was not updated monthly. (Board Finding)

82. The Marsico-SSHE Contract Specifications provided that it was Marsico's obligation to prepare and complete the schedule of submittals within 10 days of the date required for establishment of its Construction Schedule and it had to include specific information such as the name of each subcontractor, the description of the work covered, the scheduled date for each submittal and resubmittal and the scheduled date for the architect's final release or approval. (P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01300 F, Submittal Schedule).

83. The Marsico-SSHE Contract Specifications provided that Marsico had an obligation to comply with the submittal procedures including allowing two weeks for review of each submittal by RDGBD and coordinating the submittals so there was sufficient time for review and the installation would not be delayed. (P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01300 D, Submittal Procedures)

84. The RDGBD–SSHE Contract provided that RDGBD was allotted 15 days for review of each submittal. (P.Ex. 948, Rider B, 2.2.609)

85. The Marsico-SSHE Contract Specifications provided that Marsico was obligated to submit shop drawings for the fabrication and installation of various elements of the Project and coordination drawings for the integration of different construction elements. (P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01300 H, Shop Drawings Procedure)

86. The purpose of the submittal schedule was to advise the design professional (RDGBD/CSE) when to expect receipt of shop drawings and to coordinate same for review in order to have them done well enough in advance so as not to hold up work on-site. (N.T. 1718; Board Finding)

87. The submittal schedule was to be updated after each meeting or activity where revisions had been recognized or made. (P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01300 D, Submittal Procedures)

88. Marsico's submittal schedule was due 10 days after the date established for the completed Construction Schedule, i.e. February 16, 1998. (F.O.F. 85; Board Finding)

89. Marsico provided its Submittal Schedule on March 10, 1998. It was nearly a month late, failed to contain the information required and was out of date when it was produced; see for example, grade beam and Area C spine wall shop drawings scheduled for initial submittal on 12/11/97 and 2/13/98, when in fact the grade beam shop drawing had not been submitted until 2/11/98 and the Area C spine wall drawings had not been submitted as of 3/10/98. (N.T. 3188; P.Ex. 579; D.Ex. 30)

90. Marsico's failure to properly schedule the Project contributed significantly to the delay and overall lack of coordination on the Project. (Board Finding)

91. Herbert Carlson, assistant vice president for facility services at SRU, stated that SRU was dissatisfied with Marsico's performance on this Project. In his opinion, they did an unsatisfactory job in coordinating the schedules. (N.T. 1396-1407)

92. Stephen Manukas, Turner's construction manager, stated that Mark Herron, Marsico's project manager, was not an effective manager. (N.T. 1329-1330)

93. Eric Campbell, the Project superintendent for Ionadi, was critical of the manner in which Marsico ran this Project. (N.T. 1130-1133)

94. Dana Damon of Turner had concerns that Marsico was not coordinating with the subcontractors on the Project, which contributed to delays in the Project. Mr. Damon also opined that Ionadi should have been on the job sooner than late February 1998 since Marsico's Construction Schedule called for work on the spine wall to begin in March 1998. (N.T. 1372)

95. On February 16, 1998, Steven Manukas of Turner and Bruce MacDonald from SRU sent a letter to Jack Berthold advising Marsico that SRU and Turner had serious concerns about the way Mr. Berthold was managing the Project. They did not believe he was dedicated to the Project. (N.T. 856-858)

96. RDGBD's damage claims expert, Francis Brennan, testified that in his opinion construction delays were caused by Marsico. (N.T. 3308-3309)

97. Through the first four months of the Project, Marsico and its subcontractors were critical of the accuracy and completeness of the Contract Documents. (N.T. 405)

98. Marsico and Turner told SRU that they wanted the structural drawings to be reissued because there had been many modifications to them. (N.T. 405-406)

99. On May 20, 1998, SRU directed RDGBD's design team to reissue the structural drawings. (N.T. 2757-2758; P.Ex. 88)

100. RDGBD reissued the structural drawings and sent them to SRU and Turner on July 15, 1998. (N.T. 543)

101. Turner did not distribute the revised structural drawings to Marsico until August 6, 1998. (N.T. 581; P.Ex. 322)

102. The Contract Documents were not flawless. They contained some errors and inconsistencies. (Board Finding)

103. The Contract Documents were reissued because of the number of mark-ups and modifications on them. (N.T. 405-406; Board Finding)

104. The reissuance of the Contract Documents, in and of itself, does not establish that they failed to exhibit the standard of reasonable care, skill and diligence expected of a design professional in the construction industry. (Board Finding)

CONSTRUCTION OF THE RECREATION CENTER

Preparation for Construction

105. When Marsico bid the contract, it planned to perform the concrete work itself. Marsico later changed its mind and subcontracted the rebar work and the concrete work to two different firms, Titusville and Ionadi. (N.T. 719-720, 3088-3089)

106. Marsico sent Ionadi a written subcontract in January 1998, but the contract was not executed until March 13, 1998. (N.T. 156)

107. Defense witness, Structural Engineer Tim Korpela of CSE, stated that having two different subcontractors for rebar work and concrete work did not lend itself to good coordination. (N.T. 2843-2845)

108. The critical path is a list of the activities that define the duration of any project. Any delay to a critical path activity will delay the end date of a project. (N.T. 1613-1614; P.Ex. 860; Board Finding)

109. Because Marsico had 12 months to build an 82,000 square foot building with multiple prime contractors, it was important that there be continuous construction activity on the spine wall and all other critical path items to enclose the building. (N.T. 104)

110. The critical path for the Project went through Area C. It was important to complete the spine wall in Area C first in order to get Area C enclosed before the winter weather conditions started. (P.Ex. 860, p. 3)

111. The critical path of construction for this Project entailed getting to and building the spine wall, building the load bearing masonry walls, connecting the structural steel and closing the roofs in the various areas (Area C in particular) then continuing with MEP and interior finish. (P.Ex. 128, 860; Board Finding)

112. The critical path for getting to and building the spine wall included excavating the site; pouring the caissons; producing rebar shop drawings for the grade beams; fabricating/delivering the rebars for at least the interior grade beams affecting the C-line (the plan line along which the spine wall was to be built); forming and pouring at least the interior grade beams affecting the C-line; producing rebar shop drawings for the spine wall; and fabricating and delivering rebar and ties for the spine wall before construction of the spine wall could begin.(N.T. 907-910; P.Ex. 128, 860; Board Finding)

113. On this Project, Marsico's method of preparing the shop drawings was to complete the shop drawings for one element of work, wait until all the shop drawings were

approved on that process, and then start the shop drawings for the next construction area. (N.T. 151, 908-909)

THE FOUNDATION PORTION OF THE PROJECT

A. Site Excavation and Construction of the Caissons

114. Titusville started work on the rebar shop drawings in December 1997. (N.T. 282)

115. Titusville prepared the caisson rebar shop drawings that were submitted for approval on January 13, 1998. The shop drawings were approved on February 4, 1998. (N.T. 287; P.Ex. 579)

116. Marsico did bulk excavation to get the site and the building pad to proper elevation, and then proceeded to have the deep foundation caissons drilled. (N.T. 86)

117. There is no delay attributable to the excavation or caisson work on the Project. (P.Ex. 860; Board Finding)

B. Preparation for Grade Beams Construction

118. Following its preparation of the caisson rebar shop drawings, Titusville began to prepare the grade beam rebar shop drawings. (N.T. 289)

119. Titusville prepared its grade beam rebar shop drawings by using the original Contract Documents. (N.T. 3040)

120. The rebar shop drawings for the grade beams were to be submitted for approval by January 14, 1998. (P.Ex. 860, p. 5; P. Ex. I-1, p. 10)

121. Titusville submitted the grade beam rebar shop drawings for approval on February 10, 1998 and they were reviewed and approved by RDGBD on February 23, 1998. (N.T. 307; P.Ex. 579, 860; P.Ex. I-11)

122. The grade beam rebar shop drawings were prepared by Titusville's detailer, Al Gerzewski. (N.T. 905-910)

123. Mr. Gerzewski usually found the dimensions for the grade beams on a grade beam schedule, but RDGBD did not supply one. ((N.T. 910-911, 921)

124. Mr. Gerzewski had to make his own grade beam schedule by referring to several aspects of the Contract Documents and resolving inconsistent or missing information as best he could. (N.T. 911-921)

125. No testimony was offered to indicate that either SSHE or RDGBD was obligated under their contracts to specifically provide a grade beam schedule. (Board Finding)

126. Mr. Kachele, Marsico's own expert, testified that, although helpful, the requisite information could be placed on grade beam plans without a schedule. (N.T. 1488-1490)

127. While a grade beam schedule may have made Mr. Gerzewski's work easier, this requirement was not included in the SSHE-Marsico Contract or the SSHE-RDGBD Contract. (P.Ex. 758, 759, 948)

128. Other than lack of a grade beam schedule, Mr. Gerzewski and Mr. Kachele, plaintiff's expert engineer, identified several problems with the original grade beam plans in the Contract Documents. (N.T. 911-921, 1485-1504)

129. There were over a dozen examples of missing or inconsistent grade beam sizing, elevation, step location and/or section cuts in the Contract Documents. (N.T. 1485-1504; P.Ex. 772; Board Finding)

130. The missing or inconsistent grade beam information includes two significant examples of sizing/elevation problems with beams along the critical C-line (the plan line along which the spine wall was to be built). (N.T. 1492-1504; P.Ex. 772; Board Finding)

131. A comparison of these two claimed deficiencies noted above with the grade beam information in the Contract Documents (S1.1 – S1.3) and the grade beam shop drawings dated February 10, 1998, shows:

1. Titusville could not determine the depth of the grade beam along C-line between the 2-10 column lines without ignoring an incorrect bottom elevation provided on the plan or making extraordinary assumptions as to the extent of section cut details provided elsewhere; and

2. There were incorrect top elevations given for the grade beam all along the 26 column line, for C-line between 24 and 26 column line and A-line between 23 and 26 column line (because no top elevations were specifically noted, the default height of (-0'-8") was incorrectly indicated by the Contract Documents).

(N.T. 1492-1504; P.Ex. 772; P.Ex. 773, Drawings 2 & 3; Board Finding)

132. In summation, the Board finds that the grade beam plans and information provided in the Contract Documents were not complete and accurate and did not exhibit the level of reasonable care, skill and diligence required of a design professional in the construction industry. (P.Ex. 772; Board Finding)

133. The problems with the grade beam information in the Contract Documents caused a delay in the preparation and submittal of the grade beam rebar drawings from January 14, 1998

to February 10, 1998. (N.T. 307-309, 927-928; P.Ex. 773, Drawings 2 & 3; P.Ex. 860 pp. 4-5; Board Finding)

C. Actual Grade Beam Construction

134. In January 1998, Marsico installed two rock entrances to the site. When Ionadi arrived in late February, the entire access road had not been completed. (N.T. 638-639)

135. Upon arriving on the site on February 20, 1998, Ionadi immediately complained to Marsico about access to the Project site due to Marsico's failure to prepare adequate roads so that Ionadi could do its work. (N.T. 174; P.Ex. 768)

136. Ionadi continued to complain to Marsico during the March through May period about the muddy conditions at the site and the inadequate road access that impeded Ionadi's work. (N.T. 175, 870-872)

137. On March 6, 1998, Eric Campbell's daily log for Ionadi stated that, "Jack [Berthold] won't supply any stone for road access!! Also, no pipe in creek for access and to keep water controlled as we dig beams." (N.T. 871-872; P.Ex. 768)

138. Under the Construction Schedule, Ionadi was scheduled to start prep work to pour the grade beams on February 26, 1998, and to complete the interior grade beams in Area C by March 13, 1998. (P.Ex. 128)

139. Ionadi was working on another job and did not review Project plans or information until it arrived at the site on February 20, 1998. This did not allow sufficient time for Ionadi to review the plans and get answers to any questions they may have had prior to their scheduled start (given the 14-15 day turnaround for design professional response provided by contract). (N.T. 1112-1114; Board Finding)

140. There was no communication or coordination between Titusville (rebar) and Ionadi (concrete). Both subcontractors reported directly to Marsico. (N.T. 739)

141. Ionadi did not finish these interior grade beams in Area C until April 24, 1998. (P.Ex. 768)

142. The delay in completing construction of the interior grade beams is attributable to other factors in addition to problems with the grade beam plans, including inter alia, Ionadi's late start, Marsico's poor coordination and scheduling of the Project, and the condition of the roads to the Project, which were muddy and which greatly impeded Ionadi's access to perform its grade beam work. (Board Finding)

D. Delay from Grade Beam Portion of Project

143. The interior grade beams upon which the spine wall was to be built were substantially complete by April 24,1998, despite the problems noted above. (P.Ex. 768)

144. However, the rebar shop drawings for the spine wall, a necessary prerequisite for the commencement of spine wall construction, were not even presented to SSHE and RDGBD for review until April 20 - 28, 1998 (and were not approved until June 10, 1998). (P.Ex. 579)

145. Thus, it was delay in the spine wall rebar shop drawings, not the grade beam construction itself, that was the operative factor in delaying commencement of spine wall construction and completion of the Project. (P.Ex. 860, pp. 5-6; Board Finding)

146. Accordingly, the problems associated with actual construction of the grade beams did not cause delay in the construction of the spine wall and, hence, did not cause delay in completion of the Project. (N.T. 1042-1044; Board Finding)

147. The grade beam shop drawings needed to be finalized so that the detailers knew the correct elevations and steps of the grade beams along C-line in order to begin shop drawings for the spine wall, which rested on top of these grade beams. (N.T. 929-930, 1007; Board Finding)

148. The grade beam drawings were initially to be submitted by January 14, 1998, but because of incomplete and/or inaccurate information in the Contract Documents were delayed until February 10, 1998. (F.O.F. 133; Board Finding)

149. This delay of 27 calendar days in producing and submitting the grade beam drawings caused a corresponding 27 day delay in commencing and producing the spine wall rebar shop drawings, construction of the spine wall and completion of the Project. (N.T. 928-930; Board Finding)

150. After this 27 day delay, commencement of the spine wall rebar shop drawings should have begun on February 11, 1998, upon Titusville's completion and submittal of the grade beam drawings, but because of the uncertainty with several pieces of information, including the grade beam elevations, Titusville turned its attention to other drawings and did not return to the spine wall rebar drawings until March 20, 1998. (N.T. 928-933; P.Ex. 860; Board Finding)

151. The Board agrees that Titusville and Marsico were justified in delaying start of the spine wall rebar drawings until its base line elevations on the grade beams along C-line were clarified. (N.T. 929-930; P.Ex. 860; Board Finding)

152. However, we also find that February 23, 1998, the date the grade beam shop drawings were corrected and returned by RDGBD (with all relevant elevations and sizes affecting C-line corrected) was the date Titusville should have commenced the spine wall rebar drawings. Accordingly, an additional 12 days of delay should be added to the 27 noted above. (P.Ex. 773, Drawings 2 & 3; Board Finding)

153. In sum, the Board finds 39 days of delay attributable to incomplete and/or inaccurate grade beam design information in the Contract Documents that directly caused delay

in commencing the spine wall rebar drawings, construction of the spine wall and completion of the Project and delayed overall completion of the project. (P.Ex. 860; Board Finding)

THE SPINE WALL PORTION OF THE PROJECT

A. Schedule for Construction

154. The spine wall was made of reinforced concrete. The total length was 512 feet. (N.T. 190; P.Ex. 768)

155. Ionadi was to construct the spine wall, and the Construction Schedule showed that it was to begin on March 16, 1998, and conclude on July 22, 1998. (P.Ex. 128)

156. Ionadi had placed and backfilled the interior grade beams in Area C by April 24, 1998, but it did not begin the first pour of concrete for the spine wall until July 7, 1998. (P.Ex. 768)

157. According to Eric Campbell of Ionadi, the work on the grade beams did not delay the start of work on the spine wall because the spine wall rebar shop drawings were not approved until June 10, 1998. (N.T. 1042-1044)

158. On December 2, 1998, Ionadi poured the last piece of the spine wall between 1 - 2 lines in Area A. (P.Ex. 768)

159. Marsico underestimated the length of time required for the spine wall construction in its Construction Schedule. Construction of the spine wall actually took five months instead of the four months that Marsico had planned. (P.Ex. 128, 768; Board Finding)

B. Delay in Starting the Spine Wall

160. Before Ionadi could begin constructing the spine wall, Titusville had to prepare the spine wall rebar shop drawings ("SW Rebar Drawings") and submit them to RDGBD for approval. (N.T. 1042-1044; P.Ex. 758, Rider B, 3.9.102)

161. Moreover, RDGBD had to approve these drawings before Ionadi could start building the wall. (P.Ex. 758, Rider B, 3.9.102)

162. Al Gerzewski, Titusville's detailer, prepared the SW Rebar Drawings for the spine wall. (N.T. 934)

163. Titusville prepared its SW Rebar Drawings by using the original Contract Documents. (N.T. 3040)

164. The preparation of the SW Rebar Drawings could not commence until the grade beam shop drawings were approved because that established the top of grade beam elevations

along C-line which was needed to determine spine wall starting elevations and rebar lengths. (F.O.F. 147, 151, 152)

165. When Mr. Gerzewski told Marsico that he could not complete the rebar drawings for the spine wall because insulation information was missing, Mr. Berthold directed him to start work in Area B and prepare those shop drawings. (N.T. 351)

166. Marsico submitted its SW Rebar Drawings (First Submission) for the first and second lifts of the spine wall in Area C to RDGBD for review, on April 22, 1998, and April 28, 1998, respectively. For some reason, there was a delay of over 11 days between when Marsico received the shop drawings from Titusville and when RDGBD received them. (N.T. 1749; 3203-3204)

167. RDGBD did not review and return the SW Rebar Drawings until May 15, 1998, 17 days later. Given the 15 day turnaround time for professional review, RDGBD should have returned the shop drawings on May 13, 1998. (P.Ex. 579, 758, 759)

168. The SW Rebar Drawings were returned to Marsico, marked "Revise and Resubmit", on May 15, 1998. (N.T. 3204; P.Ex. 759)

169. After resubmission of the SW Rebar Drawings in the end of May 1998, they were approved as noted by RDGBD on June 10, 1998. (N.T. 3204)

170. More important than this initial two day delay was the fact that RDGBD failed to provide the critical information that Titusville asked for and that it needed to complete these SW Rebar Drawings with RDGBD's first review. (P.Ex. 773, Drawings 12, 13, 14, 15; Board Finding)

171. The original Contract Documents were unclear as to the specific limits of insulation in the spine wall and the corresponding pier and tie configuration details. Some of the details given showed insulation where there was to be none and vice versa. (N.T. 930-934, 2659-2673; P.Ex. 772, 773; Board Finding)

172. RDGBD's structural engineer for the Project, Mr. Korpela, provided comments on the first submission of the SW Rebar Drawings and then marked them "Revise and Resubmit." (P.Ex. 773)

173. Drawings 12, 13, 14 and 15 of the First Submission of the SW Rebar Drawings addressed various aspects of the spine wall, including detail as to the rebar reinforcing pattern and the configuration of the reinforced columns running vertically within the spine wall (i.e. piers). (P.Ex. 773)

174. The piers were reinforced columns running vertically within the spine wall. These piers were typically located at the numbered column lines 1 to 26. (P.Ex. 773)

175. Different tie configurations had to be used in the piers depending upon whether the piers were insulated or uninsulated. Where there was no insulation in the wall, a one piece tie was used and where there was insulation, a multi-piece tie was used. (N.T. 930-932; P.Ex. 773)

176. Mr. Gerzewski, the Titusville detailer, said he was delayed in preparing the rebar drawings for the spine wall because of uncertainty regarding limits of insulation and he could not tell whether the piers were insulated or not. (N.T. 929-932; P.Ex. 773)

177. Mr. Gerzewski did not know which ties to show in his shop drawing because he did not know where insulation in the spine wall started. (N.T. 931)

178. Drawing 12 dealt primarily with detail for the spine wall from column lines 9 through 26 (to the east end). Although the detail focused on the spine wall from the ground level to the mezzanine level (the first lift), there were also some details for the wall from the mezzanine to the top. (P.Ex. 773)

179. Drawing 13 provided similar detail for the spine wall from column line 9 to column line 1 and west to the end of the wall (including the curved portion on the top of the spine wall). (P.Ex. 773)

180. Drawing 14 provided additional detail for the spine wall from column line 9 through column line 26 and from the mezzanine level to the top of the wall. (P.Ex. 773)

181. Drawing 15 provided similar detail for the spine wall above the mezzanine level for column line 9 to column line 1 (to the west end, including the arc) with a reference stating, "See Drawing 13 For the First Lift Reinf." (P.Ex. 773)

182. Mark-ups to the First Submission of SW Rebar Drawing Nos. 12, 13, 14 and 15 indicated solid piers and corresponding solid pier single ties as the configuration for <u>all</u> the piers (except for the pier at the bridge) from the top to the bottom of the spine wall. This was not correct. (P.Ex. 773; P.Ex. 942; Board Finding)

183. On Drawing 13, Titusville provided "Pier details" noting the two types: an Exterior Pier (Exposed) which showed a pier with insulation utilizing 6-#6 rebar and a multi-piece tie configuration. It also showed an Interior Pier (Non-exposed) with no insulation utilizing 6-#6 rebar and a 1 piece tie. (P.Ex. 773)

184. The importance of these pier details is that a multi-piece tie configuration was needed in place of the 1 piece tie wherever insulation was to be placed between the concrete portions of the spine wall. (N.T. 930-932; P.Ex. 773; Board Finding)

185. Next to these "Pier Details," Titusville made a request to the design professional: "Please, Please Provide Information As To Where Rigid Insulation Begins and Ends, Needed For Pier Types!!!" (P.Ex. 773)

186. On Drawing 14, Titusville provided similar pier details, which noted that there were 26 places for these piers to be located and asked, "Please Provide Information As To Were (sic) Rigid Insulation Begins and Ends, Needed For Pier Types and Ties." (P.Ex. 773)

187. Mr. Korpela responded to Titusville's pleas for more information as follows:

(A) On Drawing 13, Mr. Korpela labeled the Exterior Pier detail as drawing detail 26/13 and referenced this to the Contract Documents detail 26/S7.5 (Wall Reinf. A Plan). This rendering of an insulated pier was apparently correct and matched the Contract Documents detail at 26/S7.5.

(B) On Drawing 14, Mr. Korpela made no change to the Exposed (Exterior) Pier detail and responded to the request to provide information as to where the rigid insulation for the piers begins by making the comment that the Exposed Pier detail (i.e. the insulated pier detail) is only to be used at the bridge.

(C) On Drawing 13, Mr. Korpela circled ("clouded") the Interior (Non-exposed) Pier detail, corrected it to show it as 8-#8s retaining a single tie configuration and solid throughout (no insulation), labeled this drawing detail 15/13 and referenced Contract Documents detail at 15/S7.3 (Section, a Spine Wall). This rendering of a solid pier, as initially presented by Titusville, was apparently incorrect and did not match the detail given by the Contract Documents at 15/S7.3. Mr. Korpela correctly changed the drawing detail for the solid piers from 6-#6s to 8-#8s.

(D) On Drawing 14, Mr. Korpela changed the Exposed Pier (solid pier) detail to 8-#8s and he noted, "See 15/13."

(E) Mr. Korpela proceeded to annotate the SW First Submission Drawings 12, 13, 14 and 15, indicating that the only pier with insulation in the spine wall (26/13 detail) would be at the bridge between column 1 and column 2. He noted that all other piers, both below the mezzanine level (originally to be the first of only two concrete lifts) and above, are shown via section cuts and notes referencing 15/13 to be solid piers.

(F) Other than the mark-ups noted above, Mr. Korpela ignored the request for information as to the limits of insulation.

(P.Ex. 773)

188. These mark-ups to the Titusville SW Rebar Drawings 12, 13, 14 and 15 (First Submission) indicating solid piers and corresponding solid pier single tie configurations for all

tne piers (except for the pier at the bridge) from the bottom to the top of the spine wall were non-responsive and misleading. (P.Ex. 773, 942; Board Finding)

189. Although the limits of insulation would not alter the number or size of the rebar in the vertical spine wall piers (8-#8s) nor horizontally along the spine wall, it would significantly alter the type of rebar tie configuration needed to deal with the insulation sandwiched between the two sides of the concrete in the spine wall. (N.T. 929-932, 2661-2673; P.Ex. 773; Board Finding)

190. It also impacted where the rebar would end for the first lift and begin for the second and third. (N.T. 930-932, 2661-2673; P.Ex. 773; Board Finding)

191. Titusville needed to know the limits of insulation in the spine wall in order to properly detail the spine wall pier tie configurations and rebar lengths for the respective lifts. (N.T. 930-954, P.Ex. 773; Board Finding)

192. Titusville needed to identify where the pier and tie configuration would change from solid to insulated. This was a legitimate and important question posed by Titusville to RDGBD, and the answer was due on May 13, 1998. (N.T. 930-54; P.Ex. 773; Board Finding)

193. Mr. Korpela made his response on May 15, 1998, ("DP Response of 5/15/98") and created confusion, frustration and delay for Titusville in its effort to finish the SW Rebar Drawings. This, in turn, delayed Ionadi in its effort to construct the spine wall. (P.Ex. 773; Board Finding)

194. On May 29, 1998, Titusville made the Second Submission of its SW Rebar Drawings to RDGBD, and on June 10, 1998, Mr. Korpela returned them with the notation, "Make Corrections Noted." (P.Ex. 579, 773)

195. Titusville had provided three pier details on Drawing 20 along with a Pier Schedule and a "Spine Wall Elevation" showing where it understood the limits of insulation were located. The three pier details included: 1) 26/20, the Pier Bridge Span (carrying over the 6-#6/ multi-piece tie/ insulated pier from 15/13 in the First Submission); 2) 15/20, the Non-Insulated Area Pier (carrying over Mr. Korpela's correction to 8-#8s/ piece tie/ solid pier from 15/13 in the First Submission; and 3) 15A/20, Insulated Area Pier (combining the correction to 8-#8s but showing insulation and a multi-piece tie configuration). (P.Ex. 773)

196. The Pier Schedule keyed off of the Spine Wall Elevation in an attempt to clarify where the piers would be insulated with multi piece ties (15A/20) and where they would be solid with 1 piece ties (15/20). (P.Ex. 773)

197. When RDGBD returned this SW Rebar Drawing Second Submission, Mr. Korpela specifically noted that he had not reviewed the limits of insulation on the Spine Wall Elevation, Drawing 20. (P.Ex. 773)

198. Mr. Korpela did remove several 15/20 solid piers from the first lift. Also, he added 15/20 (solid pier) detail to the second and third lifts (Drawings 12 and 13, Second Submission), several of which showed solid piers in areas ultimately containing insulation (e.g. column lines 23-26), and he made no section cuts at all utilizing the 15A/20 detail although there were ultimately several of these in the wall. (P.Ex. 773)

199. We therefore find that Mr. Korpela's response to the SW Rebar Drawing Second Submission failed to provide the limits of insulation and continued the confusion and uncertainty regarding insulation and pier ties in the upper portions of the spine wall. (P.Ex. 773; Board Finding)

200. In fact, RDGBD did not resolve the limits of insulation issue until July 29, 1998. (N.T. 1062-1063, 1567)

201. We further find that the Contract Documents were not complete and accurate with respect to the limits of insulation in the spine wall and did not exhibit the reasonable care, skill and diligence required of a design professional in the construction industry. (P.Ex. 772, 773; Board Finding)

202. Similarly, we find Mr. Korpela's response to Titusville's requests for information was not accurate and complete and failed to exhibit the reasonable care, skill and diligence required of a design professional in the construction industry. (P.Ex. 773; Board Finding)

203. We find that the need for a Second Submission of the SW Rebar Drawings and the delay in approval of these drawings were due primarily to the deficiencies in spine wall information provided in the Contract Documents, as noted immediately above. (P.Ex. 772, 773; Board Finding)

204. The Board finds that the incomplete and/or inaccurate information in the Contract Documents respecting the limits of insulation, corresponding pier and tie configurations and lift heights delayed approval of the SW Rebar Drawings and, in turn, caused a delay in starting to pour the spine wall. (P.Ex. 860, p. 6; Board Finding)

205. The Board finds that this delay began on May 13, 1998, when RDGBD's response to the SW Rebar Drawing First Submission was due and ends on June 10, 1998, the date when Marsico received approval of the SW Rebar Drawing Second Submission, for a total delay of 28 days. (P.Ex. 579; Board Finding)

206. This delay of 28 days, in turn caused a 28 day delay in construction of the spine wall and a corresponding 28 day delay in final completion of the Project. (P.Ex. 860; Board Finding)

D. Actual Spine Wall Construction

207. Originally, three lifts of concrete were scheduled to be done to create the spine wall; one lift for the solid bottom of the wall; then one lift was to be done for one side of the

insulated upper portion of the wall; and finally a third lift would be made to create the other side of the insulated upper portion of the wall and the cap enclosing the top of the wall. (N.T. 577-578, 1069; P.Ex. 946)

208. In June 1998, Ionadi was still not sure where the insulation started in the spine wall, so it decided to add an additional lift to keep the job moving. Marsico, Titusville and Ionadi had intended for the first lift to go up to the bottom of the insulation but had to make the first lift to a lower elevation because the limits of insulation had not yet been established. (N.T. 577-578, 1070)

209. The decision by Marsico and its subcontractor Ionadi to make an extra lift was a good faith and practical reaction on their part to allow them to commence pouring the spine wall up to an elevation they believed would not be affected by insulation while they awaited clarification from RDGBD regarding the insulation limits. (N.T. 1069-1070; Board Finding)

210. Inserting a 4th or "extra" lift in the spine wall process eliminated most of the delay in the subsequent pouring of the spine wall due to this uncertainty. (N.T. 577-579; Board Finding)

211. According to Mr. Campbell's testimony, it appears that the extra concrete pour extended from column line 21 to the midpoint of column lines 24 and 25, an approximate distance of 70 feet. (N.T. 1137-1139; P.Ex. 942)

212. Although the limits of insulation were not finally resolved until July 29, 1998, Marsico and Titusville were able to design, fabricate and deliver rebar to the site after the June 10, 1998 approval of the SW Rebar Drawings in order to begin pouring the first lift of the spine wall by July 7, 1998. (P.Ex. I-11; P.Ex. 768; Board Finding)

213. On June 18, 1998, Ionadi's log shows that it unloaded the rebars for the spine wall. On June 22, 1998, it started placing the rebar for the spine wall. On July 3, 1998, it continued placing the rebars and starting placing the ECCO forms to prepare for the first lift of the spine wall. (P.Ex. 768)

214. On July 7, 1998, Ionadi finished the forms and the rebars and began the first lift of the spine wall, pouring the first section from 26 line to 24 line. (P.Ex. 768)

E. Richmond Anchors

215. Marsico was responsible for ordering the Richmond Anchors. Because Marsico had ordered the wrong anchors and then had trouble with its supplier, it delayed Ionadi's work on the spine wall from June 26, 1998 to June 30, 1998. Ionadi had to stop work during that period. (N.T. 1131-1133)

216. On June 30, 1998, Ionadi's log indicates it received the Richmond Anchors for the spine wall. (P.Ex. 768)

217. On July 1, 1998, Ionadi's log indicates it was still waiting for the Richmond Anchors for the second pour of the spine wall and the rebars for the third pour. (P.Ex. 768)

218. On July 20, 1998, Ionadi set the Richmond Anchors and the insulation on the inside of the spine wall at the 24-26 line and got the panels ready for the next three pours of the spine wall. (P.Ex. 768)

219. On August 12, 1998, Ionadi's log indicates that it found out the "2 piece Richmonds for 2 piece beam are wrong . . . these are supplied by Marsico Corp. and need to be ordered ASAP!!" (P.Ex. 768)

220. On August 17, 1998, Ionadi's daily log indicated that it was forming the second lift on the spine wall and pouring the first lift at 11-13 lines. It was stripping the panels on the back side of the insulated pour from lines 22 to 24. Ionadi still did not have the embed plates or Richmond Anchors for the rebar and it was becoming a problem to keep the spine wall moving. (P.Ex. 768)

221. On August 18, 1998, Marsico had still not provided Ionadi with the embed plates or Richmond Anchors it needed for the entire spine wall. (P.Ex. 768)

222. There were hundreds of Richmond Anchors used on the Project spine wall to anchor the embed plates. Of this multitude, some were Type I and some Type II, the basic difference being the length of the anchor bolts. The shorter ones were used in the 8" sides of the insulated spine wall, and the longer ones in the solid 18" portion of the spine wall. (N.T. 1130-35, 1064-1066)

223. The uncertainty of the limits of insulation until July 29, 1998, caused the need for reordering some, and/or adjusting the ratio of long and short, Richmond Anchors at this time. Plaintiffs' testimony suggested that the Richmond Anchor problem occurred primarily in the steel joist beam connections in the gymnasium area and affected progress from this July 29, 1998, date until the mid to the end of August (N.T. 1063-1068).

224. The Board also notes that the structural detail for these anchors called for the bottom anchors to be the longer Type I's and credits Plaintiff's assertion that when the insulation limits were finally fixed, these lower anchors had to be changed to the shorter Type II's. (P.Ex. 772; Board Finding)

225. Not all of the Richmond Anchors would be changed by the limits of insulation. The insulation limit changes would have required longer ones in some instances and shorter ones in other locations. (N.T. 1066; P.Ex. 772, 773, 942; Board Finding)

226. Ionadi was experiencing problems with an inadequate supply of these anchors even for the first lift, which was solid and unaffected by the insulation levels. (N.T. 1126; Board Finding)

227. Moreover, common sense dictates that, given the need for both types, the relative uncertainty of insulation limits and the need to avoid further delays, one would reasonably expect Marsico to have extras of both types on hand. (Board Finding)

228. The Board finds that the problem with timely provision of Richmond Anchors to the job site stemmed from supply and ordering problems as well as from late insulation limit adjustments. (Board Finding)

229. The Board finds that 20 days of delay in actual construction of the spine wall was due to the need to re-order some of the Richmond Anchors following final resolution of the limits of insulation on July 29, 1998. (N.T. 1063-1068; Board Finding)

230. Accordingly, this 20 day delay was due to incomplete and/or inaccurate information in the Contract Documents respecting the limits of insulation in the spine wall. (N.T. 1063-68 and Board Finding)

231. The 20 day delay in actual construction of the spine wall caused the final completion of the Project to be delayed 20 days. (P.Ex. 860; Board Finding)

232. SSHE provided Contract Documents that were not complete and accurate with respect to the grade beam information and the limits of insulation in the spine wall, and this caused a total of 87 days of delay on the Project. (F.O.F. 153, 206, 231; Board Finding)

233. The Board further finds that, with the exception of the items noted above contributing to 87 days of delay, Marsico, Ionadi and Cost have failed to carry their burden of proof that the other outstanding issues relating to the limits of insulation or other alleged design deficiencies contributed materially to delay in completing the Project. (F.O.F. 153, 206, 231; Board Finding)

F. Model of Spine Wall

234. Marsico was required under its contract with SSHE to complete a mock-up of the spine wall and have it approved prior to constructing the spine wall. (N.T. 180-182; P.Ex. 759, Section 03300, Part 1. 8, Cast-in Place Concrete)

235. Marsico had the responsibility of ordering the embedded anchors for the spine wall and none were at the job site so Ionadi was not able to pour the spine wall mock-up until April 17, 1998. (N.T. 1126-1128, 3201; P.Ex. I-11)

236. On April 17, 1998, Ionadi poured the mock-up of the spine wall. (N.T. 3201; P.Ex. 768)

237. On April 28, 1998, RDGBD rejected the mock-up of the spine wall that Ionadi had prepared. (N.T. 892; P.Ex. 768)

238. While the Ionadi Damage Claim Report, prepared by Duggan & Rhodes LLC, makes mention of the late approval of the spine wall mock-up, the actual approval date is not provided. (P.Ex. I-11, p. 14)

G. The Structural Steel Portion of The Project

239. Livi prepared its structural steel rebar shop drawings by using the original Contract Documents. (N.T. 3040)

240. Livi found some discrepancies in the Contract Documents but was still able to prepare its shop drawings from them. Although the Contract Documents failed to call out the tops of steel for the spine wall, Livi was able to figure this out from the Contract Documents and include them in their drawings. (N.T. 430, 3040)

241. Livi's structural steel embed shop drawings were first submitted in early February 1998. They were reviewed and rejected because they were reproductions of the contract drawings. After resubmission by Livi, they were approved and returned with the comment, "Make Corrections Noted" on March 27, 1998. (N.T. 2938-2939; P.Ex. 76)

242. Livi accurately determined the top of steel and placed the information on the structural steel shop drawings dated February 4, 1998, which were approved on March 27, 1998. Marsico failed to share these drawings and the top of steel information with Titusville or Ionadi until June 1998. (N.T. 2774-2775)

243. Marsico did not share the approved Structural Steel Shop Drawings made by Livi with Ionadi until mid June 1998. Ionadi needed these Shop Drawings to determine the types and locations of plates and embeds in the spine wall earlier than June 1998. (N.T. 2773-2778, 2941)

244. Ionadi's daily log shows that Mr. Campbell was preparing formwork shop drawings to show wall tie locations and reveals on June 9, 1998. Mr. Campbell gave the drawings to Marsico so it could insert the information on the steel elevations from the Livi steel drawings. (N.T. 1051-1052)

245. On July 14, 1998, Ionadi received an embed kit prepared by Mr. Korpela (CSE) from the information on the Livi Structural Steel Shop drawings. The kit of embedded plates showed the center lines and elevations so Ionadi could locate each plate. (N.T. 1055-1058; P.Ex. 280)

246. RDGBD's contract with SSHE did not require it to provide the embed kit to Marsico. If Marsico had shared the information on the Livi Shop Drawings with Titusville and Ionadi, they could have prepared the embed kit themselves. RDGBD's failure to provide this kit to Marsico and its subcontractors earlier was not a design deficiency. (P.Ex. 948; Board Finding)

247. By failing to share with Ionadi the information about the elevations of the steel in the spine wall from the Livi Structural Steel Shop drawings as soon as it became available, Marsico failed to properly coordinate the Project and caused delay. (Board Finding)

248. Mr. Bufano, RDGBD's design and engineering expert, showed how Livi Steel, Marsico's subcontractor for the structural steel work, used the Contract Documents to prepare the structural steel and spine wall embed shop drawings for the Project. (N.T. 3091-3115)

249. Plaintiff's own witness, Eric Campbell of Ionadi, acknowledged that once one knew the tops of steel, the location of the embeds and anchors were also fixed. (N.T. 1005)

250. During Mr. Bufano's testimony, Marsico's counsel stipulated that the Livi Steel drawings did include all the required embed information with the exception of certain types of anchors. (N.T. 3115-3118)

251. All the necessary design information as to placement of the embeds for steel connections to the spine wall was contained in the Contract Documents. (N.T. 3091-3115; Board Finding)

252. The Project was not delayed due to any deficiencies in the Contract Documents with regard to location of the embeds. (Board Finding)

H. Spine Wall Arc

253. The Board agrees that the dimensions for the arc of the spine wall were not expressly called out in the Contract Documents. (P.Ex. 772)

254. However, Marsico submitted RFI No. 43, dated May 7, 1998, requesting the radius of the arc in the spine wall. RDGBD responded with the necessary information on May 8, 1998. (P.Ex. 751)

255. The Board finds that the lack of information on dimensions of the spine wall arc in the Contract Documents did not contribute to delay in completing the Project. (Board Finding)

MARSICO'S CLAIM

256. Marsico's duration on the Project was extended by 87 days as a result of delays which the Board has attributed to inaccurate and/or incomplete information in the Contract Documents, causing Marsico to incur damages for extended field supervision, extended general conditions, extended office overhead and mark-up on subcontractors claims. (F.O.F. 232; N.T. 2119; P.Ex. 942A, 758, Rider B)

257. Marsico claimed lost productivity/labor inefficiencies of $108,765 for work it performed in the Spring and Summer of 1999 due to problems such as wet ground conditions and related difficulties, but has failed to establish that the 87 days of delay attributable to inaccurate and/or incomplete Contract Documents caused it to be working at this time or to incur these inefficiencies. (N.T. 2014; P. Ex. 871, 860; Board Finding)

IONADI'S CLAIM

A. Inefficiencies & Delay

258. The fact that the Contract Documents did not adequately identify the limits of insulation in the spine wall (and this was not resolved until July 29, 1998) caused Ionadi to incur the expense of labor inefficiencies in pouring the spine wall from July through August 20, 1998, or a period of one and two-thirds months. (F.O.F. 207-233; P.Ex. 772; Board Finding)

259. It took Ionadi approximately five months to pour the spine wall (July '98 – November '98) and its productivity was adversely impacted for four of these months by a combination of the delay in getting started, the uncertainty of the limits of insulation, the late delivery of rebar, Richmond Anchors and other supplies necessary to build the spine wall. (F.O.F 258; P.Ex. 768; P.Ex. I-11, pp. 20-21; Board Finding)

260. One and two-thirds months of the four months of the impacted period of Ionadi's work on the spine wall was caused by inaccurate and/or incomplete Contract Document information respecting the limits of insulation. (F.O.F. 258-259; Board Finding)

261. Ionadi incurred damages due to these one and two-thirds months of labor inefficiencies respecting its work on the spine wall in the amount of $78,040 (1.66/4 or 41.5% x $188,048 total inefficiency damage claimed), due to inaccurate and/or incomplete Contract Document information respecting the limits of insulation. (P.Ex. I-11, pp.20-21; Board Finding)

262. The Marsico-SSHE Contract provides for a 10% mark-up to Marsico for subcontractor work, or $7,804, on account of the spine wall labor inefficiencies. (P.Ex. 758, Rider B)

263. The Contract Document deficiencies did not delay enclosure of Area C beyond December 12, 1998, so they did not cause Ionadi to suffer the labor inefficiencies claimed by Ionadi for its Slab on Grade work for the months of May – July, 1999. (F.O.F. 257, 313; P.Ex. I-11, pp. 21-22)

264. Ionadi's duration on the Project was extended by 87 days as a result of delay in completion of the spine wall, which the Board has attributed to inaccurate and/or incomplete information in the Contract Documents. (F.O.F. 232; Board Finding)

265. As a result, Ionadi has suffered delay damages attributable to those 87 days for extended field supervision, extended/additional equipment, extended office overhead, extended bonding costs and mark-up and profit. (P. Ex. I-11; P.Ex. 758; Board Finding)

266. Marsico filed the instant claim against SSHE for its own damages and for the use and benefit of Ionadi and Cost, with regard to their respective damages. (Marsico Complaint)

B. Running Track Issues

267. Ionadi constructed the running track in Area C in accordance with the design specifications provided by RDGBD. (N.T. 2305-2316, P.Ex. I-12/16/22)

268. The design of the running track was defective in that it failed to provide for sufficient concrete cover for the rebar. (N.T. 2305-2316; P.Ex. I-12/16/22)

269. RDGBD's design called for a 5" thick concrete slab with 1" concrete cover over the top rebars. However, only ½" of cover was provided for in the Contract Document when all components were added in. (P.Ex. 772)

270. The concrete cover over the rebars in the top of the slab was reduced from 1" to ½" and this caused the ripple effect problem on the concrete deck surface. (N.T. 2315)

271. The Contract Documents were not complete and accurate and did not exhibit the reasonable care, skill and diligence required of a design professional in the construction industry respecting design of the running track. (P.Ex. 772; Board Finding)

272. As a result of the design defect of the running track, Marsico was required to perform substantial corrective work at a cost of $29,978 to correct the rippling problem. (N.T. 2305-2316; P.Ex. I-22)

273. Although the cost of the corrective work relating to the running track was caused by the defective design, Marsico charged this to Ionadi in the amount of $29,978. (N.T. 2305-2316; P.Ex. I-22)

274. Ionadi has suffered damages in the amount of $29,978 for the cost of corrective work on the running track. (F.O.F. 273; Board Finding)

275. The Marsico-SSHE Contract provides for a 10% mark-up to Marsico for subcontractor work, or $2,998, on account of the work to correct the running track charged to Ionadi. (P.Ex. 758, Rider B)

C. Temporary Bracing Issue

276. In the General Notes on Structural Drawing S0.1, under "Construction Procedures and Safety Requirements," the following notes pertain to the contractor's responsibilities:

> P3 Provide all measures necessary to protect the workmen and other persons during construction. Provide all necessary measures to avoid excessive stresses and to hold the structural elements in

> place during construction. Such measures shall include, but not be limited to, bracing, shoring for construction equipment, shoring for earth banks, forms, scaffolding, planking, safety nets, support and bracing for cranes and hoists, guying, etc.
>
> P4 Engage properly qualified persons to determine where and how temporary precautionary measures shall be used. Observation visits to the site by structural engineer's field representatives shall not include the items noted above.

(N.T. 190-194; P.Ex. 772)

277. It was not clear or known by Marsico or SSHE that there would be an additional cost of shoring and bracing the spine wall at the time of the contract between the two was bid or signed. (N.T. 186-188, 1312-1314)

278. The Marsico-SSHE Contract required Marsico to provide all necessary measures to avoid excessive stress and to hold the structural elements in place during construction, including bracing and shoring. (N.T. 194; P.Ex. 3)

279. The contract drawings and specifications represent the finished structure unless otherwise indicated, and they do not indicate the means and methods of construction. (N.T. 193; P.Ex. 1)

280. The costs of the temporary bracing required for spine wall or the temporary shoring for the bridge were not included in the contractor's bid. SSHE never paid Marsico for these items. (N.T. 186)

281. On July 30, 1998, Ionadi noted in its daily log that the bracing for the spine wall was not yet decided and it can not move to the next pour without bracing the wall. (P.Ex. 768)

282. Marsico directed Ionadi to provide temporary bracing and shoring at an additional cost of $80,277 for the temporary bracing for the spine wall and $11,162 for temporary shoring for the bridge. Ionadi did so and was not paid for this work. (N.T. 2316, 2333, 2337; P.Ex. I-28, 29)

283. This bracing and shoring was necessary for the safe construction of the spine wall and bridge, and SSHE received the benefit of these services. (N.T. 2335-2336)

284. Ionadi incurred additional costs of $91,439 for the temporary bracing for the spine wall and shoring for the concrete bridge. (F.O.F. 282; Board Finding)

285. The Marsico-SSHE Contract provides for a 10% mark-up to Marsico on subcontractor work, or $9,144, with respect to the additional bracing and shoring. (P.Ex. 758, Rider B)

COST COMPANY'S CLAIM

286. Cost entered into a subcontract with Marsico, which required it to perform all of the brick and block work for the Project. (N.T. 1159)

287. Cost prepared its bid based upon the schedules provided by Marsico. (N.T. 1168)

288. Under Marsico's Construction Schedule, Cost was scheduled to begin work on April 9, 1998, but it did not come on-site until after May 13, 1998 because the grade beams were behind schedule. (N.T. 455; P.Ex. 178)

289. Ray Sekowski, project manager for Cost, testified that Cost planned to perform its masonry work by proceeding first to Area C, then to Area B, and finally to Area A. (N.T. 1159-1161)

290. Pursuant to the Construction Schedule prepared by Marsico, Cost planned to substantially complete its masonry work in Area C by May 13, 1998, in Area B by June 8, 1998 and in Area A by June 24, 1998. (N.T. 1160; P.Ex. 128)

291. In May 1998, Ionadi had not yet begun to pour the spine wall, so Cost was told by Marsico to work in other areas instead of the north wall in Area C. (N.T. 1167)

292. Marsico's Construction Schedule and sequencing was based on Marsico's view that the Contract Documents showed that the north wall in Area C was a masonry load bearing wall. Accordingly, Marsico's construction schedule had Cost building the C - Masonry wall at the same time as Ionadi was building the C - Spine Wall. (N.T. 1162-1164; P.Ex. 128)

293. Both Cost and Marsico had read the plans and specifications for the north wall in Area C and they did not understand that there were to be steel columns embedded in that wall to support the structural steel roof members. Mr. Sekowski (Cost) testified that he had to adjust his schedule due to this original interpretation of the drawings. This adjustment meant to Mr. Sekowski that C - Masonry work could not be built until the spine wall and steel erection was complete. (N.T. 1162-1163)

294. The steel columns in the masonry wall (north wall in Area C) are clearly depicted on the Contract Documents. (P.Ex. 772, Drawings A1.3, A1.6, S1.3, S1.9; See also, D.Ex. 290[Levi Steel Shop Drawings that call out the steel columns on drawings E6 and E7])

295. Marsico and Cost misidentified the north wall in Area C because each failed to read the Contract Documents correctly. (N.T. 1162-1164, 1190-1193; Board Finding)

296. SSHE did not cause Marsico's and Cost's mistake in interpreting the Contract Documents regarding the north masonry wall in Area C. (Board Finding)

297. When erecting the spine wall, Ionadi occupied approximately 30 to 40 feet on either side of the wall with cranes and bracing, making it difficult for Cost to work on the north

wall in Area C at the same time, as originally planned in Marsico's Construction Schedule. (N.T. 1165-1167; P.Ex. 128)

298. Mr. Sekowski testified several times that Cost was unable to work on the north masonry wall in Area C at the same time that the spine wall was being constructed because a wide path on either side of the spine wall was occupied by Ionadi's cranes, equipment, materials and bracing. As a result, while Ionadi was working, Area C was inaccessible for Cost to perform any masonry work. (N.T. 1166-1194)

299. Marsico's Construction Schedule showed that Ionadi's work on the spine wall in Area C (Item 10) was to occur simultaneously with Cost's work on the north wall in Area C (Item 9). This was Marsico's error in preparing the schedule. (P.Ex. 128)

300. Mr. Sekowski testified that many of the walls that were scheduled to be built by Cost tied into or were adjacent to the spine wall and could not be built until the spine wall was completed and the steel girders were erected. (N.T. 1162-1167)

301. Mr. Marsico testified that Cost was unable to perform masonry work in Area A or in Area C north of the spine wall until the spine wall was completed. (N.T. 95)

302. Mr. Sekowski testified that, because the spine wall was not completed in a timely manner, Cost was only able to build certain walls in Area B; then it moved to Area A and erected certain walls there, but did not fully complete its work in either Area due to the accessibility problem created by the incomplete spine wall. (N.T. 1165)

303. Despite the foregoing assertions made by Marsico and Cost at hearing, Marsico had scheduled Cost to be working on C – Masonry (4/9 – 5/13) at the same time Ionadi was to be working on C – Spine Wall (3/15 – 5/15); working on B – Masonry (4/21 – 6/8) at the same time Ionadi was to be working on B – Spine Wall (4/28 – 6/29); and working on A – Masonry (5/21 – 6/24) at the same time Ionadi was to be working on A – Spine Wall (5/21 – 7/22). (P.Ex. 128)

304. It was critical to Marsico's and Cost's plan in sequencing and scheduling their work that the masonry work be performed before the Winter of 1998. (N.T. 11)

305. When Cost prepared and submitted its bid to Marsico, it did not anticipate performing any masonry work in winter weather. (N.T. 1168)

306. Freezing weather temperatures have a negative impact on the productivity of masonry workers. When a mason installs mortar with brick and block, the mortar does not cure as quickly in cold weather as it does in warm weather. (N.T. 1168-1169)

307. Marscio's original Construction Schedule called for the masonry work to extend from April 9, 1998 through June 24, 1998, a total of 85 days. However, Cost's subcontract agreement with Marsico stated that Cost was to be substantially complete by August 31, 1998, a period of 144 days. (P.Ex. 128; P.Ex. C-1, p. 6)

308. It took Cost over 400 days to complete the masonry work. (N.T. 1180; P.Ex. C-1, p. 9)

309. Cost remained on the job and worked until August 1999. (N.T. 1912; P.Ex.C-1, p. 9)

310. Because of the various delays including the late completion of the spine wall and mistakes in the Construction Schedule and in reading the Contract Documents, Cost was forced to perform out-of-sequence work, to demobilize from the Project on three separate occasions, and to finally perform masonry work in winter weather conditions. (N.T. 1181)

311. The main objective of Marsico was to get Area C under roof before winter weather which began on December 17, 1998. (N.T. 11; P.Ex. 860, p.3)

312. The Board has assessed a total of 87 days of delay caused by inaccurate and/or incomplete information in the Contract Documents: 39 days for insufficient grade beam information; 28 days for failure to provide limits of insulation in the spine wall; causing delay in the spine wall rebar drawings; and 20 more days for failure to provide limits of insulation in the spine wall causing a re-order of some of the Richmond Anchors and delay in their delivery on-site. (F.O.F. 153, 204-206, 229-232)

313. In order to determine whether the deficiencies in the Contract Documents caused any of Cost's damages for winter weather conditions, the Board applied the 87 days of spine wall delay to Marsico's Construction Schedule and found that the latest resulting date for masonry work was December 12, 1998. This was the date critical Area C would have been enclosed if the only problem was the delay caused by the Contract Document deficiencies. This date was before the start of winter weather, December 17, 1998. (F.O.F. 311-329; Board Finding)

314. Marsico's Construction Schedule indicates the duration of these four activities as follows:

3/16 – 5/15	C – Concrete Spine Wall
4/9 – 5/13	C – Masonry (load bearing)
5/18 – 7/1	C – Steel Roof Erection
7/2 – 8/12	C – Roofing

(P. Ex. 128)

315. Marsico misread the Contract Documents to provide for a load bearing masonry wall in Area C and this led it to schedule the C-Masonry (load bearing) activity as it did during C - Spine Wall activity and prior to C-Steel Roof Erection. (F.O.F. 293)

316. The C-Masonry (load bearing) activity shows a duration of 25 days but is scheduled for the period 4/9 – 5/13, a period of 34 days. (P.Ex. 128)

317. Since the masonry wall was not load bearing, but in fact had to be built around steel members connecting to and supporting the roof, it would have been more appropriate to schedule this C-Masonry activity after steel erection. (N.T. 1163-64; Board Finding)

318. Marsico indicates on its Construction Schedule a duration of 33 days for C-Steel Roof Erection, but scheduled this activity for the period 5/18 – 7/1 (a period of 44 days). (P.Ex. 128)

319. If these activities are resequenced to allow the C-Masonry work to occur after C-Spine Wall, C-Steel Roof Erection and C-Roofing (to give Cost unobstructed access), and we assume: the C-Steel Roof Erection takes 44 days instead of 33, a C-Masonry period of 34 days, and the 87 days of delay are added to the spine wall construction, the date of Area C enclosure and completion of C-Masonry work is December 12, 1998, to wit:

3/16 – 8/10 (5/15+87)	C – Concrete Spine Wall
8/13 – 9/26 (7/1+87)	C – Steel Roof Erection
9/27 – 11/7 (8/12+87)	C – Roofing
11/8 – 12/12 (+34 days)	C – Masonry

(P.Ex. 128; Board Finding)

320. In Area B, Marsico correctly identified the masonry wall as load bearing, B-Masonry (load bearing), and properly scheduled it to be a prerequisite for, and completed prior to, the steel roof erection, to wit:

4/28 – 6/29	B – Concrete Spine Wall
4/21 – 6/8	B – Masonry (load bearing)
6/30 – 7/20	B – Steel Roof Erection
7/21 – 8/31	B – Roofing

(P.Ex. 128)

321. Marsico did not consider the B-Masonry (load bearing) activity to require prior completion of the spine wall in Area B, having scheduled B-Concrete Spine Wall to begin and end 4/28 – 6/29 and B-Masonry (load bearing) to begin and end 4/21 – 6/8 with only grade beam back fill as a prerequisite. (P.Ex. 128; Board Finding)

322. Marsico indicated a 35 day duration for B-Masonry (load bearing) work, but scheduled it for 4/21 – 6/8 (a period of 48 days). (P.Ex. 128)

323. Adding 87 days of delay to construction of the spine wall and assuming, arguendo, that B-Masonry (load bearing) work would take 48 days and could not start until completion of the spine wall in Area B produces the following effect on B Area masonry:

4/28 – 9/24 (6/29+87)	B – Concrete Spine Wall
9/25 – 11/12 (+48 days)	B – Masonry (load bearing)

(P.Ex. 128; Board Finding)

324. In Area A, Marsico correctly identified the masonry wall as load bearing, A Masonry (load bearing), and properly scheduled it to be a prerequisite for, and completed prior to, the steel roof erection to wit:

5/21 – 7/22	A – Concrete Spine Wall
5/21 – 6/24	A – Masonry (load bearing)
7/23 – 8/12	A – Steel Erection
7/23 – 8/5	A – Steel Roof Erection
8/13 – 9/23	A – Roofing

(P.Ex. 128)

325. Marsico did not consider the A-Masonry (load bearing) activity to require prior completion of the spine wall in Area A, having scheduled A-Concrete Spine Wall to begin and end 5/21 to 7/22 and A-Masonry (load bearing) to begin and end 5/21 to 6/24 with only grade beam back fill as a prerequisite. (P.Ex. 128; Board Finding)

326. Marsico indicated a 25 day duration for A-Masonry (load bearing) work, but scheduled it for 5/21 – 6/24 (a period of 34 days). (P.Ex. 128)

327. Adding 87 days of delay to construction of the spine wall and assuming, arguendo, that A-Masonry (load bearing) work would take 34 days and could not start until completion of the spine wall in Area A produces the following effect on Area A masonry:

5/21 – 10/17 (7/22+87)	A – Concrete Spine Wall
10/18 – 11/21 (+34 days)	A – Masonry (load bearing)

(P. Ex. 128; Board Finding)

328. In summary, the 87 days of delay attributed to incomplete and/or inaccurate information in the Contract Documents pushed the enclosure of the critical Area C to December 12, 1998; the completion of Area B masonry off to November 12, 1998; and the completion of Area A masonry to November 21, 1998. (F.O.F. 319-327)

329. Winter weather for the construction of this Project began on December 17, 1998 (N.T. 1673; P.Ex. 860, p.3)

330. If Area C had been enclosed and the masonry in Areas A and B substantially complete before the onset of significant winter weather, a substantial portion of the delay and financial impact on Marsico, Ionadi and Cost, including delay for winter weather conditions, would have been avoided. (P.Ex. 860, p. 3; Board Finding)

331. The 87 days of delay attributable to deficiencies in the Contract Documents did not delay the critical enclosure of Area C or the masonry in Areas A and B beyond December 12, 1998, or into winter weather conditions. (F.O.F. 328-329)

332. The causes of Cost's labor inefficiency damages are multifold and include mistakes reading the plans and specifications and mistakes in work scheduling. Cost was scheduled to work in the same area and at the same time as Ionadi when that was impractical. There were many job delays while subcontractors waited for materials to arrive. Some subcontractors caused delays because they had not finished their work due to poor access roads, late arrival at the site, and insufficient manpower to do the job. All of these factors contributed to Cost's labor inefficiency damages. (F.O.F. 292-302; P.Ex. C-1; Board Finding)

333. Deficiencies in the Contract Documents which delayed construction of the spine wall also played a part in causing Cost to suffer the labor inefficiencies complained of. (N.T. 1163-1165; P.Ex. C-1; Board Finding)

334. More than half of Cost's work was performed in winter weather conditions. (P.Ex. C-1, p. 13)

335. The Board finds that the 87 day delay in construction of the spine wall due to deficiencies in the Contract Documents caused 25% of the labor inefficiencies claimed herein by Cost, or $46,841 (25% x $187,362). (P.Ex. C-1, pp. 12-14; Board Finding)

336. The Marsico SSHE Contract provides for a 10% mark-up to Marsico for subcontractor work, or $4,684, on account of masonry labor inefficiencies. (P.Ex. 758, Rider B)

337. Cost's duration on the Project was also extended by 87 days as a result of delay in completion of the spine wall, which the Board has attributed to inaccurate and/or incomplete information in the Contract Documents. (F.O.F. 232, 313; P.Ex. C-1; Board Finding)

338. As a result, Cost has suffered delay damages attributable to these 87 days for extended field supervision, extended/additional equipment, extended office overhead and mark-up and profit. (N.T. 1163-1165; P.Ex. C-1; Board Finding)

339. Cost has made no claim here against any party except SSHE. (Marsico Complaint; Board Finding)

DELAY DAMAGES

340. Marsico Corporation entered into a contract with SSHE on December 10, 1997 ("Marsico-SSHE Contract") for construction of the Aebersold Student Recreation Center located at Slippery Rock University. (F.O.F. 53)

341. Marsico was contractually required to perform its work within 365 calendar days from the date of the Notice to Proceed. (F.O.F. 55)

342. SSHE issued a Notice to Proceed to Marsico on January 7, 1998. Marsico was to complete the Project by January 7, 1999. (F.O.F. 57)

343. The punch list for the Project was completed on December 15, 1999. This was the date of substantial completion of the Project. (P.Ex. 860, p. 3; Board Finding)

344. Based on the December 15, 1999, substantial completion date, the total delay to the Project was 342 calendar days. (Board Finding)

345. SRU took full occupancy of the Project on January 10, 2000. (D.Ex. 231)

346. Marsico claims, for itself, and on behalf of Ionadi and Cost, that the owner of the Project, SSHE, is responsible for 257 days of the total delay because of deficient Contract Documents. (Marsico Complaint; P.Ex. 860, I-11; P.Ex. C-1)

347. As a result of the 87 days of delay attributable to Contract Document deficiencies, Marsico, Ionadi and Cost suffered delay damages for extended field supervision, extended general conditions, extended office overhead and mark-up delay. (F.O.F. 256, 265, 338)

348. Marsico's damage calculations and damage summary are based upon the premise that the Contract Document deficiencies (and SSHE) are responsible for 257 days of the total delay on the Project. (Marsico's Findings of Fact, Damage Summary, p.91)

349. To quantify the damages to be awarded to Marsico against SSHE for the 87 day delay of the Project, the Board used Marsico's Damage Summary as a format for its computation, with several modifications. (Marsico's Findings of Fact, Damage Summary, p. 91)

350. The Board eliminated the following items: Marsico's claim for Winter Conditions and Lost Productivity; Ionadi's claims for Bracing and Shoring, Running Track Repairs, and Lost Productivity, and Cost's claim for Lost Productivity. These items are not part of the delay damages suffered due to the Contract Document deficiencies. (Board Finding)

351. Based on the testimony and information presented in this case, the Manshul Formula is the most appropriate method to determine extended office overhead damages to Marsico, Ionadi and Cost. (N.T. 2119; P.Ex. I-11; P.Ex. C-1; Board Finding)

352. To determine the delay damages actually incurred by Marsico, Ionadi and Cost, the Board first added the following:

Marsico Delay

Extended Field Supervision	$87,685 (P. Ex. 942A)	
Extended General Conditions	$43,267 (P. Ex. 942A)	
Extended Office Overhead (Manshul Formula)	$133,119 (N.T. 2119)	
Subtotal -		$264,071

Ionadi Delay

Extended Supervision	$43,120 (P. Ex. I-1, p. 16)	
Additional/Extended Equipment	$81,430 (P. Ex. I-1, p. 16)	
Extended Home Office Overhead	$55,787 (P. Ex. I-1, p. 16)	
Mark-up for Overhead and Profit (15%) (Excluding Home Office Overhead)	$18,683 (P. Ex. 758, Rider B)	
Subtotal-		$199,020

Cost Delay

Extended Supervision	$45,377 (P. Ex. C-1, p. 8)	
Extended/Additional Equipment	$80,396 (P. Ex. C-1, p. 8)	
Extended Home Office Overhead	$46,227 (P. Ex. C-1, p. 8)	
Mark-up for Overhead and Profit (Excluding Home Office Overhead)	$18,866 (P. Ex. 758, Rider B)	
Subtotal -		$190,866
Marsico's Mark-up on Sub Delay Claims (10% x [$199,020 + $190,866])	$38,989 (P. Ex. 758, Rider B)	
Bonded Insurance (Subs) (1.766% x [$199,020 + $190,866])	$6,885 (N.T. 2139)	
Total		$699,831

353. Next, since Marsico calculated these delay expenses based upon a 257 day delay, the Board divided $699,831 by 257 to determine a cost of $2,723 per day of delay. (Board Finding)

354. Next, in order to allocate the delay damages suffered by Marsico, Ionadi and Cost, respectively, the Board determined that of the $699,831 total claimed, $199,020 was claimed by Ionadi, $190,866 claimed by Cost; and the remainder, $309,945 by Marsico. (F.O.F. 352; Board Finding)

355. Accordingly, of the total delay damages suffered, 44.3% was incurred by Marsico, 27.3% was incurred by Cost and 28.4% was incurred by Ionadi. (Board Finding)

356. Given the total of 87 days of delay that the Board has attributed to inaccurate and/or incomplete Contract Documents, the total delay damages caused by inaccurate and/or incomplete Contract Documents are calculated to be $236,901 ($2,723 per day x 87 days). (F.O.F. 232, 353; Board Finding)

357. The Board finds that Marsico, for its own account, suffered $104,947 in delay damages from the 87 days of delay. (F.O.F. 355-356; Board Finding)

358. The Board finds that Cost suffered $64,674 in delay damages from the 87 days of delay. (F.O.F. 355-356; Board Finding)

359. The Board finds that Ionadi, suffered $67,280 in delay damages from the 87 days of delay. (F.O.F 355-356; Board Finding)

360. In sum, the inaccurate and/or incomplete information in the Contract Documents (also referred to herein as the Contract Document deficiencies or the three design deficiencies) caused Marsico and its subcontractors to incur damages in the total amount of $407,246, comprised of the following:

Marsico, for its own account:

$104,947 in delay damages;
$7,804 as 10% mark-up on Ionadi's lost productivity
$4,684 as 10% mark-up on Cost's lost productivity
$2,998 as 10% mark-up on running track repairs

Marsico, for the use and benefit of Ionadi:

$67,280 in delay damages;
$78,040 in lost productivity
$29, 978 in running track damages

Marsico, for the use and benefit of Cost:

$64,674 in delay damages
$46,841 in lost productivity

(F.O.F. 261-262, 274-275, 335-336, 357-359)

361. In addition, Ionadi incurred additional expense of $91,439 and Marsico a 10% mark-up on this amount ($9,144) for temporary bracing and shoring which the Board finds was not caused by Contract Document deficiencies. (F.O.F. 282-285)

SSHE'S CLAIMS AGAINST RDGBD

362. The SSHE-RDGBD Contract provided that RDDGBD would, inter alia, "exercise reasonable and ordinary care and diligence in the application of its professional knowledge to accomplish the purpose for which it is retained . . . and . . . provide plans and specifications that are adequate and sufficient to accomplish the purposes of the project." (P.Ex. 948, Rider E)

363. The SSHE-RDGBD Contract also provided that the professional (RDGBD) would respond to the contractor's submittals of shop drawings for approval within 15 days of receipt thereof. (P.Ex. 948, Rider B, Review and Approval of Contractor's Shop Drawings and Submittals)

364. RDGBD failed to provide Contract Documents and timely responses to RFI's that included sufficient design information so as to allow the successful, on-time completion of the Project in three instances: 1) incorrect and/or inadequate information respecting grade beams sizing and elevations; 2) incomplete and untimely disclosure of the insulation limits of the spine wall, and; 3) inaccurate design detail for the running track. (F.O.F. 132-133, 153, 199-206, 229-232, 258-262, 271-275, 333-338; Board Finding)

365. RDGBD failed to provide complete and accurate Contract Documents and to perform its obligations with the reasonable care, skill and diligence expected of a design professional in the construction industry in three instances: 1) incorrect and/or inadequate information respecting grade beams sizing and elevations; 2) incomplete and untimely disclosure of the insulation limits of the spine wall; and 3) inaccurate design detail for the running track. (F.O.F. 364; Board Finding)

366. The Board has already presented a detailed factual discussion of these three design deficiencies in this case and the damages caused thereby. (Board Finding)

367. The Board has herein found SSHE liable to Marsico for these three design deficiencies in the total amount of $407,246. (F.O.F. 360; Conclusion of Law 33)

368. Having found that SSHE is liable to Marsico for $407,246 on account of the three design deficiencies noted, we further find that this fixes the damages actually suffered by SSHE on account of these three design deficiencies. (F.O.F. 360)

369. The Board rejects RDGBD's assertion that there are no damages suffered by SSHE in this matter. (Board Finding)

370. On October 24, 2002, Marsico and SSHE entered into a contract entitled "Claim Prosecution Agreement" ("CPA") that contained provisions regarding this litigation. (N.T. 2025; S.Ex. 9)

371. The terms of the CPA provided, inter alia, that SSHE would pay Marsico $850,000.00 and assign all of its rights for breach of contract and indemnity against RDGBD to Marsico. (S.Ex. 9)

372. There was no allocation made by the parties of the $850,000 to any particular item being claimed. (N.T. 2237)

373. The $850,000 sum paid by SSHE to Marsico was for Marsico's claims against SSHE for the claims asserted in this case as well as for money owed in retention on their contract, change orders, interest and penalties for SSHE's withholding of contract payments. (N.T. 2236-2241; S.Ex. 9; Board Finding)

374. The recitals in the CPA clearly include the delay and damage claims here at issue and it also states that the $850,000 payment by SSHE to Marsico is to limit Marsico's recovery (i.e. SSHE's actual damage) on account of these claims to whatever can be recovered in this action from RDGBD. (S.Ex. 9)

375. The amount of $407,246 for which we herein find SSHE liable to Marsico on account of Contract Document deficiencies (and for which we find RDGBD at fault), is included in the $850,000 paid by SSHE to Marsico. (N.T. 2236-2241; S.Ex. 9; Board Finding)

376. The Board finds that the three design deficiencies caused SSHE to incur damages of $407,246. (F.O.F. 367-375)

377. The Board finds that the three design deficiencies did not cause the other damages alleged by Marsico and its subcontractors in this case. (Board Finding)

378. Count II of SSHE's Complaint alleges that RDGBD is liable to SSHE for design deficiencies and delay damages under two indemnification provisions in the Contract. The first indemnity clause is Paragraph 11, entitled "Hold Harmless Clause." This paragraph states that RDGBD agrees to indemnify SSHE for liability "...arising out of any injuries to, or the death of any person or any damages to property ... caused by the negligence..." of RDGBD. (SSHE's Complaint to Join Additional Defendants; P.Ex. 948)

379. The three design deficiencies did not cause injuries to person or property. (Board Finding)

380. SSHE also contends that Paragraph 2.2.608 of Rider B of the SSHE-RDGBD Contract provides an indemnity from RDGBD for SSHE's damages for design deficiencies. Paragraph 2.2.608 of Rider B states in part:

> Should the System be called upon by any prime contractor for additional compensation, or should it become necessary during the course of construction to issue change orders increasing the cost of the project, by reason of the failure, in either case, of the professional due to design errors and omissions and/or produce proper and coordinated plans, specifications and drawings, or any portion thereof relating to the project, in accordance with accepted standards and procedures, the professional shall be liable to the System for the difference between the amount of such extra costs or compensation, and what the System would have incurred had the design been proper." Para. 2.2.608 of Rider B. (Emphasis added.)

(P.Ex. 948)

381. Marsico, a prime contractor, has "called upon" SSHE for "additional compensation," and this Board has found SSHE liable to Marsico due to three design deficiencies present in the Contract Documents created by RDGBD in the total amount of $407,246. (Marsico Complaint; F.O.F. 367)

382. The Board also finds that the three design deficiencies noted (incomplete and inaccurate grade beam information; incomplete and untimely information on the limits of insulation in the spine wall; and inaccurate design of the running track) constitute "design errors and omissions" and a failure by RDGBD to "produce proper and coordinated plans, specifications and drawings . . . in accordance with accepted standards and procedures" for the Project. (P.Ex. 948; Board Finding)

383. Under the SSHE-RDGBD Contract, RDGBD was to provide SSHE architectural services from the beginning to the end of the Project. (P.Ex. 948)

384. Because the delays on the Project required RDGBD to continue its services past the original contract completion date, SSHE paid $111,274.24 to RDGBD on two change orders for additional services. (N.T. 2196-2199)

385. The SSHE-RDGBD Contract provided in the section relating to change orders that, "The Professional shall not be entitled to additional compensation under this paragraph for delays in construction that are attributable to the acts or failures to act on the part of the Professional." (P.Ex. 948, Rider B, Para. 4.3)

386. 87 days out of the total 342 days of delay on the Project are attributable to the acts or failures to act on the part of RDGBD. (P.Ex. 860; Board Finding)

387. The Board computes that 87/342 or 25.4% of $111,274 equals $28,264, and that this amount is suffered by SSHE as a result of RDGBD's acts or failure to act. (F.O.F. 384-386; Board Finding)

388. SSHE paid its construction manager, Turner Construction, Inc, compensation for additional services of $136,731.74. Because of the delays on the Project, Turner had to remain until the end of construction to supervise the contractors. (N.T. 2200-2201)

389. Paragraph 2.2.608 of Rider B of the SSHE-RDGBD Contract provides that RDGBD is liable to SSHE for any extra costs its incurs due to change orders caused by delays attributable to acts and omissions of RDGBD. (P.Ex. 948)

390. RDGBD's acts and omissions caused 87 days of delay in completing the Project and SSHE has suffered damages of $34,730 (87/342 or 25.4% of the $136,732) that SSHE paid to Turner as a result of RDGBD's acts and/or omissions. (F.O.F. 386, 388; P.Ex. 948; Board Finding)

391. SSHE claims $18,720.67 from RDGBD for utility costs because delays on the Project caused Marsico and the subcontractors to have to work past December 1998 in winter weather conditions. (S.Ex. 7)

392. Since the Board has concluded that the 87 days of grade beam/spine wall delays attributable to RDGBD did not, by itself, push the Project into winter weather conditions, RDGBD did not cause SSHE to incur the additional utility bills. (F.O.F. 331; Board Finding)

393. SSHE claims that RDGBD is liable for $238,314.52 that SSHE spent for attorney and consultant fees, but no provision of the SSHE-RDGBD Contract provides for the recovery of attorney or consultant fees. (P.Ex. 948; S.Ex. 8)

394. RDGBD did not engage in any bad faith or vexatious conduct. (Board Finding)

395. SSHE failed to show what, if any, portion of the attorney and consultant fees it incurred are attributable to the acts or omissions of RDGBD, as opposed to other parties, other delays or other legal actions. (Board Finding)

396. The three design deficiencies caused SSHE to incur total damages and costs with respect to the Project in the amount of $470,240 comprised of the following: $407,246 due to Marsico, on its own account and for the use and benefit of Ionadi and Cost; $28,264 in additional amounts paid to RDGBD; and $34,730 in additional amounts paid to Turner. (F.O.F. 367-368, 387, 390)

CONCLUSIONS OF LAW

1. The initial claim brought by Marsico Corporation is a breach of contract action against the Pennsylvania State System of Higher Education ("SSHE"), a government entity and an instrumentality of the Commonwealth of Pennsylvania. (24 P.S. §20-2001, et seq.)

2. The SSHE properly joined RDG Bussard Dikis, Inc. ("RDGBD") as an Additional Defendant for contractual indemnification and/or breach of contract pursuant to Pa. R.C.P. 2252.

3. The Board of Claims has subject matter jurisdiction to hear and determine the claim of Marsico against SSHE as it is a claim against the Commonwealth of Pennsylvania arising from a contract entered into with the Commonwealth. (72 P.S. §4651-4)

4. The Board of Claims has subject matter jurisdiction to hear and determine the claim of SSHE against RDGBD because it is a contract claim properly joined and necessary for a complete determination of the claims against SSHE. (72 P.S. §4651-6)

5. The Board of Claims has jurisdiction over the parties. Marsico, SSHE and RDGBD consented to the Board's jurisdiction in their contracts. (72 P.S. §4651-1, et seq.; P.Ex.758, 759, 948)

6. Marsico and SSHE had a valid enforceable contract (Number UP-141.1) for the construction of the subject recreation center at Slippery Rock University at all times relevant to this matter.

7. SSHE and RDGBD had a valid enforceable contract (Number PD-141) for the design, specifications, plans and other professional services necessary for the construction of the subject recreation center at Slippery Rock University at all times relevant to this matter.

8. Under the Marsico-SSHE Contract, SSHE had a duty to Marsico to provide plans and specifications for the Project ("Contract Documents") that included complete and accurate information needed to build the Project.

9. In order for the Contract Documents to meet the requirement that they be complete and accurate, they do not need to be perfect, but they must exhibit the reasonable care, skill and diligence expected of a design professional in the construction industry.

10. In order for RDGBD to meet the requirements of its contract with SSHE, it was required to supply Contract Documents for construction of the Project which were adequate and sufficient to build the Project and which exhibited the reasonable care, skill and diligence expected of a design professional in the construction industry.

11. In order for RDGBD to meet the requirements of its contract with SSHE, it was required to perform its contractual obligations, such as review of submittals and information

requests from contractors on the Project with the reasonable care, skill and diligence expected of a design professional in the construction industry.

12. SSHE had an obligation to supply Marsico with responses to submittals, such as shop drawings and information requests respecting the Contract Documents, within two weeks. (P. Ex. 759, Rider B, 3.9.100 and Section 01300 – Submittals)

13. RDGBD had an obligation to respond to submittals such as shop drawings and information requests respecting Contract Documents within 15 days. (P. Ex. 948, Rider B, 2.2.609)

14. The reissuance of the Contract Documents by RDGBD, at the request of SSHE, did not, by itself, conclusively establish that the Contract Documents were deficient and below the standards of the industry.

15. Marsico had a contractual obligation to provide to SSHE, RDGBD and others a complete CPM construction schedule approved and signed by all prime contractors within 30 days of the Notice to Proceed on the Project. (P. Ex. 758, Rider B, 3.8.100; P.Ex. 759, Project Manual, Div. 1-General Requirements, Section 01315)

16. Marsico had a contractual obligation to provide to SSHE, RDGBD and others a schedule of submittals within 10 days of the date set for provision of the complete construction schedule, i.e. 40 days from Notice to Proceed. (P. Ex. 759, Rider B, 3.9.100 and Section 01300 – Submittals)

17. Marsico had a contractual obligation to provide to SSHE, RDGBD and others, updates to the construction schedule monthly and the submittal schedule when revisions had been made or recognized. (P. Ex. 759, Rider B, 3.9.100 and Section 01300 – Submittals)

18. Marsico's failure to timely provide a complete CPM construction schedule, its failure to provide a schedule of submittals and its failure to update either schedule after revisions had been made or recognized, while not sufficient to excuse SSHE's performance, were factors contributing to the overall delay experienced on the Project.

19. SSHE materially breached its contract with Marsico in that it provided Contract Documents that were not complete and accurate with respect to the grade beam information and the limits of insulation in the spine wall.

20. SSHE's breach described in Paragraph 19 caused a total of 87 days of delay on the Project, resulting in delay damages to Marsico (and Marsico for the benefit and use of Ionadi and Cost) totaling $236,901.

21. Of the $236,901 delay damages chargeable to SSHE, SSHE is liable to Marsico, for its own account, in the amount of $104,947; liable to Marsico, for the use and benefit of Ionadi, in the amount of $67,280; and liable to Marsico for the use and benefit of Cost, in the amount of $64,674.

22. SSHE's breach of contract for failure to provide complete and accurate information in the Contract Documents respecting the grade beams and limits of insulation in the spine wall also caused Ionadi to incur additional costs for labor inefficiencies in constructing the spine wall in the amount of $78,040, and SSHE is liable to Marsico for the use and benefit of Ionadi in this amount.

23. Pursuant to its contract with Marsico, SSHE is also liable to Marsico for its own account for a 10% mark-up on the additional cost incurred by Ionadi for labor inefficiencies, in the amount of $7,804.

24. SSHE materially breached its contract with Marsico in that it provided Contract Documents that were not complete and accurate with respect to the design of the running track.

25. SSHE's breach described in Paragraph 24, caused Ionadi to incur additional expenses of $29,978 for correction of the running track problem.

26. SSHE is liable to Marsico for the use and benefit of Ionadi in the amount of $29,978 for repair of the running track.

27. Pursuant to its contract with Marsico, SSHE is also liable to Marsico for its own account for a 10% mark-up on the cost incurred by Ionadi for repair of the running track, in the amount of $2,998.

28. Because the Board has found that the need for temporary bracing of the spine wall and temporary shoring of the spine wall bridge was not clear or known to either Marsico or SSHE at the time the contract between them was bid or signed, the Board also finds that the omission of costs for this activity was a mutual mistake.

29. Since the Board has also found, as a matter of fact, that this bracing and shoring was necessary for the safe construction of the spine wall and bridge, and that SSHE received the benefit of these services, the Board holds that SSHE is liable for this extra cost to Marsico for the use and benefit of Ionadi (who paid for same) in the amount of $91,439.

30. Pursuant to its contract with Marsico, SSHE is also liable to Marsico for its own account for a 10% mark-up on the cost to Ionadi of the bracing and shoring, which amounts to $9,144.

31. SSHE's breach of contract for failure to provide complete and accurate information in the Contract Documents respecting the grade beams and limits of insulation in the spine wall also caused Cost to incur additional costs for labor inefficiencies in respect to its masonry work in the amount of $46,841, and SSHE is liable to Marsico for the use and benefit of Cost in this amount.

32. Pursuant to its contract with Marsico, SSHE is liable to Marsico for its own account for a 10% mark-up on the additional cost incurred by Cost for labor inefficiencies in the amount of $4,684.

33. In summary, SSHE is liable to Marsico for breach of contract in the amount of $407,246 on account of inaccurate and/or incomplete information in the Contract Documents comprised of the following:

1) To Marsico for its own account
   $104,947 for delay damages
   $12,488 for 10% mark-up on additional labor inefficiencies
   $ 2,998 for 10% mark-up on running track repairs
   $ 9,144 for 10% mark-up on temporary bracing and shoring

2) To Marsico for the use and benefit of Ionadi
   $ 67,280 for delay damages
   $ 78,040 for labor inefficiencies
   $ 29,978 for running track repairs
   $ 91,439 for temporary bracing and shoring

3) To Marsico for the use and benefit of Cost
   $ 64,674 for delay damages
   $ 46,841 for labor inefficiencies

34. In addition, SSHE is also liable to Marsico, for the use and benefit of Ionadi, in the amount of $91,439, and to Marsico, for its own account, in the amount of $9,144 for bracing and shoring due to mutual mistake, not Contract Document deficiencies. (Board Finding)

35. SSHE is not liable to Marsico, Cost or Ionadi for damages for constructing the Project in winter weather conditions, spring weather conditions or for any other claims made to the Board other than those explicitly enumerated above in Conclusions of Law.

36. Marsico may include in its claim against SSHE, claims for the use and benefit of Marsico's subcontractors, Ionadi and Cost, and must distribute any awards to these subcontractors as indicated by the Board's Order.

37. RDGBD was obligated under the terms of the SSHE-RDGBD contract to provide plans and specifications that were adequate and sufficient to build the Project and that exhibited the reasonable care, skill and diligence expected of a design professional in the construction industry.

38. RDGBD materially breached its contract with SSHE in that it provided Contract Documents that were not adequate and sufficient to build the Project and that failed to exhibit the reasonable care, skill and diligence expected of a design professional in the construction industry with respect to the grade beam information, the limits of insulation in the spine wall and the design of the running track.

39. RDGBD's breach of the SSHE-RDGBD Contract, caused SSHE to incur liability on the Project to Marsico in the total amount of $407,246 comprised of the following: $236,901 for delay damages; $137,369 for labor inefficiencies; and $32,976 for the running track.

40. Because the Board has found that the $850,000 paid by SSHE to Marsico included the amount attributable to the liability incurred by SSHE to Marsico on account of the three design deficiencies, which three design deficiencies constitute both the breach by SSHE of its contract with Marsico and the breach by RDGBD of its contract with SSHE, the Board also finds that SSHE did suffer damages due to RDGBD's breach in the total amount of $407,246 comprised of: $236,901 for delay damages; $137,369 in damages for labor inefficiencies; and $32,976 for repair of the running track.

41. RDGBD is liable to SSHE for a total of $407,246 on account of the three design deficiencies in the Contract Documents identified above pursuant to breach of contract claim.

42. Under Paragraph 2.2.608 of Rider B in the SSHE- RDGBD Contract, RDGBD agreed to indemnify SSHE if SSHE is "called upon" by any prime contractor for additional compensation due to any design errors or omissions or to a failure of RDGBD to produce proper and coordinated plans, specifications and drawings for the Project in accordance with accepted standards and procedures.

43. The lack of complete and accurate information in the Contract Documents respecting the grade beams, the limits of insulation in the spine wall and the running track constitute design errors and omissions under Paragraph 2.2.608 of Rider B in the SSHE-RDGBD Contract.

44. The lack of complete and accurate information in the Contract Documents respecting the grade beams, the limits of insulation in the spine wall and the running track constitute a failure to produce proper and coordinated plans, specifications and drawings for the Project in accordance with accepted standards and procedures under Paragraph 2.2.608 of Rider B in the SSHE-RDGBD Contract.

45. Since SSHE has been called upon and found liable to Marsico in this action for lack of complete and accurate information in the Contract Documents respecting the grade beams, the limits of insulation in the spine wall and the running track, which we have found to constitute design errors and omissions and failure to produce proper and coordinated specifications and drawings, as noted in Paragraphs 42 and 43 above, SSHE is entitled under Paragraph 2.2.608 to indemnification from RDGBD in the total amount of $407,246 comprised of the following: $236,901 for delay damages, $137,369 for the labor inefficiencies and $32,976 for the running track repairs.

46. RDGBD's indemnification liability to SSHE is not conditioned upon the prior payment of any amount by SSHE to Marsico.

47. RDGBD is liable to SSHE for a total of $407,246 on account of the three design deficiencies in the Contract Documents identified above pursuant to the indemnification clause of Paragraph 2.2.608 Rider B in the SSHE-RDGBD Contract. This amount is the same as, not in addition to, the amount for which RDGBD is liable to SSHE pursuant to breach of contract.

48. The first indemnity clause in the SSHE-RDGBD Contract, Paragraph 11, entitled "Hold Harmless Clause" provides only tort indemnity and no indemnity for claims in assumpsit. The clause is inapplicable to the assumpsit claims brought before the Board.

49. Under Paragraph 4.3 of Rider B of the SSHE-RDGBD Contract, RDGBD is not entitled to additional compensation for delays in construction that are attributable to RDGBD's own acts or omissions.

50. RDGBD must repay SSHE the sum of $28,264 of the additional compensation that it received because of the 87 days of delay RDGBD caused on the Project pursuant to Paragraph 4.3 of Rider B of the SSHE-RDGBD Contract.

51. Under Paragraph 2.2.608 of Rider B of the SSHE-RDGBD Contract, RDGBD is liable for change orders for extra costs increasing the cost of the Project caused by design errors and omissions. Pursuant to two change orders (S.Exs. 5 an 6),
SSHE paid Turner an extra $136,681.74 because of the delays to remain on the Project until construction was completed.

52. RDGBD is liable to SSHE for the additional amounts it paid to its construction manager, Turner, that were attributable to design errors and omissions.

53. RDGBD must pay SSHE the sum of $34,730 of the additional compensation that SSHE paid Turner because of the 87 days of delay RDGBD caused on the Project.

54. RDGBD is liable to SSHE in the total amount of $470,240 with respect to the Project.

55. RDGBD is not liable to SSHE for the additional utility costs SSHE incurred because the Contract Document deficiencies did not cause the construction to be delayed into the winter weather.

56. RDGBD is not liable to SSHE for SSHE's attorney fees or consulting fees.

57. Interest on the damage awards runs from December 15, 1999, the date of substantial completion of the Project.

58. The parties will bear their own costs and attorney fees.

OPINION

The issues in this case arise from the construction of a recreation center at Slippery Rock University (the "Project"). The Project was scheduled to start in January 1998 and to be completed one year later. For a variety of reasons, most of which are the subject of this litigation, the Project took an extra year to build and resulted in large cost overruns. The Board must decide whether, and to what extent, the owner, Commonwealth of Pennsylvania, State System of Higher Education ("SSHE"), and/or the design professional, RDG Bussard Dikis, Inc., ("RDGBD"), the architectural firm retained by SSHE to design the project, are responsible for the construction delays and extra costs.

Procedural History

Marsico Corporation ("Marsico") filed a complaint on December 10, 2001, commencing this action in its own name and for the use and benefit of its two subcontractors, Pat Ionadi Corporation ("Ionadi") and Cost Company ("Cost"). Marsico's complaint alleges a breach of contract by SSHE and seeks damages of $1,778,720.49 plus interest on behalf of itself and the two subcontractors. Ionadi claims damages of $459,900 for delays/inefficiencies in the grade beam work, the slab on grade work, the construction of the concrete spine wall, and additional amounts to compensate it for running track repairs and the temporary bracing and shoring needed for the spine wall. Cost, the masonry contractor, claims damage of $406,331 for delays/inefficiencies to complete their work.

On February 11, 2002, SSHE filed its answer and new matter along with a complaint to join as additional defendants the architect, RDGBD, and Turner Construction Company ("Turner"), the construction manager. SSHE sued RDGBD for breach of contract, for indemnification, and for "extra costs" of $576,579 (attorneys fees, experts fees, utility charges,

and a refund of additional compensation it paid to RDGBD and Turner). Additional defendant Turner filed its answer and new matter to the SSHE complaint on March 15, 2002, and RDGBD filed its answer and new matter on April 17, 2002. On April 29, 2002, SSHE filed preliminary objections to a portion of Turner's new matter. After Turner responded, the Board sustained SSHE's preliminary objections on July 25, 2002. Marsico and SSHE filed their replies to Turner's new matter on May 9, 2002. On May 24, 2002, RDGBD filed its reply to Turner's new matter. After the pleadings were closed, the parties entered a period of discovery.

On September 11, 2002, the Board ordered the hearing of the matter to begin on March 3, 2003. On February 21, 2003, the Board granted a motion for a continuance and ordered the hearing to begin on May 12, 2003. On January 27, 2003, RDGBD filed a motion to dismiss. RDGBD's motion alleged lack of Board jurisdiction, release and failure to state a claim based upon an October 24, 2002, Claims Prosecution Agreement ("CPA") between Marsico and SSHE. The terms of the CPA provide, inter alia, that:

> The SSHE agrees to make payment to Marsico in the amount of $850,000.00 in consideration of Marsico's agreement to not enforce against the SSHE any award or judgment entered against the SSHE in the Board of Claims Litigation, to take an assignment of the SSHE's claims for indemnification against RDG and Turner, and to limit its recovery on any award or judgment against the SSHE to whatever Marsico is able to collect from RDG and/or Turner on the claims against RDG and Turner assigned to it by the SSHE.
>
> Marsico and the SSHE acknowledge and agree tha the SSHE's $850,000.00 payment to Marsico is not intended to serve as consideration for the release of any claims that Marsico has asserted against the SSHE
> in the Board of Claims Litigation. Rather, the SSHE's $850,000.00 payment to Marsico is in consideration of Marsico's agreement that it will not enforce against the SSHE any award or judgment that might be rendered against the SSHE in any litigation arising from the Project, including, but not limited to, the Board of Claims Litigation, and to limit its recovery to whatever Marsico, through the aforementioned assignment from the SSHE, is able to collect on any award rendered on the SSHE's claims over against RDG and/or Turner.

The parties made no allocation of any amount of the $850,000 payment to any particular item of Marsico's claim. The CPA also provided that, at the hearing, Marsico would present its claims against SSHE and that SSHE would not contest those claims. SSHE assigned its right to recover against RDGBD to Marisco, and both agreed that Marsico would present SSHE's case against RDGBD. Finally, SSHE and Marsico agreed to a formula for dividing any amounts recovered from RDGBD in this action.

After a careful review of case law on the subject of claims prosecution agreements, as explained more fully in its Order of March 27, 2003, the Board accepted a plain reading of the terms of the CPA and denied RDGBD's motion.

Turner also filed a motion to dismiss and a motion in limine. The Board denied the motion to dismiss, but granted the motion in limine, in part, on March 27, 2003. On May 8, 2003, SSHE filed a praecipe to settle and discontinue respecting Turner. At the time of hearing, Turner was no longer a party to the case, and the two claims remaining were Marsico against SSHE for breach of their contract and SSHE against RDGBD for breach of their contract and for indemnification.

On May 12, 2003, the hearing of the matter commenced in the Board's court room in Harrisburg and continued on May 13, 14, 15, 16, 19, 20, 21, 22, and 23, June 9 and 10, August 6, 11, 12, 13, and 14. On August 8, 2003, at the end of the case against it, RDGBD filed a motion for compulsory non-suit. On October 8, 2003, Marsico filed opposition to that motion. On March 11, 2004, the Board denied that motion.

Evidentiary Issue Raised at the Hearing

On the final day of the hearing of this matter, additional defendant RDGBD sought to introduce testimony from its expert witness, William Wolf, Jr. Mr. Wolf is an expert on

construction delays and damages. At the end of direct examination, RDGBD's counsel asked him for two opinions that plaintiffs asserted had not been included in the expert report from Capital Project Management, Inc., Mr. Wolf's company. Plaintiffs Marsico, Cost, and Ionadi objected to this testimony and moved to exclude it. (N.T. 3479-3481) The Board took their motion to exclude the two opinions under advisement and allowed the expert to testify pending its ruling. (N.T. 3481) The hearing adjourned before a decision on the motion was rendered.

At the hearing, Mr. Wolf testified on direct examination about the opinions expressed in the revised expert report of Capital Project Management, Inc. (D. Ex. 351 also called the "April Report"). The April Report had been provided in pre-hearing memoranda and was admitted into evidence without objection. He also prepared a second revised expert report (the "Second Report") that contained additional opinions. The Board refused to admit the Second Report into evidence pursuant to Pa. R.C.P. 501(c)(3) (BOC R.P. 501) because it had not been provided with the pre-hearing memoranda. The two opinions at issue were in the Second Report. (N.T. 3477, 3508)

Over the plaintiffs' objection, Mr. Wolf first opined that Ionadi used the measured mile approach to determine lost productivity, but had applied the concept incorrectly. Mr. Wolf pointed out the period that Ionadi selected for its "measured mile" base period was in November 1998 when Ionadi was pouring the concrete spine wall in sections and there was just a straight pour with no cut-outs. Ionadi compared this period to another period when Ionadi had to frame around openings and could not do straight pours. Because the type of work differed in the two periods, Mr. Wolf opined that this was not an accurate way to apply the measured mile method of determining productivity damages. (N.T. 3477, 3481-3485)

Mr. Wolf's second opinion at issue was that Cost used the modified total cost approach to measure their loss of productivity, but this method was not an appropriate measurement because this is a multi-party situation. (N.T. 3477) He notes that Cost computed its damages by taking their total labor cost, removing the change orders, and then deducting the anticipated labor cost. Cost claims that the amount remaining represents its lost productivity. (N.T. 3486) Mr. Wolf criticizes their use of this mechanism to measure damages because he says it assumes all delays are attributable to RDGBD and does not allow for the apportionment of any delay damages to any other party. (N.T. 3487)

The scope of expert testimony that is permitted at trial is governed by Pa. R.C.P. 4003.5(c). The primary purpose of the rule requiring that the expert's testimony be within the fair scope of the pretrial report is the avoidance of unfair surprise to an adversary concerning the substance of the expert's proposed testimony. Commonwealth, Department of General Services v. United States Mineral Products Co., 809 A.2d 1000 (Pa. Cmwlth. 2002). Two tests exist to determine whether testimony must be excluded. Is the testimony within the "fair scope" of the report? If so, does the testimony prejudice the opposing party?

In deciding first whether Mr. Wolf's trial testimony is within the fair scope of the April Report (D. Ex. 351), the question is whether, under the particular facts and circumstances of the case, the discrepancy between Mr. Wolf's April Report and his trial testimony is of a nature which would prevent the adversary from making a meaningful response, or which would mislead the adversary as to the nature of the appropriate response. Andaloro v. Armstrong World Industries, Inc., 799 A.2d 71 (Pa. Super. 2002), reargument denied.

The Board finds that both opinions at issue were within the fair scope of the April Report. The April Report extensively criticizes Ionadi's computation of its loss of productivity damages.

(D.Ex. 351 at 67-68). Mr. Wolf's statement about the measured mile approach not being properly applied by Ionadi actually pointed to facts already in the record regarding construction of the spine wall. If Ionadi thought Mr. Wolf's point was incorrect or ill-informed, Ionadi's counsel had the opportunity on cross-examination to show Mr. Wolf made an error. The second opinion of Mr. Wolf's concerning Cost's computation of its loss of productivity damages actually appears on page 76 of the April Report. Both Ionadi and Cost thus had sufficient notice of the expert's theories to rebut them. Feden v. Consolidated Rail Corp., 746 A.2d 1158 (Pa. Super. 2000)

The second test to be applied to determine whether an expert's testimony must be excluded is whether the testimony prejudices the opposing party. The opposing party has the burden to demonstrate that it has been prejudiced as a result of the testimony going beyond the fair scope of the expert's report before admission of the testimony must be denied. Commonwealth, Department of General Services v. United States Mineral Products Co., 809 A.2d 1000 (Pa. Cmwlth. 2002). None of the plaintiffs in the case before the Board suggested any specific prejudice that would result from the admission of Mr. Wolf's two opinions. See also, Allegheny Ludlum Corp. v. Municipal Authority of Westmoreland County, 659 A.2d 20 (Pa. Cmwlth. 1995).

Thus, under Rule 4003.5c and the applicable case law, the testimony of Mr. Wolf at N.T. 3477 to 3487 is admitted, and the objections raised by plaintiffs are overruled.

Project Background

The Project began when SSHE solicited technical qualifications for the design of the Project and chose RDGBD to be the architect. The parties entered into a contract for professional design services dated September 1, 1995, which was signed and approved by all

requisite parties by November 19, 1995. In addition to design services, RDGBD's scope of work included construction administration services such as review and approval of shop drawings and other submittals and periodic site observation during construction. As part of its design team, RDGBD retained Charles Saul, Engineering (CSE) to provide structural engineering consulting services.

The building, which is oriented on an east-west axis, is comprised of three major areas: Area C, houses the gymnasium with a running track suspended above it; Area B, which is south of Area C, contains a swimming pool, mechanical area, sundeck and offices; Area A, houses a weight room and fitness center.

A key structural element in the building is a cast-in-place reinforced concrete "spine wall" which runs the entire length of the project. The spine wall, which measures 18 inches wide and 25 to 40 feet high, is approximately 500 feet long. It serves as a bearing wall and supports various structural components of the building. Two unique features of the spine wall are the embedded anchors that are mounted within the concrete, to which structural steel members are attached, and the insulation that is "sandwiched" within the concrete in areas where one side of the spine wall is exposed to the outside. Except for the spine wall feature, the recreation center was not considered unusual or difficult to build.

The Project was constructed utilizing five multi-prime contracts: General Construction (site development and building construction); HVAC Construction; Plumbing Construction; Electrical Construction; Fire Protection Construction. The only prime contractor involved in this litigation is Marsico, which was hired by SSHE for the General Construction phase of work.

SSHE retained the services of Turner to serve as construction manager for the Project.

Marsico contracted with SSHE by agreement dated October 17, 1997, which was signed and approved by all requisite parties by December 10, 1997, to construct the Project for a fee of $6,892,000 in 365 calendar days (P. Ex. 758). Marsico hired various subcontractors to assist with the work, including: Livi Steel ("Livi"), who prepared structural steel shop drawings and manufactured the structural steel; Titusville Fabricators ("Titusville"), who prepared reinforcing steel (rebars) shop drawings and manufactured the rebars for the various reinforced concrete elements (grade beams, spine wall, slabs, etc.); Ionadi, who prepared spine wall shop drawings and constructed grade beams, spine wall, other concrete walls and slabs; and Cost, who did the masonry work (concrete block and brick).

As noted initially, the Project took nearly an extra year to complete. As a result, Marsico asserts a breach of contract claim against SSHE, blaming 257 days of this delay on SSHE because of errors and omissions in the plans and specifications provided for the Project (the "Contract Documents") and/or acts or omissions of SSHE's design professional, RDGBD. SSHE, in turn, claims against RDGBD for breach of their contract and for indemnification should it be found liable to Marsico for such deficiencies. RDGBD, for its part, denies the existence of any material defects in the Contract Documents and proffers evidence that many of the contractors on the Project, including Marsico, did not perform properly and were themselves responsible for significant portions of the delay.

It is therefore, necessary to parse through the design and construction details in the Contract Documents as well as the testimony and job site records to determine what design problems existed, which ones were material breaches, to what extent they caused damage and to whom. However, because no claims are made against parties other than SSHE and RDGBD, it should be noted that the Board's decision and findings herein focus on allocating fault for delays

and costs between SSHE/RDGBD on the one hand, and the contractors, as a whole, on the other. While some findings may identify one contractor or another as doing or failing to do certain things, the contractors were not in an adversarial position to one another and the Board does not draw any conclusions as to the allocation of fault among the contractors involved.

CLAIMS BY MARSICO AGAINST SSHE

Marsico claims that SSHE breached its duties under their contract and that those breaches delayed its work and caused it damages to complete the Project. Under Pennsylvania law, four elements must be established to make a claim for breach of contract: (1) the existence of a contract between the plaintiff and defendant; (2) the essential terms of the contract; (3) a breach of a duty imposed by the contract, and (4) damages resulting from the breach. Powell v. First Republic Bank, 274 F. Supp.2d 660 (E.D. Pa. 2003).

In this matter, the existence of a valid contract between Marsico and SSHE and its essential terms are not in dispute. The parties also agree that SSHE owed Marsico a duty to provide plans and specifications that included all the information needed to build the Project and that were free of material design mistakes. Under Pennsylvania case law, an owner, here SSHE, impliedly warrants the accuracy and completeness of the plans and specifications that it furnishes to the contractor, here Marsico. A breach of this obligation entitles the contractor to recover its costs. Bloomsburg Mills, Inc. v. Sordoni Const. Co., 164 A.2d 201 (Pa. 1960); Glasgow, Inc. v. Commonwealth of Pennsylvania, Department of Transportation, 529 A.2d 576 (Pa. Cmwlth. 1987). SSHE and RDGBD also had a duty to provide timely responses to Marsico's shop drawings and requests for information about the design. (P.Ex. 759, Rider B, 3.9.100, P.Ex. 948, Rider B, 2.2.609)

As to the standard to be applied to the plans and specifications themselves, it is not expected that they be perfect. Rather, these documents must exhibit the reasonable care, skill and diligence expected of a design professional in the construction industry. See, Bloomsburg Mills, Inc. v. Sordoni Const. Co., supra. So too is the design professional expected to perform his/her other contractual duties on a construction project with such care, skill and diligence. Id. See also, Kunkleman v. Dechant, 91 Pa. Super. 589 (1927)

The Reissuance

One of Marsico's allegations is that the Contract Documents were deficient per se because SSHE (at the request of Marsico and Turner) required RDGBD to reissue the structural drawings six months after the start of construction. Certainly RDGBD was requested to revise and reissue the structural drawings because of a number of questions and problems identified with the originals. However, case law and testimony at the hearing made it clear that the standard for plans and specifications is not that they be flawless. On the contrary, because they are prepared by humans, it is to be expected that they would contain some mistakes. Evidence also suggests that there were a multiplicity of reasons for a reissuance of the Contract Documents, including a desire to consolidate mark-ups on various shop drawings into one set of documents. Additionally, the Board finds the testimony of James Bufano (RDGBD's expert engineer) more persuasive than that of Eric Kachele (Marsico's expert engineer) regarding the overall quality of the Contract Documents. Accordingly, Marsico has failed to establish that reissuance of the Contract Documents, in and of itself, is conclusive proof that the Contract Documents were legally deficient.

Although the Board finds that the reissuance of the Contract Documents is not dispositive of SSHE's breach of its duty under the contract to provide complete and accurate Contract

Documents meeting design professional standards in the construction industry, this does not answer Marsico's charges that specific elements of the Contract Documents were deficient. These more specific claims regarding various aspects of the Contract Documents and their relationship to the delays and additional costs experienced do, however, lead the Board to find that certain acts and omissions of SSHE were material breaches that caused Marsico damage.

As the Board explains more fully below, SSHE breached the contract by failing to provide in the Contract Documents complete and accurate information from its architect respecting grade beams and the limits of insulation for the spine wall. This breach damaged Marsico by delaying construction for a total of 87 days and by causing Marsico to make an extra lift of concrete for several portions of the spine wall. SSHE also breached the contract by providing Contract Documents that contained a material design error for the running track. Finally, the temporary bracing of the spine wall and the temporary shoring for the bridge were necessary for safe construction of the Project, and Marsico is entitled to recover these costs.

As to the remaining days of delay and additional cost claimed, the old expression, "enough blame to go around" most aptly describes the circumstance. Many factors other than the Contract Documents, including the contractors' own acts and omissions, contributed to the further delays. Accordingly, Marsico has failed to establish by a preponderance that any additional delay or costs other than those noted above were caused by deficiencies in the Contract Documents, SSHE or its agent, RDGBD.

Getting Started

SSHE issued the Notice to Proceed to Marsico on January 7, 1998. The Project was scheduled to take 365 days to complete. Under the contract between SSHE and Marsico, Marsico was obligated to produce a complete Construction Schedule within 28 days of the

Notice to Proceed. Marsico failed to prepare this schedule in a timely or complete way. Jack Berthold, Marsico's project manager, first distributed a "preliminary" schedule to the other prime contractors on January 27, 1998. At the third job conference on February 24, 1998, Marsico distributed a construction schedule for Area C only. It was not until March 24, 1998, that Marsico finally distributed a copy of a complete Construction Schedule to all parties. That was almost two months late.

As of March 24, 1998, Marsico's work was already several weeks behind. This delay made the Construction Schedule unrealistic as soon as it was produced, and not useful for determining how far behind the Project was, or how to catch up. For instance, the March 24, 1998 Construction Schedule indicated that Ionadi was to start the spine wall in Area C on March 18, 1998, but on that date Ionadi's crew was still working in Area C on the interior grade beams. Ionadi did not finish those interior grade beams until April 24, 1998. By the end of April, the Project was significantly behind. Additionally, the Construction Schedule was not updated as required by the contract. Marsico's failure to properly schedule the Project as required by contract contributed significantly to the delay and overall lack of coordination on the Project.

Another immediate problem was Marsico's failure to establish and produce a Submittal Schedule. Contract specifications required this be produced within 10 days of the time set for production of the construction schedule, i.e. within 38 days of the Notice to Proceed (See Plaintiff's Ex. 759, Rider B, 3.9.100 and General Requirement Section 01300-Submittals). Such a schedule is designed to coordinate the production of shop drawings with the actual start of work on the construction-site and to take into account the lead time needed between production of initial shop drawings for review and revision prior to the planned commencement of activity.

This did not happen, and its absence also contributed significantly to delay and confusion on the Project.

Some things did, at least initially, go satisfactorily. A review of the construction work from January to April shows that construction began with the excavation of the site, and the placement of the caissons. This work proceeded on time and no design delay claims are made for this period. Livi Steel was Marsico's structural steel subcontractor, and it proceeded early in the period to make its shop drawings from the Contract Documents. The testimony and exhibits at the hearing show that Livi Steel found some minor discrepancies in the Contract Documents, but was able to work around them. Although the Contract Documents did not specifically call out the top of the steel in the spine wall, Livi figured this out from the Contract Documents and established the elevations of steel. Livi Steel submitted its drawings to Marsico by February 4, 1998. After the initial drawings were returned because they were reproductions of Contract Documents, they were resubmitted and approved by RDGBD by March 27, 1998. We will come back to these drawings later. However, other areas of construction, particularly the grade beams, were encountering problems.

Grade Beam Issues

Marsico claims that there were delays in construction of the grade beams because of design deficiencies. It alleges that SSHE had a contractual obligation to supply it with a grade beam schedule in the Contract Documents that included all the grade beam elevations and dimensions. Marsico also asserts that the grade beam plans were deficient due to numerous conflicts or omissions regarding sizing, elevations, and other aspects of grade beam information.

The grade beam rebar shop drawings were prepared by Titusville's detailer, Al Gerzewski. Mr. Gerzewski testified that he usually found the dimensions for the grade beams on

a grade beam schedule, but that RDGBD did not supply one. Mr. Gerzewski also testified that he had to make his own grade beam schedule by referring to several aspects of the Contract Documents and resolving inconsistent or missing information as best he could. No testimony was offered to indicate that either SSHE or RDGBD was obligated under their contracts to specifically provide a grade beam schedule. Mr. Kachele, Marsisco's own expert, even testified that, although helpful, the requisite information could be placed on grade beam plans without a schedule. While a schedule may have made Mr. Gerzewski's work easier, the Board finds that a grade beam schedule was not required of SSHE/RDGBD.

Marsico also alleges that there were other material deficiencies in the Contract Documents regarding the grade beams, including missing and/or inconsistent sizing and elevation information. It further asserts these deficiencies caused delay in production of these shop drawings. The Board has reviewed the grade beam evidence presented at the hearing and finds that it does support Marsico's allegations. Other than lack of a grade beam schedule, Mr. Gerzewski and Mr. Kachele, Plaintiff's expert engineer, identified several problems with the original grade beam plans in the Contract Documents.

Mr. Kachele's grade beam testimony (N.T. 1491-1504) identifies over a dozen examples of missing or inconsistent grade beam sizing, elevation, step location and/or section cuts in the Contract Documents. These include two significant examples of sizing/elevation problems with grade beams along the critical C-line (the plan line along which the spine wall was to be built). A comparison of these two claimed deficiencies with the grade beam information in the Contract Documents (S1.1 – S1.3) and the grade beam shop drawings dated February 10, 1998, shows:

1. Titusville could not determine the depth of the grade beam along C-line between the 2-10 column lines without ignoring an incorrect bottom elevation provided on the plan or making extraordinary

assumptions as to the extent of section cut details provided elsewhere; and

2. There were incorrect top elevations given for the grade beam all along the 26 column line, for C-line between 24 and 26 column line and A-line between 23 and 26 column line (because no top elevations were specifically noted, the default height of (-0'-8") was incorrectly indicated by the Contract Documents).

In summation, the Board finds that the grade beam plans and information provided in the Contract Documents was not complete and accurate and did not exhibit the level of care, skill and diligence required of a design professional in the construction industry. This constitutes a breach of SSHE's obligation to Marsico and requires that we now analyze and determine what effect this problem actually had in causing the overall delay in completion of the Project.

In assessing the effect of these deficient grade beam plans, we first note that there were other problems on-site with construction of the grade beams. For instance, under the Construction Schedule, Ionadi was scheduled to start prep work to pour the grade beams on February 26, 1998, and to complete the interior grade beams in Area C by March 13, 1998. However, evidence indicates Ionadi was working on another job and did not review Project plans or information until it arrived at the site on February 20, 1998. This did not allow sufficient time for Ionadi to review the plans and get answers to any questions they may have had prior to their scheduled start (given the 15 day turnaround for design professional response provided by contract). Ionadi did not finish these interior grade beams until April 24, 1998. The Board believes that the delay in completing construction of the interior grade beams is attributable to other factors in addition to problems with the grade beam plans, including inter alia, Ionadi's late start, Marsico's poor coordination and scheduling of the Project, and the condition of the roads to the Project, which were muddy and which greatly impeded Ionadi's access to perform its grade beam work.

However, in our view, the problems associated with actually constructing the grade beams did not cause a delay in the construction of the spine wall and, hence, did not contribute to the overall delay experienced on the Project. Specifically, the interior grade beams upon which the spine wall was to be built were substantially complete by April 24,1998, despite the problems noted above. However, the rebar shop drawings for the spine wall, a necessary prerequisite for the commencement of spine wall construction, were not even presented to SSHE and RDGBD for review until after April 28, 1998 (and were not approved until June 10, 1998). Thus it was delay in the spine wall rebar shop drawings, not the grade beam construction itself, that was the operative factor in delaying commencement of spine wall construction and delaying the completion of the Project.

Accordingly, we must ask what factors delayed production of the spine wall rebar shop drawings. While there were several, we find that the first significant factor was the delay in producing the grade beam shop drawings. This is so because testimony and logic indicate that the grade beam shop drawings needed to be finalized so that the detailers knew the correct elevations and steps of the grade beams along C-line in order to begin shop drawings for the spine wall, which rested on top of these grade beams. Since we find that the delay in the grade beam drawings was due to the deficiencies in the Contract Documents described above, we must allocate a period of delay to these deficiencies.

Phillip Apprill, Marsico's delay expert, indicates in his report that the grade beam drawings were initially to be submitted by January 14, 1998, but because of problems with the Contract Documents were delayed until February 10, 1998. This is a delay of 27 calendar days. Having found the Contract Documents deficient for the reasons stated above, we find Mr. Apprill's attribution of 27 days credible and will adopt it. He goes one step further and asserts

that commencement of the spine wall rebar shop drawings should have begun on February 11, 1998, upon Titusville's completion and submittal of the grade beam drawings, but because of the uncertainty with the grade beam elevations, Titusville turned its attention to other drawings and did not return to the spine wall rebar drawings until March 20, 1998, thus adding an additional delay caused by design deficiencies in the grade beam plans.

The Board agrees that Titusville/Marsico were justified in delaying start of the spine wall rebar drawings until its base line elevations on the grade beams along C-line were clarified. However, we also find that February 23, 1998, the date the grade beam shop drawings were corrected and returned by RDGBD (with all relevant elevations and sizes affecting C-line corrected) was the date Titusville should have commenced the spine wall rebar drawings. Accordingly, an additional 12 days of delay should be added to the 27 noted above. In sum, the Board finds 39 days of delay attributable to grade beam design deficiencies in the Contract Documents and charges these to SSHE.

Spine Wall Issues

There were two major types of delay asserted respecting the spine wall, delay in beginning its construction and delay during its actual construction. We address the former first.

Marsico contends that SSHE bears responsibility for the delay during the preparation period before construction of the spine wall began, approximately April to July. Marsico claims that this delay was caused by deficiencies in the Contract Documents and RDGBD's untimely responses to requests for information. Marsico claims that the Contract Documents failed to include correct information concerning the top of steel and the arc of the spine wall, the pier configurations and pier ties, and the location of insulation in the spine wall. These deficiencies in the Contract Documents, coupled with RDGBD's failure to give timely responses to requests

for this information, allegedly delayed Titusville in finishing its rebar drawings for the spine wall and Ionadi in commencing construction.

The Board finds merit in the claim by Marsico against SSHE for delay in providing the limits of insulation for the spine wall. This information was crucial early on because it was needed by Titusville, who was creating the spine wall rebar shop drawings. Titusville needed to know the location of the insulation in the wall so it could draw the proper lift levels, pier ties and pier configurations. This information was also needed by Ionadi to plan its form work and concrete lifts for the spine wall.

Delay In Starting the Spine Wall

As has been acknowledged by all parties, the critical path of construction on this Project entailed getting to and building the spine wall, then connecting the structural steel and closing the roof prior to the onset of winter weather. As we have noted above, the first significant misstep along this critical path attributable to defendant SSHE occurred in the grade beam portion with the deficiencies in the grade beam plans. The second occured in the spine wall plans found in the Contract Documents. Before Ionadi could begin constructing the spine wall, Titusville had to prepare the spine wall rebar shop drawings ("SW Rebar Drawings") and submit them to RDGBD for approval. The grade beams along C-line were completed by April 24, 1998, but the spine wall construction could not begin at that time because the SW Rebar Drawings were not submitted for the first time until April 28, 1998 ("SW First Submission"). Moreover, RDGBD had to approve these drawings before Ionadi could start building the wall.

After the SW First Submission was presented to it, RDGBD had fifteen days under its contract's terms to review and return the drawings to Marsico. The SW Rebar Drawings were due to be returned by May 13, 1998, but were not returned until May 15,1998. More important than this initial two day delay was the fact that RDGBD failed to provide the critical information that Titusville asked for and that it needed to complete these SW Rebar Drawings with RDGBD's first review.

The original Contract Documents were unclear as to the specific limits of insulation in the spine wall and the corresponding pier and tie configuration details. In fact, some of the details given showed insulation where there was to be none and vice versa.

RDGBD's structural engineer for the Project, Mr. Korpela, provided comments on the SW First Submission drawings and then marked them "Revise and Resubmit." His mark-ups to Rebar Shop Drawings Nos. 12, 13, 14 and 15 indicated solid piers and corresponding solid pier single ties as the configuration for all the piers (except for the pier at the bridge) from the top to the bottom of the spine wall. This was misleading and non-responsive to Titusville's request.

On Drawing 13, Titusville provided "Pier details" noting the two types: an Exterior Pier (Exposed) which showed a pier with insulation utilizing 6-#6 rebar and a multi-piece tie configuration. It also showed an Interior Pier (Non-exposed) with no insulation utilizing 6-#6 rebar and a 1 piece tie. The importance of these pier details is that a multi-piece tie configuration was needed in place of the 1 piece tie wherever insulation was to be placed between the concrete portions of the spine wall. Next to these "Pier Details," Titusville made a request to the design professional: "Please, Please Provide Information As To Where Rigid Insulation Begins and Ends, Needed For Pier Types!!!" On Drawing 14, Titusville provided similar pier details, which noted that there were 26 places for these piers to be located and asked, "Please Provide

Information As To Were (sic) Rigid Insulation Begins and Ends, Needed For Pier Types and Ties."

Mr. Korpela responded to Titusville's pleas for more information as follows:

(A) On Drawing 13, Mr. Korpela labeled the Exterior Pier detail as drawing detail 26/13 and referenced this to the Contract Documents detail 26/S7.5 (Wall Reinf. A Plan). This rendering of an insulated pier was apparently correct and matched the Contract Documents detail at 26/S7.5.

(B) On Drawing 14, Mr. Korpela made no change to the Exposed (Exterior) Pier detail and responded to the request to provide information as to where the rigid insulation for the piers begins by making the comment that the Exposed Pier detail (i.e. the insulated pier detail) is only to be used at the bridge.

(C) On Drawing 13, Mr. Korpela circled ("clouded") the Interior (Non-exposed) Pier detail, corrected it to show it as 8-#8s retaining a single tie configuration and solid throughout (no insulation), labeled this drawing detail 15/13 and referenced Contract Documents detail at 15/S7.3 (Section, a Spine Wall). This rendering of a solid pier, as initially presented by Titusville, was apparently incorrect and did not match the detail given by the Contract Documents at 15/S7.3. Mr. Korpela correctly changed the drawing detail for the solid piers from 6-#6s to 8-#8s.

(D) On Drawing 14, Mr. Korpela changed the Exposed Pier (solid pier) detail to 8-#8s and he noted, "See 15/13."

(E) Mr. Korpela proceeded to annotate the SW First Submission Drawings 12, 13, 14 and 15, indicating that the only pier with insulation in the spine wall (26/13 detail) would be at the bridge between column 1 and column 2. He noted that all other piers, both below the mezzanine level (originally to be the first of only two concrete lifts) and above, are shown via section cuts and notes referencing 15/13 to be solid piers.

(F) Other than the mark-ups noted above, Mr. Korpela ignored the request for information as to the limits of insulation.

These mark-ups to the Titusville Rebar Shop Drawings 12, 13, 14 and 15 (First Submission) indicating solid piers and corresponding solid pier single configurations for all the

piers (except for the pier at the bridge) from the bottom to the top of the spine wall were non-responsive and misleading at best. Although the limits of insulation would not alter the number or size of the rebar in the vertical spine wall piers (8-#8s) nor horizontally along the spine wall, it would significantly alter the type of rebar tie configuration needed to deal with the insulation sandwiched between the two sides of the concrete in the spine wall. It also impacted where the rebar would end for the first lift and begin for the second and third.

Titusville needed to know the limits of insulation in the spine wall in order to properly detail the spine wall pier tie configurations and lengths for the respective lifts. It needed to identify where the pier and tie configuration would change from solid to insulated. This was a legitimate and important question posed by Titusville to RDGBD, and the answer was due on May 13, 1998.

Mr. Korpela made his response on May 15, 1998 ("DP Response of 5/15/98") and created confusion, frustration and delay for Titusville in its effort to finish the SW Rebar Drawings. This, in turn, delayed Ionadi in its effort to construct the spine wall.

On May 29, 1998, Titusville made the second submission of its SW Rebar Drawings to RDGBD and on June 10, 1998, Mr. Korpela returned them with the notation, "Make Corrections Noted." Titusville had provided three pier details on Drawing 20 along with a Pier Schedule and a "Spine Wall Elevation" showing where it understood the limits of insulation were located. The three pier details included: 1) 26/20, the Pier Bridge Span (carrying over the 6-#6 / multi-piece tie/ insulated pier from 15/13 in the First Submission); 2) 15/20, the Non-Insulated Area Pier (carrying over Mr. Korpela's correction to 8-#8s / piece tie / solid pier from 15/13 in the First Submission; and 3) 15A/20, Insulated Area Pier (combining the correction to 8-#8s but showing insulation and a multi-piece tie configuration). The Pier Schedule keyed off of the Spine Wall

Elevation in an attempt to clarify where the piers would be insulated with multi-piece ties (15A/20) and where they would be solid with 1 piece ties (15/20).

When RDGBD returned this SW Second Submission, Mr. Korpela specifically noted that he had not reviewed the limits of insulation on the Spine Wall Elevation, Drawing 20. RDGBD did remove several 15/20 piers from the first lift. Also, he added 15/20 (solid pier) detail to the second and third lifts, several of which showed solid piers in areas ultimately containing insulation (e.g. column lines 23-26), and he made no section cuts at all utilizing the 15A/20 detail although there were ultimately several of these in the wall. We, therefore, find that Mr. Korpela's response to the SW Second Submission failed to provide the limits of insulation and continued the confusion and uncertainty regarding the upper portions of the spine wall. In fact, RDGBD did not resolve the limits of insulation issue until July 29, 1998.

The Board finds that the questions and confusion over the limits of insulation, corresponding pier and tie configurations and lift heights delayed approval of the spine wall shop drawings and, in turn, caused a delay in starting to pour the spine wall. We further find that the Contract Documents were not complete and accurate with respect to the limits of insulation in the spine wall and did not exhibit the care, skill and diligence required of a design professional in the construction industry. Similarly, we find Mr. Korpela's response to Titusville's requests for information was not accurate and complete and failed to exhibit the care, skill and diligence required. The rebar shop drawings for the spine wall were submitted April 28, 1998. Based on that submittal date, the review and approval should have been completed no later than May 13, 1998. The spine wall shop drawings were instead returned on May 15, 1998, and were marked up for re-submittal. Marsico resubmitted the shop drawings on May 29, 1998, and the shop drawings were returned approved as noted on June 10, 1998. We find that the need for a second

submittal and delay in approval of these drawings were due primarily to the deficiencies in spine wall information provided in the Contract Documents as noted immediately above. This delay begins on May 13, 1998 and runs for 28 days until June 10, 1998, and is also charged to SSHE.

June 10, 1998, becomes an important date because, although Marsico and its subcontractors had to wait until July 29, 1998, for final resolution of the limits of insulation, they were, from June 10, 1998, onward, able to design, fabricate and deliver rebar and design and order forms for the site in order to begin pouring the first lift of the spine wall. Specifically, the lack of information regarding insulation limits caused Marsico, Ionadi and Titusville to alter their initial plan, which was to construct the wall in three lifts.[1] The contractors were worried about accumulating delays in the construction and, since the spine wall was the key structural element in the building, they needed to expedite things any way they could. To compensate for the lack of clear levels of insulation, they now planned for a fourth lift.

Marsico, Titusville and Ionadi initially planned on 3 lifts to construct the spine wall: the first lift (18" thick) was to go from the bottom all the way to the elevation at which the insulated spine wall began; the second lift (8" thick) was to be one side of the insulated wall and go all the way from the first lift to the top of the spine wall insulation; the insulation (2" thick) was then to be placed on the side of the second lift and the third lift (8" thick) was to go on the other side of the insulation from the first lift all the way to the top of the spine wall and cap over the insulation just at the top of the wall. Because of the uncertainty of the insulation limits in the wall, Marsico, Titusville and Ionadi were forced to insert a fourth or additional lift in a portion of the spine wall, so that they could begin pouring the bottom (18" solid portion) up to an elevation

[1] The terms "lifts" and "pours" were used interchangeably by many of the witnesses and attorneys in this case in describing the actual laying of concrete into the spine wall. We will use the term "lift" to describe the height or elevation to which concrete was to be poured along the length of the spine wall and "pours" to mean the discrete section of length along the spine wall poured at any one time.

they reasonably believed unaffected by insulation and allow a gap well below the elevation at which the insulated portions began.

The decision by Marsico and its subcontractors to add a fourth lift was a good faith and practical solution that allowed them to start pouring the spine wall up to an elevation they believed would not be affected by the location of the insulation while they awaited clarification from RDGBD. By inserting an additional lift in the spine wall process, the contractors were able to eliminate most of the delay in the subsequent pouring of the spine wall due to the uncertainty of the insulation limits.

Delay in Building the Spine Wall

In addition to the delays and costs noted above caused by deficiencies in the grade beam information and the missing limits of insulation, the Board finds that a portion of the delay caused by the Richmond anchor problem experienced in the actual building of the spine wall is attributable to deficiencies in the Contract Documents and SSHE. However, with the exception of a small portion of the Richmond anchor problem, Plaintiffs have failed to establish that any additional delays are attributable to deficiencies in the Contract Documents, SSHE or RDGBD.

The Board agrees that the dimensions for the arc of the spine wall were not expressly called out in the Contract Documents. However, Marsico submitted RFI No. 43, dated May 7, 1998, requesting the radius of the arc in the spine wall. RDGBD responded with the necessary information on May 8, 1998. We find that this design deficiency in the Contract Documents did not contribute to the Project delay.

Marsico alleges, in a claim related to the spine wall construction delay, that the Contract Documents failed to show the locations in the spine wall of the embedded plates to which the structural steel attached. In order to construct the upper portions of the spine wall, Ionadi needed

to know where the embedded plates were located. These locations were needed to connect steel members to the spine wall, and the embeds had to be placed prior to pouring the spine wall sections around them. Marsico claims that SSHE and RDGBD breached their contractual obligations by failing to provide embed location information in the Contract Documents.

The Board finds that, although Ionadi had problems finding the embed locations, neither SSHE nor RDGBD are responsible for this problem. All the necessary design information to place the embeds was contained in the Contract Documents. This was clearly demonstrated by Mr. Bufano, RDGBD's expert, at the hearing.

Mr. Bufano showed how Livi Steel, Marsico's subcontractor for the structural steel work, used the Contract Documents to prepare the structural steel and spine wall embed shop drawings for the Project. (N.T. 3091-3115) As previously noted, these structural steel shop drawings were first submitted to RDGBD for review in early February 1998 and approved by RDGBD on March 27, 1998. Plaintiff's own witness, Eric Campbell of Ionadi, acknowledged that once one knew the tops of steel, the location of the embeds and anchors were also fixed. Throughout April, May, and thereafter when Titusville and Ionadi needed the information about the location of the embeds in the spine wall, Marsico was in possession of these approved structural steel shop drawings, but it did not share them. According to Ionadi's daily log, Marsico did not give the drawings to Ionadi until mid-June 1998.

Even after receiving the Livi Steel drawings in mid-June, Ionadi continued to have trouble with the location of the embeds in the wall. Mr. Korpela, prepared an embed kit from the information on the Contract Documents and the Livi Steel drawings and sent it to Ionadi on July 14, 1998. This kit showed the centerlines and elevations so that Ionadi could precisely locate each plate. RDGBD was not contractually required to provide the embed kit, but did so to assist

the contractors. RDGBD's failure to provide the kit earlier was not a design deficiency. Ionadi could have prepared the kit itself from the information in the Livi Steel drawings. In fact, during Mr. Bufano's testimony, Marsico's counsel stipulated that the Livi Steel drawings did include all the required embed information with the exception of certain types of anchors. (N.T. 3115-3118)

As to Ionadi's complaints about spine wall construction being delayed because of the untimely supply of Richmond anchors, the evidence indicates that only a portion of this problem is due to SSHE/RDGBD. Testimony indicates there were hundreds of such anchors used on the Project spine wall to anchor the embed plates. Of this multitude, some were Type I and some Type II, the basic difference being the length of the anchor bolts. The shorter ones were used in the 8" sides of the insulated spine wall, and the longer ones in the solid 18" portion of the spine wall. The Board accepts that the uncertainty of the limits of insulation until July 29, 1998, caused the need for reordering and/or adjustment in the ratio of long and short anchors at this time. Plaintiffs' testimony suggested that the Richmond anchor problem occurred primarily in the steel joist beam connections in the gymnasium area and affected progress from this July 29, 1998, date until the mid to the end of August (N.T. 1063-1068). The Board also notes that the structural detail for these anchors called for the bottom anchors to be the longer Type I's and credits Plaintiff's assertion that when the insulation limits were finally fixed, these lower anchors had to be changed to the shorter Type II's.

On the other hand, testimony also indicated that the insulation limit changes would have required longer ones in some instances and shorter ones in other locations. We further note that Ionadi was experiencing problems with an inadequate supply of these anchors even for the first lift, which was solid and unaffected by the insulation levels. Moreover, common sense also

dictates that, given the need for both types, the relative uncertainty of insulation limits and the need to avoid further delays, one would reasonably expect Marsico to have extras of both types on hand. This suggests to the Board that the anchor problem stemmed, at least as much from supply and ordering problems, as it did from insulation limit adjustments. Under these circumstances, we find that SSHE bears responsibility for 20 days of delay in actual construction of the spine wall due to the need to re-order some of the Richmond anchors following final resolution of the limits of insulation on July 29, 1998.

Accordingly, the Board finds that Marsico experienced a total of 87 days of delay on the Project attributable to SSHE for which delay damages are appropriate. The Board further finds that, with the exception of the items noted above contributing to 87 days of delay, Marsico has failed to carry its burden of proof that the other outstanding issues relating to the limits of insulation or other alleged design deficiencies contributed materially to the overall Project delay.

Winter Weather Damages

Marsico alleges that it is entitled to delay damages from SSHE, not only for the period of time attributable to design deficiencies, but also for working in winter conditions. The spine wall had to be completed before the steel for the roof could be put into place because it was anchored into the wall. The accumulating delays made it critical to get Area C enclosed and the masonry work there and in Areas A and B done before the onset of winter weather conditions. Marsico's Construction Schedule indicated that the spine wall was to be finished in Area C by May 15, 1998 and in Area B by June 29, 1998. The steel for the roof over Area C was scheduled to be erected by July 1, 1998. As noted earlier, Ionadi was just starting to pour the spine wall on or about July 7, 1998.

Marsico contends that the delay caused by SSHE/RDGBD pushed back the entire construction schedule into the winter months and that, accordingly, SSHE and RDGBD caused 257 days of delay on the entire Project. The Board has found only 87 days of delay attributable to SSHE. If 87 days are added to the spine wall construction and its effect applied to the steel erection/roofing/masonry sequence necessary to enclose Area C, utilizing Marsico's own Construction Schedule (P. Ex. 128), we find the date of Area C enclosure pushed out to December 12, 1998.[2] Marsico correctly determined B-Masonry to be load bearing and scheduled it prior to steel erection. A similar analysis for Area B indicates that the B-Masonry, even after 87 days of delay on the spine wall construction, would have been complete no later than November 12, 1998. Finally, an analysis for Area A, even though little, if any, of Plaintiff's testimony focused on problems in this area, indicates that the A-Masonry, after 87 days delay on the spine wall would have been complete by no later than November 21, 1998.

In sum, the Board finds that the 87 days of delay attributed to SSHE pushed the enclosure of Area C to December 12, 1998; the completion of Area B-Masonry to November 12, 1998; and the completion of Area A-Masonry to November 21, 1998.[3] Testimony and records indicate the onset of winter weather did not begin until December 17, 1998. As a result, the Board denies Marsico's, Ionadi's and Cost's claims for any damages against SSHE/RDGBD for winter weather conditions. Similarly, claims relating to problems encountered in the Spring of 1999, such as Marsico's $108,765 claim for labor inefficiencies and Ionadi's claim for labor

[2] Marsico originally scheduled the C-Masonry to be done during C-Spine Wall and before steel erection because it mistakenly believed the C-Area masonry wall was load bearing. Upon discovery of this error the C-Masonry had to be re-sequenced to follow steel erection.

[3] The Board notes that some of these activities such as B-Masonry indicate a need for other predecessor activities to be done in addition to the spine wall and/or steel/roofing sequence noted. The Board has reviewed these other predecessor tasks and found no credible evidence to suggest that these tasks held up the basic spine wall masonry sequence or that these other predecessor tasks were delayed due to Contract Document deficiencies or SSHE.

inefficiencies in the Slab on Grade work caused by wet Spring conditions and difficulties, are also denied.

COST COMPANY CLAIM

Cost Company was Marsico's masonry subcontractor for the Project, and it has requested $406,331 in damages for the extensive delays and inefficiencies that it experienced in completing its work. Since the Board did not find that the 87 days of delay attributable to design errors pushed the Project into the winter weather, the Board denied Cost's request for damages due to operating in winter conditions in full. This was not the fault of SSHE or its architect. Cost's duration on the Project was, however, extended as a result of the 87 day delay attributable to SSHE, so specific delay damages for this portion of the delay is appropriate.

There were many reasons that Cost experienced labor inefficiencies prior to winter weather as well. These included some mistakes by Marsico, such as their misreading of the Contract Documents when they determined that the north exterior wall in Area C was a load bearing masonry wall, when in fact it was not. Marsico also scheduled Ionadi and Cost to complete work in Areas A, B and C at the same time when it was logistically impracticable. These mistakes, not attributable to SSHE or the architect, caused Cost to start its work late and to have to re-sequence its work and at times to demobilize from the Project. However, we believe that the delayed construction of the spine wall also played a part in Cost's difficulties on-site. We have found that 25% of Cost's labor inefficiencies were due to the delayed construction of the spine wall caused by the deficiencies in the Contract Documents and attributable to SSHE.

Accordingly, the Board found SSHE liable to Marsico for the use and benefit of Cost for labor inefficiency costs in the amount of $46,841, and liable to Marsico, in its own right, for $4,684 as a 10% mark-up on this subcontractor work.

IONADI CLAIM

Ionadi was Marsico's concrete subcontractor for the Project, and it has requested $459,900 in damages for the extensive delays and inefficiencies that it experienced in completing its work. It also claims an additional $91,439 for additional bracing and shoring for the spine wall not included in its original bid. Since the Board did not find that the 87 days of delay pushed the Project into winter weather (or into the Spring of 1999) the Board denied Ionadi's claim for claims relating to these problems (i.e. the Slab on Grade Labor Inefficiencies claim). Ionadi's duration on the Project was, however, extended as a result of the 87 day delay attributable to SSHE, so specific delay damages for this portion of the delay is appropriate.

Spine Wall Inefficiency Claim

Originally Marsico, Titusville and Ionadi planned to construct the spine wall using three concrete lifts. The first lift was to be to the elevation of the spine wall where the insulation began, the second lift was to be one side of the insulated wall, and the third lift was the other side of the insulated wall. As indicated earlier, Titusville could not determine during the April through July period exactly where the insulation began at various places along the wall, delaying the completion of its shop drawings. Without approved shop drawings, Ionadi was also delayed. As the Project fell further behind schedule, Ionadi decided to go ahead, and begin pouring the first lift on or about July 7, 1998. Because it did not know exactly where the insulation in the wall began, Ionadi could not pour all the way up to the top of the solid portion of the spine wall, but instead stopped short of that height in several sections to await the determination of the insulation location. This decision was appropriate because it mitigated the delay and the damages incurred, but it did necessitate an extra lift. Once the architect determined the

insulation limits on July 29, 1998, Ionadi could then eliminate the extra lift and pour the first lift of concrete up to the beginning of the commencement of the insulation.

The inefficiencies caused by the extra lift are the responsibility of SSHE because, as stated earlier in the limits of insulation discussion, the deficiency in the Contract Documents caused the need for this additional lift. In addition, the need to re-order some of the Richmond Anchors, after July 29, 1998, that had been affected by the late changes in the limits of insulation contributed significantly to the lack of an adequate supply of correct anchors as the spine wall progressed. This, in turn, caused Ionadi to have to jump around and pour non-continuous segments of the spine wall while it awaited anchors, thus creating labor inefficiencies. Having found that the portion of the Richmond Anchor supply problem attributable to SSHE continued for approximately 20 days into August, we also found SSHE responsible for Ionadi's labor inefficiencies for July and two-thirds of August. To compute the damages due from SSHE to Marsico for the use and benefit of Ionadi for the spine wall labor inefficiencies claimed, the Board used relevant portions of the expert report from Duggan & Rhodes that was introduced at the hearing by Ionadi. This report indicated in the section entitled "Spine Wall Labor Inefficiencies" that Ionadi experienced labor inefficiencies for the first 4 months of the 5 spent constructing the spine wall. Applying this, the Board determined that one and two-third months out of 4 impacted months, or 41.5% of the claimed labor inefficiencies damage was actually due to SSHE.

Accordingly, the Board found SSHE liable to Marsico for the use and benefit of Ionadi for labor inefficiency costs in the amount of $78,040, and liable to Marsico, in its own right, for $7,804 as a 10% mark-up on this subcontractor work.

Running Track Claim

Ionadi constructed the elevated running track that ran through Area C and claims $29,978 from SSHE for its architect's defective design of the track. After Ionadi constructed the track in accordance with the design specifications, it discovered that the design failed to provide for sufficient concrete cover for the rebar. RDGBD's design contemplated 1 inch of concrete cover over the top rebars (P. Ex. 772, Drawing S0.1), but it only actually provided ½ inch of cover. When Ionadi followed the architect's specifications and poured the track, a ripple effect occurred on the concrete slab surface. To correct the problem, Marsico spent $29,978 to fix the concrete ripple and it charged that amount against Ionadi. The Board finds that this was a design problem, that the Contract Documents were not accurate with respect to the running track design, and that this design error did not exhibit the reasonable care, skill and diligence expected of a design professional in the construction industry due to the mathematical discrepancy in the constituent dimensions of the running track base in the Contract Documents. SSHE is liable for $29,978 to Marsico, for the use and benefit of Ionadi, to pay for the running track repairs. SSHE is also liable to Marsico, for its own account, for $2,998 as a 10% mark-up on this work.

Costs of Temporary Shoring and Bracing

Neither Marsico's nor Ionadi's bid included any amount for temporary bracing of the spine wall or temporary shoring of the bridge. However, temporary bracing was necessary in order to construct the spine wall and the bridge required shoring of the structure. The cost of this temporary shoring and bracing was omitted from the bids because it was not specifically called out in SSHE's Contract Documents, and both Marsico and Ionadi failed to clearly understand the need for same when making their bids. Although this was not a design deficiency and the architect has no liability for these expenses, the Board finds that, given the unique nature

of the spine wall, this need for temporary shoring and bracing was not clear to SSHE or the contractors during the bidding or signing of the contract between them. We believe this to be a mutual mistake.

We find the owner of the Project responsible for the temporary bracing and shoring expenses because these services were required under the contract for safe construction of the spine wall and the bridge. Also, SSHE received the benefit of these services that were provided by Ionadi and did not pay for them. Since these services were required to construct the Project and they were provided by Ionadi, the Board finds that Ionadi is entitled to recover its costs of $80,277 for the spine wall bracing and $11,162 for the temporary bridge shoring. Accordingly, the Board finds SSHE liable to Marsico, for the use and benefit of Ionadi, for the amount of $91,439. Since Marsico, for its own account, is entitled to a 10% mark-up on all subcontractor work, Marsico is awarded damages of $9,144 from SSHE. No design error was responsible for this claim, and the Board finds RDGBD has no liability to any party on this issue.

DELAY DAMAGES

To quantify the damages to be awarded to the plaintiff against SSHE for the 87 day delay of the Project, the Board used Marsico's Damage Summary as a basis for its computation. See Marsico's Findings of Fact, Damage Summary, p. 91. Because we find it to be the most accurate measure based on the testimony and information presented in this case, the Board chose the Manshul Formula to determine extended office overhead. The Board eliminated the following items: Marsico's claims for Winter Conditions and Lost Productivity; Ionadi's Claims for Bracing and Shoring, Running Track Repairs and Labor Inefficiencies; and the portion of the Cost Claim for Labor Inefficiencies because, pursuant to the Board's findings, these items are not

part of the calculation of delay damages. The Board began by adding the following items to determine the delay damages claimed by Marsico, Ionadi and Cost:

Marsico Delay		
Extended Field Supervision	$ 87,685	(P.Ex. 942 A)
Extended General Conditions	$ 43,267	(P.Ex. 942 A)
Extended Office Overhead	$ 133,119	(N.T. 2119)
(Manshul Formula)	$ 264,071	
Ionadi Delay		
Extended Supervision	$ 43,120	(P.Ex. I-11, p.16)
Additional/Extended Equipment	$ 81,430	(P.Ex. I-11, p.16)
Extended Home Office Overhead	$ 55,787	(P.Ex. I-11, p.16)
Mark-up for Overhead and Profit (15%)	$ 18,683	(P.Ex. 758, Rider B)
(Excluding Home Office Overhead)	$ 199,020	
Cost Delay		
Extended Supervision	$ 45,377	(P.Ex. C-1, p. 8)
Additional/Extended Equipment	$ 80,396	(P.Ex. C-1, p. 8)
Extended Home Office Overhead	$ 46,227	(P.Ex. C-1, p. 8)
Mark-up for Overhead and Profit (15%)	$ 18,866	(P.Ex. 758, Rider B)
(Excluding Home Office Overhead)	$ 190,866	
Marsico's Mark-up on Sub Delay Claims (10% x [$199,020+$190,866])	$ 38,989	(P.Ex. 758, Rider B)
Marsico's Bond and Insurance (on Subs) (1.766% x [$199,020+$190,866])	$ 6,885	(N.T. 2139)
Total	$699,831	

Marsico calculated these delay expenses based upon a 257 day delay, so the Board divided $699,831 by 257 to determine a cost of $2,723 per day of delay. In order to accurately allocate the delay damages to Marsico, and to Marsico for the use and benefit of Ionadi or Cost, the Board determined that of the $699,831 total claimed, $309,945 was claimed by Marsico, $199,020 claimed by Ionadi, and the remainder, $190,866, by Cost. This means that of the total delay damages to be awarded by the Board, 44.3% will be for Marsico, 28.4% for the account of Ionadi, and 27.3% for the account of Cost.

Since the Board found 87 days of compensable delay and computed damages of $2,723 per day of delay, the total delay damage award is $236,901. Using the percentages above, Marsico, for its own account, is awarded $104,947 in delay damages from SSHE for breach of the Marsico-SSHE Contract; Marsico, for the use and benefit of Ionadi, is awarded $67,280 in delay damages; and Marsico for the use and benefit of Cost, is awarded $64,674 in delay damages.

CLAIM BY SSHE AGAINST RDGBD

SSHE and RDGBD entered into their contract for design services on November 19, 1995. In this litigation, SSHE claims that certain provisions of the SSHE-RDGBD Contract entitle it to recover the amounts for which it has been found liable to Marsico for design deficiencies, as well as, certain extra costs it incurred in completing the Project.

RDGBD Is Liable to SSHE for Breach of Certain Duties Under the Contract

Under the SSHE-RDGBD Contract, RDGBD was obligated to "exercise reasonable and ordinary care and diligence in the application of its professional knowledge to accomplish the purpose for which it is retained . . . and . . . provide plans and specifications that are adequate and sufficient to accomplish the purpose of the project." (P. Ex. 948, Rider E, Standards of Practice). The Contract also provided that the professional (RDGBD) would respond to the contractor's submittals of shop drawings for approval within 15 days of receipt thereof. (P. Ex. 948, Rider B, Review and Approval of Contractor's Shop Drawings and Submittals). Clearly, the SSHE-RDGBD Contract obligated RDGBD to provide Contract Documents and timely responses to RFI's that include sufficient design information so as to allow the successful, on-time completion of the Project. Moreover, as explained above, RDGBD was responsible under Pennsylvania law and its contract with SSHE to provide complete and accurate Contract Documents and to

perform its obligations with the reasonable care, skill and diligence expected of a design professional in the construction industry. It failed to do this in three instances specified: 1) incorrect and/or inadequate information respecting grade beam sizing and elevations causing delay; 2) incomplete and untimely disclosure of the insulation limits of the spine wall causing delay and the expenses of an extra lift; and 3) inaccurate design detail for the running track.

The Board has already presented a detailed factual discussion of the design deficiencies in this case. It found SSHE liable to Marsico for failing to provide adequate grade beam information and failing to provide limits of insulation for the spine wall in a timely manner, thereby delaying the Project for 87 days, resulting in SSHE being liable to Marsico[4] for delay damages of $236,901. The same design problem relating to disclosure of the limits of insulation also caused Marsico's subcontractor Ionadi to incur labor inefficiencies in order to construct the spine wall, and the Board found SSHE liable to Marsico for this problem in the total amount of $85,844. The Board also found that SSHE was liable to Marsico for damages of $32,976 because of the design problem with the running track. Finally, the Board found SSHE liable to Marsico for Cost's claim of labor inefficiencies in the total amount of $51,525. In sum, SSHE is liable to Marsico for these three areas of design deficiency in the total amount of $407,246.

Having found that SSHE is liable to Marsico for $407,246 on account of the three design deficiencies noted, we further find that this fixes the damages suffered by SSHE on account of these design deficiencies in breach of RDGBD's obligations to SSHE under the SSHE-RDGBD Contract. We reject RDGBD's argument that there are no damages suffered by SSHE. Among other things, the Board disagrees with RDGBD's assertion that testimony establishes that no portion of the $850,000 paid by SSHE to Marsico was for the Contract Document deficiency

[4] Liability to Marsico is understood here to be to Marsico and to Marsico for the use and benefit of its subcontractors Ionadi and Cost as more specifically enumerated herein.

claims. To the contrary, the Board finds that testimony confirms that amounts for the claims here at issue were included in this payment even though no specific dollar amount was allocated to same. (N.T. 2236-2241). Moreover, the Claims Prosecution Agreement clearly includes these claims in its recitals (which are incorporated into the agreement itself). It also states that the $850,000 payment by SSHE to Marsico is, inter alia, to limit Marsico's recovery (i.e. SSHE's actual damages) on account of these claims to whatever can be recovered in the action against RDGBD. In sum, we find that, by both testimony and a plain reading of the Claims Prosecution Agreement, the amount of $407,246 for which SSHE was found liable to Marsico on account of Contract Document deficiencies (for which RDGBD was found at fault) is included in the $850,000 paid by SSHE to Marsico. Accordingly, SSHE has established its damages due to RDGBD's breach of contract with it. RDGBD is liable to SSHE for these three areas of design deficiency pursuant to its breach of contract in the total amount of $407,246.

RDGBD Is Liable to SSHE Under the Contract's Indemnity Provision

Count II of SSHE's Complaint alleges that RDGBD is liable to SSHE for design deficiencies and delay damages under two indemnification provisions in the Contract. The first indemnity clause is Paragraph 11, entitled "Hold Harmless Clause." (P.Ex. 948). This paragraph states that RDGBD agrees to indemnify SSHE for liability ". . . arising out of any injuries to, or the death of any person or any damages to property . . . caused by the negligence. . ." of RDGBD. This clause provides only tort indemnity and no indemnity for claims in assumpsit. This Board only has jurisdiction over the breach of contract claims before it, so this clause is inapplicable to the claims brought in this forum.

SSHE also contends that another provision of the SSHE-RDGBD Contract provides an indemnity from RDGBD for SSHE's damages for design deficiencies. Paragraph 2.2.608 of Rider B states in part:

> Should the System be called upon by any prime contractor for additional compensation, or should it become necessary during the course of construction to issue change orders increasing the cost of the project, by reason of the failure, in either case, of the professional due to design errors and omissions and/or produce proper and coordinated plans, specifications and drawings, or any portion thereof relating to the project, in accordance with accepted standards and procedures, the professional shall be liable to the System for the difference between the amount of such extra costs or compensation, and what the System would have incurred had the design been proper." Para. 2.2.608 of Rider B. (Emphasis added.)

These terms are clear. Marsico, a prime contractor, has "called upon" SSHE for "additional compensation," and this Board has found SSHE liable to Marsico due to three design deficiencies present in the Contract Documents created by RDGBD in the total amount of $407,246. The Board has further found that the three design deficiencies noted (incomplete and inaccurate grade beam information; incomplete and untimely information on the limits of insulation in the spine wall; and inaccurate design of the running track) constitute "design errors and omissions" and a failure by RDGBD to "produce proper and coordinated plans, specifications and drawings . . . in accordance with accepted standards and procedures" for the Project. Accordingly, RDGBD is now liable to SSHE for these design deficiencies in the amount of $407,246 pursuant to the indemnification provision of the SSHE-RDGBD Contract at Paragraph 2.2.608.

RDGBD has defended this claim by arguing that since SSHE has presented no proof that it has yet paid out any specified amount for design defects and delay that it is not entitled to

indemnity. RDGBD asserts that an actual payment of the damages is required before SSHE is entitled to indemnification. The Board rejects this argument. First, the Board has found that the amount of $407,246 attributable to the design deficiencies was included in the $850,000 paid by SSHE to Marsico. Secondly, there is no language in the contract conditioning RDGBD's liability upon any actual payment by SSHE. The language of the indemnity provision is very broad and the Board has now specifically found SSHE liable to Marsico for the design defects. The broad indemnification language, coupled with no words limiting indemnity to actual payment, indicates the parties' "intent to allocate all liability" to RDGBD for claims made against SSHE by Marsico for RDGBD's acts and omissions. County of Delaware v. J.P. Mascaro & Sons, Inc., 830 A.2d 587, 593 (Pa. Super. 2003) RDGBD is responsible to SSHE under Paragraph 2.2.608, because ". . . the indemnitee [SSHE] may recover as soon as [its] liability has become fixed and established, even [assuming it] has sustained no actual loss or damage at the time it seeks to recover." Coleman v. City of Bradford, 415 Pa. 557, 560, 204 A.2d 260, 261 (1964); See also, 25 Williston On Contracts, Sec. 66:108 (4th ed. 2003) ("a promise to indemnify against the existence of liability is broken as soon as the liability is incurred, and the promisee [i.e. SSHE] is entitled to recover damages based on the amount of its liability even though the obligation has not been satisfied.") (Emphasis added.) Thus, RDGBD's indemnification liability to SSHE is not conditioned upon payment of additional compensation to Marsico. No proof of actual loss is required.

For the reasons expressed above, RDGBD is liable to SSHE under the indemnity clause for a total amount of $407,246 comprised of: delay damages of $236,901; labor inefficiency damages of $137,369; and expense of the design defect in the running track of $32,976. These liability awards are identical to, not in addition to, those made against SSHE in favor of Marsico

under the breach of contract cause of action between these two parties. Having found no design deficiency in the Contract Documents with respect to the temporary bracing and shoring issue, RDGBD is not liable to SSHE on this item.

SSHE'S Claim For Extra Costs From RDGBD

The final category of claims by SSHE against RDGBD is "extra costs." There are four separate items that comprise these "extra costs:" 1) amounts paid to RDGBD for additional services; 2) amounts paid to Turner for additional services; 3) additional utilities; and 4) attorney and consultant fees. The Board will address each extra cost item separately.

1. RDGBD Must Reimburse SSHE For Some Amounts SSHE Paid For Additional Services

SSHE states that it paid RDGBD $111,274 for two change orders for additional services because of delays on the Project. SSHE needed RDGBD to oversee the project from beginning to end, so when construction fell behind schedule, RDGBD was paid this extra amount to continue performing the services required of the architect under the SSHE-RDGBD Contract.

SSHE argues that this amount should be paid back by RDGBD because RDGBD caused the delay on the Project and therefore should not be entitled to collect extra monies for the delay. SSHE cites the language relating to additional compensation for the professional for change orders in Paragraph 4.3 of Rider B of the SSHE-RDGBD Contract, which states:

> "The Professional shall not be entitled to additional compensation under this paragraph, for delays in construction that are attributable to the acts or failures to act on the part of the Professional."

This language clearly states that RDGBD is not entitled to payment of the portion of the $111,274 that is attributable to the delays it caused.

SSHE makes a claim for repayment of the entire amount and makes no showing of how to arrive at any amount proportional to the amount of delay attributable to RDGBD, even though

Marsico's expert testified that some of the delay was attributable to others. (See, P. Ex. 860 where Phillip Apprill states that of the 342 days of total delay in his opinion only 257 days were attributable to RDGBD.) The Board has found previously in this opinion that 87 days of the total 342 days of delay were attributable to RDGBD's acts and omissions. The Board therefore computes that 87/342 or 25.4% of the delay days was attributable to RDGBD. The Board then multiplies 25.4% times $111, 274 and finds that $28,264 is the amount recoverable by SSHE from RDGBD for additional services.

2. RDGBD Must Reimburse SSHE For Some Amounts SSHE Paid To Turner For Additional Services

SSHE states that it paid its construction manager, Turner Construction, Inc., compensation for additional project management services of $136,732. SSHE claims that this amount was paid to Turner pursuant to two change orders (S. Exs. 5 and 6) because the construction process was delayed and SSHE needed Turner to stay until the end of construction to supervise the contractors. SSHE argues that 257 days of the one year delay is attributable to the acts and omissions of RDGBD and therefore RGDBD must reimburse SSHE for all the extra compensation paid to Turner for this period. The Board agrees that some reimbursement is required, but calculates the amount based upon prior findings in this case.

This claim is similar to the previous one, but it is based upon a different section of the SSHE-RDGBD Contract. SSHE cannot recover under Paragraph 4.3 in Rider B (cited in the prior claim) because the language of that section does not apply to payments from SSHE to construction managers like Turner; however the indemnity provision in Paragraph 2.2.608 of Rider B does apply and will permit recovery. Paragraph 2.2.608 provides that RDGBD must indemnify SSHE in the event it became necessary during the course of construction for SSHE to

issue change orders because of delays on the Project due to design errors and omissions. In such a situation, RDGBD is liable for the difference between the extra costs caused by the architect and the amount SSHE would have incurred if the design had been proper. (P.Ex. 948).

As stated earlier, there were a total of 342 days of delay on the Project, but RDGBD has only been found responsible for 87 days, or 25.4% of that delay. RDGBD's liability for this claim is therefore limited to 25.4% of the $136,732 amount that SSHE paid to Turner. The Board finds that pursuant to Paragraph 2.2.608, RDGBD is liable to SSHE for $34,730 as a reimbursement for the amount SSHE had to pay its construction manager due to delays caused by RDGBD's design errors and omissions.

3. SSHE's Claim For Additional Utility Costs Is Denied

SSHE states that it incurred additional utility costs of $18,720.67 arising from delays in completing the Project and that these delays are the fault of RDGBD. SSHE demonstrated at the hearing that it paid extra expenses for temporary gas supplied to Marsico and its subcontractors at the construction site after December, 1998, the date that the Project was originally scheduled to be completed. These costs were incurred because all the delays caused the construction to continue into cold winter weather. SSHE's problem is that it has failed to demonstrate that RDGBD is responsible for this particular delay. The Board has already made the exact opposite finding - that the delay of 87 days attributable to RDGBD's acts and omissions was not the reason that the construction of the Project was pushed into winter weather conditions without being under cover of the roof. Because there were so many delays caused by so many factors apart from the design issues, the Board finds that RDGBD was not responsible for any damages related to working in the winter weather conditions, including SSHE's gas bills. SSHE is not entitled to recovery of this amount from RDGBD.

4. SSHE's Claim For Attorney Fees and Consulting Fees Is Denied

SSHE states that it paid attorney and consulting fees in the amount of $238,314.52 to defend itself against claims asserted against it by Marsico and its subcontractors. The Board finds no legal or factual basis for recovery of this amount from RDGBD. The general rule regarding the payment of attorney fees is that in a breach of contract action, such fees are not recoverable unless: 1) it is specifically stated that they are recoverable in the contract; 2) they are authorized by statute; or 3) the breaching party has engaged in bad faith or vexatious conduct. Lucchino v. Commonwealth, 809 A.2d 264 (Pa. 2002); Pennsylvania State Police, Bureau of Liquor Control Enforcement v. Benny Enterprises, Inc., 669 A.2d 1018 (Pa. Cmwlth. 1995), Reargument Denied, Appeal Denied, 545 Pa. 672, 681 A.2d 1344 (1996). There is no provision in the SSHE-RDGBD Contract whereby RDGBD agreed to pay SSHE's attorney or consulting fees. SSHE cites no statute authorizing recovery of such fees in this case. SSHE has made no allegations of bad faith or vexatious conduct by RDGBD, and the Board finds none. Further, even if there was a legal basis for recovery of these professional fees, SSHE has not made a casual linkage between the services performed by its attorneys and consultants and RDGBD's conduct which would allow the Board to determine what, if any, proportion of SSHE's attorneys' and consultants' time was spent on the design and delay issues for which RDGBD has been found liable (as opposed to the many other issues involving the many other parties and delays in this case, as well as, in other parallel litigation). Since SSHE has presented no valid legal theory and no evidence linking RDGBD's acts or omissions to a specific amount of these fees, the Board denies SSHE's claim against RDGBD for reimbursement of these attorney and consultant fees.

ORDER

AND NOW, this 2nd day of August, 2004, the Board of Claims hereby finds:

1) In favor of Plaintiff, Marsico Corporation for its own account and against the Defendant, Commonwealth of Pennsylvania, State System of Higher Education in the total amount of $129,577, comprised of the following: $104,947 for delay damages; $7,804 for 10% mark-up on Ionadi's labor inefficiency costs; $2,998 for 10% mark-up on the running track repairs; $9,144 for 10% mark-up on the temporary bracing and shoring; $4,684 for 10% mark-up on Cost's labor inefficiency expenses;

2) In favor of Plaintiff, Marsico Corporation for the use and benefit of Pat Ionadi Corporation and against Defendant, Commonwealth of Pennsylvania, State System of Higher Education, in the total amount of $266,737, comprised of the following: $67,280 for delay damages; $78,040 for labor inefficiencies; $29,978 for running track repairs; and $91,439 for the temporary bracing and shoring;

3) In favor of Plaintiff, Marsico Corporation, for the use and benefit of Cost Company, and against Defendant, Commonwealth of Pennsylvania, State System of Higher Education, in the total amount of $111,515, comprised of $64,674 for delay damages and $46,841 for labor inefficiencies;

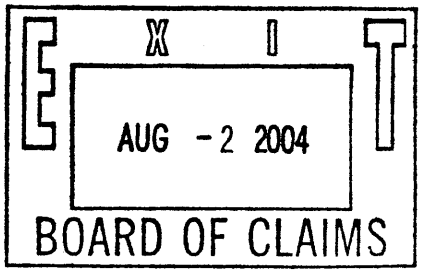
4) In favor of Defendant, Commonwealth of Pennsylvania, State System of Higher Education, and against Additional Defendant, RDG Bussard Dikis, Inc. in the total amount of $470,240, comprised of the following: $236,901 for delay damages; $137,369 for labor inefficiencies; $32,976 for running track repairs; $28,264 for reimbursement of amounts paid to RDG Bussard Dikis, Inc. for additional services, and $34,730 for additional services from Turner Construction Company;

5) Interest is awarded on each amount of damage at the statutory rate of six percent (6%) per annum from December 15, 1999, the date of substantial completion of the Project; and

6) Each party shall bear its own costs and attorneys fees.

BOARD OF CLAIMS

Jeffrey F. Smith
Chief Administrative Judge



Ronald L. Soder, P.E.
Engineer Member

John R. McCarty
Citizen Member