BEFORE THE
MARYLAND STATE BOARD OF CONTRACT APPEALS

Appeal of ERIC K. STRAUB, INC.	)	
Under DGS Contract No.	)	Docket No.
F-020-792-316	)	MSBCA 1371

August 14, 1989

Differing Site Condition - "Type 1" - Appellant failed to prove that a Type 1 differing site condition occurred. Appellant did not prove that a subsurface or latent physical condition at the site differing materially from those indicated in the contract occurred where the timber piles it drove during construction of a wooden pier at a marina reached bearing at elevations that varied by approximately five feet from the elevations of piles it drove at several nearby locations. The contract did not contain specifications representing the elevations at which piles should have attained bearing.

Differing Site Condition - "Type 2" - Appellant failed to show that a Type 2 differing site condition occurred. It did not show that variations between relatively hard and soft subsurface soil conditions at different site locations, which caused some piles to attain bearing at elevations that varied by as much as five feet from elevations attained by nearby piles, constituted unknown physical conditions of an unusual nature that differed materially from those conditions ordinarily encountered at the site of the contract work.

APPEARANCES FOR APPELLANT: Douglas G. Worrall, Esq.
David G. LaRoche, Esq.
Smith, Somverville & Case
Baltimore, MD

APPEARANCE FOR RESPONDENT: John H. Thornton
Assistant Attorney General
Baltimore, MD

OPINION BY MR. KETCHEN

This is an appeal from a Department of General Services (DGS) procurement officer's final decision denying Appellant's claim for additional compensation under a contract for the installation of a timber pile pier. Appellant claims it encountered a differing site condition while driving the piles.

Findings of Fact

1. On June 4, 1986, Appellant entered into a contract with DGS for construction of a timber pile pier known as K-pier at Somers Cove Marina in Crisfield, Maryland. This pier was constructed for the Maryland Department of Natural Resources as the using agency. The contract required that Appellant construct a timber pier, including a main pier, finger piers, furnish and install mooring piles, and furnish and install mechanical and electrical equipment all as shown on the drawings and in the specifications.

2. Somers Cove Marina is roughly U-shaped with the bottom of the "U" facing east and the open end of the "U" facing west. The two generally parallel sides of the marina extend out in a westerly direction from the bottom of the "U".

3. K-pier is approximately 436 feet long extending in a westerly direction into the water from and perpendicular to the existing bulkhead on the eastern side of the marina.

4. K-pier is in the shape of a long "T" with the bottom of the "T" being attached to the bulkhead. Twelve finger piers extend out from each side of the leg of the "T" between the bulkhead and the top of the "T" (the "T-head"). The main K-pier and finger piers extending out perpendicular to K-pier were built by driving timber pilings into the bottom of the marina harbor, attaching the piles together with certain timber, structural elements, i.e., cross bracing, and then covering this structure with timber decking. The spaces between the finger piers function as boat slips. Mooring piles to which boats may be tied were driven parallel to and between each end of each finger pier. Another line of mooring piles was driven outside the end of the finger piers at K-pier. They were placed on both sides of K-pier and parallel to K-pier and run from the bulkhead out to the T-head. A sketch showing K-pier, its finger piers, and the mooring piles is attached and incorporated as part of this decision. (Appendix A).

5. Section 02890, entitled "Timber Piers and Piles," Part 3.02 of the specifications describes the method of driving the piles and the requirement to drive to a specified bearing value. The bearing value of a pile generally represents the capacity of the pile to carry a physical load based on the

force exerted against it in the opposite direction of the driven pile by the resisting soil. Section 02890, Part 3.02 thus states, in pertinent part, as follows:

> A. Drive pier piles to a minimum bearing capacity of 15 tons.[1] Driving shall be continuous without intermission until pile has been driven to required penetration. In general, penetration for any pile shall not be less than shown on plans even in hard material...
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> B. Method of driving, determining bearing value of and test loading of piles as [sic] specified in Section 605, entitled "Piling", of latest edition of State of Maryland, State Highway Administration Standard Specifications for Construction and Materials, 1982, together with applicable supplemental specifications and subsequent addenda thereto.
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> C. Each pile is expected to provide adequate pile-bearing capacity. If during driving operations contractor finds inadequate bearing on piles, he shall stop driving and immediately contact the Engineer. Contractor is advised that in event that length of piles shown on Drawings is found to be inadequate on basis of bearing value, longer replacement piles may be required. It is anticipated that these replacement piles may be up to 50% longer than piles shown on drawings. Install these piles as directed by the Engineer. Payment for replacement piles in accord with schedule of Unit prices.
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> F. After driving, length of pile remaining above elevation of cut-off shall not be more than 6 inches. Saw top of piles to a true plane at elevation fixed by drawing. Pile tops shall then be beveled and waterproofed. Apply waterproofing in accord with the manufacturers directions.
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6. The specifications required Appellant to drive test piles. Section 02890, Parts 1.05(A) and (C) provide as follows:

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[1]During the course of the project, the required minimum bearing capacity was reduced to 10 tons. (September 14, 1988 Tr. 226; Rule 4 File, Tab 22).

A. Drive a minimum of two 40 foot long test piles in locations as directed. Drive piles a minimum of three feet below minimum tip elevation[2] shown on drawings. If test pile does not reach specified bearing at designated tip elevation or three feet below, continue driving until this bearing is achieved. Test piles become foundation working piles at completion of test.

* * *

C. Order piling after results for test piles are known since pile lengths, [sic] order by Contractor may be effected [sic] by test results. Determination of pile lengths to be ordered is responsibility of contractor.

7. The Instruction to Bidders, Section 3, and the General Conditions, Section 3.04 contained in the invitation for bids for this contract both required bidders to perform a pre-bid site investigation, which Appellant did.

8. The specifications required the contractor to base his bid price on providing 8,080 linear feet of piling for the main K-pier and the finger piers extending from it and 2,880 linear feet of piling for the mooring piles. (Invitation to Bids, Addendum Number 1). These average out to 202 twelve-inch (diameter) piles and 72 ten-inch (diameter) piles based on piles forty feet in length.

9. The specifications provided for payment to the contractor only for the amount of piling in place. This pay length is measured starting from the specified cutoff elevation above the water line to the bottom of the pile in the ground at the point where it reaches bearing, i.e., the pile tip elevation. For payment purposes under the contract this pile length — the length in feet from pile tip elevation to pile cutoff — is measured without regard to the original length of the pile prior to cutoff. (Section 02890, Part 1.03). The cutoff point is the elevation above the water where the top portion of the

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[2]The minimum tip elevation is the elevation in the ground below which the piles must be driven.

pile sticking out of the water is cutoff after the pile attains bearing. The contract specified the point or elevation where the piles were to be cutoff. (Finding of Fact No. 5).

10. Appellant prepared a bid estimate based on the defined scope of work and on the crew days it assigned to perform the required contract tasks. Appellant's pile driving production plan was based on an estimated production rate of driving 10 pier piles per day and 5 mooring piles per day. Appellant's schedule assumed that once production got underway it would divide its work force into two crews with a framing crew following closely behind a pile driving crew.

11. Following award of the contract on August 29, 1986, Appellant submitted its proposed construction schedule. Appellant's schedule indicated its plan to mobilize its crew and to begin installing test piles commencing on September 8, 1986. Appellant was then to begin driving pier piles for the main pier of the K-pier structure. This operation was to last 20 working days. Pier framing was to begin shortly after Appellant began driving the main pier piles. Framing involves constructing the part of the wooden structure that links the piles together and holds the pier decking onto the supporting piles. Appellant's pier framing operation was to follow closely behind the driving of the piles for the main pier. Appellant intended to follow the same sequence for the finger piers for 15 working days, i.e., driving of finger pier piles followed closely behind by a crew framing the driven finger pier piles.

12. Appellant was to commence driving the mooring piles as driving of the finger pier piles was being completed and to continue with the mooring pile driving operation for seven days beyond completion of the driving of the piles for the finger piers. The time schedule for driving all of the timber piles and framing them was 42 working days.

13. Prior to driving the first test pile, Appellant ordered its initial shipment of piles. Invoices from Appellant's supplier indicate that a shipment of twenty-three, 35 foot long piles and eight, 40 foot long piles were to be delivered on September 11, 1986. (Rule 4 File, Tab 64E). The first test pile was driven on September 19, 1986 after some delay caused by Appellant when it switched pile hammers. The first test pile was a 40 foot pile as required by the specifications.

14. The specifications called for test piles to be driven to a minimum of three feet below the minimum tip elevation or at an elevation of minus 23 (-23') feet at the location specified by the contract for driving the test piles. The first test pile was driven in the water 100 feet out from the existing bulkhead and on the north side of the location of the main pier. The results were recorded by Everett Garey, the State inspector for the job. The minimum bearing capacity required by the contract for this test pile was fifteen tons, measured on Appellant's hammer as twenty-five blows per foot.[3]

15. The test pile results were as follows: at a depth of 13 feet, the test pile attained a blowcount of 40 blows per foot; at 15 feet, 12 blows per foot; at 17 feet, 7 blows per foot; from 17 to 25 feet, the pile sank under one blow; at 25 feet, 40 blows per foot; at 27 and 28 feet, 17 blows per foot; at 30 feet, 31 blows per foot; and 31 feet, 40 blows per foot. Based on these results, Appellant anticipated that 35 foot production piles would suffice for at least the first hundred feet of the pier. That is, 35 foot long

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[3]Bearing capacity in terms of the physical load a pile will carry in tons is calculated and converted to the number of blows required by the pile driving hammer to drive a pile through a foot of material. In other words, the specified bearing capacity of a pile is reached at the point where the hammer uses the calculated number of hammer blows to the pile to drive the pile through one foot of the soil material. When bearing is reached, the pile is said to "take up" and may be detected by a change in the sound of the hammer striking the pile.

piles would be of ample length to attain the required bearing capacity and leave a sufficient length of pile extending above the water to allow cutoff of the pile at the specified elevation.

16. On Monday, September 22, 1986, Appellant drove its first production pile, Pile No. 1, on the north side of the main pier ten feet out from the bulkhead. Pile No. 2 was driven on the south side of the main pier ten feet out from the bulkhead.

17. Each pair of piles driven across from each other on each side, i.e., on the north and south side of the pier is referred to as a "bent". The bents were numbered consecutively beginning at the bulkhead and moving outwardly toward the end of the main pier.

18. After the first bent, Appellant went back and forth, from north to south, driving Piles 3, 4, 5 and 6. These first six piles were all 35 foot piles and took Appellant thirty feet out from the bulkhead. Then Appellant drove four 40 foot piles, Piles 7 through 10, starting on the north side of the pier, then moving to the south side, and then back and forth again, taking him fifty feet out from the bulkhead. The next four piles driven, Pile Nos. 11 through 14, were 40 foot piles. They were driven consecutively outward along the north side of the pier. Note that although numbered sequentially the piles were not always driven alternatively on the north side and then on the south side of the pier. For example, Pile Nos. 15-18 were driven on the south side of the pier.

19. Pile 14 was a pile driven ten feet inward, toward the bulkhead, of Test Pile Number 1, located 100 feet from the bulkhead. The next pile driven was Pile Number 15 on the south side of the pier, eight feet away from Pile 14 and opposite Pile 14. Piles 15, 16, 17 and 18, all 35 foot piles, were driven consecutively inward, moving back toward the bulkhead, along the south

side of the pier opposite Piles 11 - 14 on the north side of the pier. Pile 18 is adjacent to Pile 10 also on the south side of the pier, and is immediately across from Pile No. 11 on the north side of the pier. Pile Nos. 14 and 15 located across from one another took the main pier piles out 100 feet from the bulkhead to the vicinity of Test Pile No. 1, as just noted.

20. Appellant next drove Pile Nos. 19 through 44, all 35 feet long, back and forth along both sides of the main pier, taking the main pier out to approximately 200 feet from the bulkhead. Appellant then drove 40 piles, Pile Numbers 45 through 78 (plus seven unnumbered piles), all 40 foot piles, along both sides of the main pier, generally back and forth from one side of the pier to the other, for the remaining 170 feet out into the water to the location of the T-head. After that, Appellant drove the piles for the T-head using 40 foot piles on the east side of the T-head and 45 foot piles on the west side, which was the deep water side of the T-head.

21. For the first twelve finger piers (six on each side) outward from the bulkhead, the piles driven were 35 feet long. For the remaining twelve finger piers (six on each side), the piles driven were 40 foot long piles.

22. All mooring piles driven on the north side of K-pier starting from the bulkhead and going out 200 feet toward the T-head were 35 foot piles. Beyond 200 feet out from the bulkhead, one of the next two mooring piles was a 35 foot pile and one was a 40 foot pile. All the remaining mooring piles driven on the north side of the K-pier location were 40 foot piles. On the south side, all mooring piles out to 130 feet (the fourth finger pier) were 35 foot piles. Four of the next nine mooring piles were 35 foot piles while five were 40 foot piles. Then, from 240 feet out from the bulkhead location to the end of the pier, Appellant drove all 40 foot piles.

23. The pile driving records reflect that on the main pier there were four bents, Bents 6 through 10, where Appellant drove 35 foot piles on the south side of the bent location at a distance of only eight feet from their 40' foot long companion piles located on the opposite, north side of that same bent. Throughout the remainder of K-pier every bent consisted of piles of the same length whether 35' piles or 40' piles. In addition, there were only a few instances where Appellant drove mooring piles of one length adjacent to other piles that it drove of a different length.

24. With regard to the sequence in which pile driving occurred, Appellant's original schedule contemplated driving all of the main pier piles and then all of the finger pier piles. However, Appellant drove piles for the finger piers in between periods spent driving piles along the main pier. Appellant drove the mooring piles after all main pier piles and finger pier piles were driven.

25. To reiterate somewhat, Appellant began driving piles for the main pier on September 22, 1986. Mr. Garey recorded the blow counts and elevations of each pile in a pile driving log. The elevations indicated by Mr. Garey's driving log provide a basis for comparing pile elevations at which bearing was achieved and for determining the relative driving conditions for each pile. His log indicates that Pile No. 1 (a working pile) achieved bearing at an elevation of minus 32 feet (-32') while Pile No. 2 achieved bearing at an elevation of minus 28 feet (-28'). Pile No. 2 did not achieve bearing under continuous driving as required by Section 02890, Part 3.02A of the specifications. However, Appellant switched driving methods and achieved bearing at Pile No. 2 using interrupted driving. Interrupted driving involves driving a pile to some depth and then stopping to let the soil settle and harden around the

pile. Pile driving is then resumed after a lapse of time to see if the pile will achieve bearing. When interrupted driving was used the interruptions lasted ten to fifteen minutes.

26. At Bents 2 and 3, Appellant experienced results similar to that at Bent 1. At Bents 4 and 5, Appellant switched to 40 foot piles. Piles 7 and 9 on the north side of the pier achieved bearing at an elevation of minus 34 feet (-34') and minus 33 feet (-33'), respectively, while Piles 8 and 10 on the south side of the pier did not achieve bearing under continuous driving.

27. Continuing along the north side of the pier, Piles Nos. 11, 12, 13 and 14 achieved bearing between an elevation of minus 31 feet (-31') and minus 33 feet (-33'). Along the south side of the pier, Pile No. 18, located adjacent to Pile No. 10 also on the south side of the pier, and opposite to Pile No. 11 on the north side of the pier, did not achieve bearing under continuous driving. Mr. Garey's records do not indicate the results for the next pile, Pile No. 17. On the south side of the pier, Piles 15 and 16, opposite Piles 13 and 14 on the north side of the pier, achieved bearing at minus 24 feet (-24') and minus 26 feet (-26'), respectively. Further out on K-pier, Pile Nos. 29 through 38 (taking the pier approximately 200 feet out from the bulkhead toward the T-head) all were 35 foot piles and all achieved bearing between an elevation of minus 25 feet (-25') and minus 27 feet (-27'). Mr. Garey's driving logs, therefore, indicate that generally piles adjacent to each other did not dramatically differ in the elevations at which bearing was achieved.

28. Appellant completed pile driving for the main pier and T-head on November 5, 1986, approximately one month after the scheduled completion date of October 11, based on a September 15 starting date.

29. Timber framing for the main pier and T-head, scheduled to run concurrently with but slightly behind the pile driving operation, was not actually completed until February 6, 1987.

30. Appellant started driving the finger pier piles on September 29, 1986 and began framing the following day. The pile driving for the finger piers was completed on November 18, 1986 with the framing of the finger piers completed on February 7, 1987. Appellant drove the mooring piles beginning on December 1, 1986. It completed this work on February 3, 1987.

31. During the pile driving operation, Appellant experienced difficulty driving the piles straight. The piles would lean 10 to 20 degrees off center. (September 14, 1988 Tr. 104-105). This required Appellant's crew to spend additional time straightening and framing the piles.

32. The contract required the contractor to install at each bent between finger piers a diagonal cross brace (or one-half x brace), with the angle of the brace alternating with each successive bent, and to install double braces (or a full x brace) at each finger pier bent.[4] (DGS Exhs. 3 & 4; September 15, 1988 Tr. 57-58; September 14, 1988 Tr. 106, 174-75; DGS Exh. 15). However, Appellant elected to install a full x brace on every bent to help straighten the crooked piles and pier. (September 15, 1988 Tr. 58-59; September 14, 1988 Tr. 106-07, 175; DGS Exh.15). Obviously, Appellant's crew expended additional time adding extra full x bracing to K-pier.

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[4] After piles are driven at a bent, a piece of timber is attached or bolted to each pile. The timber of specified length is bolted near the top of the first pile and to a point down the side of the second pile. This is one-half x bracing. To complete the x of full x bracing, a second piece of timber is bolted diagonally across the two piles in the direction opposite to the first timber bracing placed, i.e., from a point near the top of the second pile to a point down the side of the first pile. This completes the x.

33. Rather than using two crews totaling seven men to perform pile driving concurrently with framing as it had originally planned, Appellant during the course of construction switched to a single five man crew which alternated between pile driving, framing and straightening piles.

34. By letter dated February 4, 1987, Appellant requested additional compensation for the delays encountered and the additional costs incurred for the additional time it took over that planned to construct K-pier.

35. By letter dated August 11, 1987, Appellant requested a final decision from the DGS procurement officer regarding Appellant's claim for additional compensation.

36. The DGS procurement officer denied Appellant's claim by letter dated December 23, 1987.

37. Appellant filed a timely appeal on January 21, 1988.

Decision

Appellant asserts that it encountered erratic conditions at K-pier at Somers Cove Marina constituting both "Type 1" and "Type 2" differing site conditions. Appellant thus maintains that pursuant to Section 3.03 of the General Conditions of the contract it is entitled to an equitable adjustment. Section 3.03 provides as follows:

> 3.03 DIFFERING SITE CONDITIONS:
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> A. The contractor shall promptly, and before such conditions are disturbed, notify the procurement officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract [Type 1] or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract [Type 2]. The procurement officer shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the contractor's cost of, or the time required for, performance of any part of the work

> under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

In order to recover for a Type 1 differing site condition, the contract must contain some indication or representation concerning the subsurface or physical conditions that a contractor might reasonably expect to encounter. The indication need not be express and may be proven by inference or implication. C.J. Langenfelder & Son, Inc., MDOT Nos. 1000, 1003 & 1006, 1 MSBCA ¶2 (1980), aff'd, Md Port Administration v. C.J. Langenfelder & Son, Inc., 50 Md. App. 525 (1982). However, as the Board stated in Corman Construction, Inc., MSBCA 1254, ____ MSBCA ____ (Feb. 28, 1989) at 19:

> The law is well settled that if the contract is completely silent as to the subsurface or latent condition ultimately encountered, the necessary assumption for a Type 1 changed condition fails. See Weeks Dredging & Contracting, Inc. v. U.S., 13 Cl.Ct. 219 (1987). To recover for a category one differing site condition, "there must be reasonably plain or positive indications in the bid information or contract documents that (the) subsurface conditions would be otherwise than actually found in contract performance. Weeks at 219."

Appellant maintains that the contract implied regularity in bottom conditions. Appellant states that it bid the job "based upon the reasonable assumption taken from the bid documents that work would proceed smoothly using two crews concurrently to drive piles and to frame." (Appellant's Post Hearing Brief at 16). Yet, there are no specific representations in the contract as to the subsurface conditions at the Somers Cove site. In fact, nothing in the contract drawings or specifications represents that a contractor could expect to encounter any particular subsurface materials, any particular degree of hardness or softness in subsurface materials, or any particular consistency in subsurface materials.

Appellant, however, maintains that this lack of representation implies normal or consistent conditions as a representation set forth in the contract. We reject Appellant's argument. Corman Construction, Inc., supra, MSBCA 1254.

A Type 1 differing site condition under the contract's Differing Site Conditions clause is dependent upon contractual indications. Here, the contract does not contain indications or representations concerning what Appellant could expect as normal or expected subsurface site conditions when driving the timber piles in the K-pier location at the Somers Cove site. Appellant thus has not demonstrated that there were subsurface or latent physical conditions at the site differing materially from representations of those conditions in the contract. Accordingly, we find that a Type 1 differing site condition did not exist. See C.J. Langenfelder & Son, Inc., supra.

Appellant also bases its claim for an equitable adjustment on a Type 2 differing site condition. A Type 2 differing site condition is a subsurface or latent physical condition encountered that is unknown, unusual or differs materially from that ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

A contractor has a difficult burden when attempting to prove a Type 2 differing site condition. Thus Appellant here must prove what a reasonably prudent contractor should have anticipated encountering at the site with regard to subsurface conditions, that the work was not inherent in the work of the character envisioned in the contract, that the conditions actually encountered were unknown or unusual for the area, and that there is a material difference between what was usual and therefore reasonably expected

and what was encountered, and whether a material difference shown caused an increase in its costs. Charles T. Parker Construction Co. v. U.S., 193 Ct. Cl. 320, 333-34 (1970).

DGS maintains that the conditions encountered by Appellant were normal or usual conditions for the area. That is, the limited variation in subsurface conditions that Appellant encountered within a given area and, specifically, the limited variation in the elevations at which the piles driven attained bearing were normal conditions at the Somers Cove Marina that a reasonable prudent contractor should have anticipated. In addition, DGS maintains that Appellant should have anticipated such conditions based on its prior experience as a subcontractor on the previously constructed Somers Cove Marina bulkhead project.

Prior to preparing and submitting its bid, Appellant conducted a site investigation of the Somers Cove Marina. As part of its site investigation, Appellant's President, Mr. Straub, observed the adjacent L-pier. Mr. Straub described his observation as follows:

> ....Because I walked L pier, which is the same length as K, and they started at the bulkhead with a 35' pile and they ended 426' later with a 35' pile. Now, was the driving criteria different, the different bearing or penetrations or whatever, I really don't know. But looking at the construction and what it's all for, which is private boats, small boats, I would make the association that the criteria was about the same.
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> So, I'm standing on a pier that's built and the piles from the bulkhead to the end are all the same length. So, I say must be pretty consistent. I also look at the mooring piles, all right, they're straight as a dye. So, you think to yourself if they had problems they're not really apparent. If they, you know, installed the thing according to plans and specs -it's not - it isn't apparent that they had any problems. So, in formulating the bid you look at a situation, which you would anticipate as being uniform.

(September 14, 1988 Tr. 76-77).

Mr. Straub admits that it is possible that a contractor on any one of the other piers previously constructed could have had problems in driving the piles. He indicated as well that any pile driving difficulties encountered would not have been apparent from observation of the previously completed L-pier. (September 14, 1988 Tr. 137). Mr. Straub assumed that the bottom conditions at K-pier were as precisely uniform as he did based on his site investigation of L-pier, although he knew neither the driving criteria at L-pier nor the driving conditions that were encountered during construction of the adjacent L-pier.

Appellant also based its assumption of very uniform or almost unvarying subsurface conditions at K-pier on its prior experience installing the bulkhead at Somers Cove Marina. In 1980-81, Appellant worked on the bulkhead as a subcontractor to the general contractor. The bulkhead consists of walls A through Q constructed with timber piles driven as foundation support. K-pier extends in a westerly direction perpendicular to D wall of the bulkhead.

In the initial phases of the bulkhead contract, along walls C, D, E, F, G, H and I, the piles did not achieve the specified 12 ton bearing. They were driven to within six inches of cutoff and were accepted. On subsequent phases of the contract, along walls A, B, J, K, L and M, the piles achieved bearing before being driven to the specified cutoff elevation but Appellant nevertheless was required to drive them down to the specified elevation.

Appellant had to return to walls B and M to redrive piles that had achieved bearing but had not been driven down to the required elevation. In that instance Appellant also had to drive the piles through hard material on bulkhead walls J, K and L in order to get the piles down to bearing at the required elevation.

Regarding the previously constructed bulkhead project, Mr. Straub testified that at the foot of land where H-pier meets the bulkhead the piles took up early, i.e. reached bearing early, meaning at a shallower depth than anticipated. He indicated that this resulted in 10 to 12 foot cutoffs at that location. He further testified that conditions were reasonably uniform, although there was an area where piles took up early. (September 14, 1988 Tr. 77-78).

In addition, on the bulkhead construction project, seven test piles were driven at various locations around the perimeter of Somers Cove prior to the construction of the bulkhead. These test piles were required to be driven to an elevation of minus 20 (-20') feet and to a bearing of 12 tons measured as eighteen blows per foot. The previously obtained test pile results for the bulkhead project were included in the specifications for the bulkhead contract which Appellant apparently had in his possession when it bid the K-pier job.

Test Pile No. 1 for the bulkhead project, located at the corner of A and B walls, achieved only 9 blows per foot at the minus 20 (-20') foot elevation. Test Pile No. 2, located at the junction of B and C walls, achieved only 16 blows per foot at the minus 20 (-20') foot elevation. Test Pile No. 3, located at the junction of C and D walls about 300 feet along the bulkhead north of the intersection of K-pier and the bulkhead, achieved only 6 blows per foot at the minus 20 (-20') foot elevation. Test Pile No 4, located on the south side of the marina at a distance of approximately 400 feet west of the bulkhead at D wall, achieved only 3 blows per foot at an elevation of minus 18 (-18') feet. Test Pile No 5 achieved a blowcount of six blows per foot at minus 21 (-21') feet. Test Pile No. 6 reached 20 blows per foot at the minus 15 (-15') foot elevation and Test Pile No. 7 reached 20 blows per foot at an elevation of minus 16 (-16') feet.

The results of pile driving at the Somers Cove Marina under the previously constructed bulkhead project reasonably demonstrate that subsurface conditions vary at Somers Cove to a degree. Test Piles 1, 3, 4 and 5 driven for the bulkhead project constructed under a previous contract reasonably indicate a relatively soft bottom. On the other hand, Test Piles 6 and 7 show a somewhat harder bottom while Test Pile 2 reasonably indicates a medium to soft bottom. Based on these facts, Appellant's conclusion drawn from its experience constructing the bulkhead that it should have encountered uniform or almost unvarying subsurface conditions at K-pier at the Somers Cove site was unreasonable.

We recognize that the previously constructed bulkhead which extends around the perimeter of Somers Cove is in a somewhat different location than K-pier which extends outward into Somers Cove perpendicular to the bulkhead. However, the bulkhead project pile driving experience relied on by Appellant for its assumption that very uniform or almost unvarying conditions existed at K-pier, in fact, indicate subsurface conditions in the area of the bulkhead that are similar to or the same as the reasonably varying subsurface conditions it actually experienced at K-pier. This is not to say that the somewhat varying conditions at K-pier were at all unusual or other than normal. Otherwise, Appellant has not shown how the subsurface conditions encountered at K-Pier were unusual, or how the conditions encountered materially varied from ordinarily expected conditions.

In this regard, the State's expert testified that the test pile data obtained during the bulkhead construction project should have "raised a flag" to Appellant based on Appellant's prior experience working on the bulkhead project. The bulkhead test pile data should have warned it that if there were

problems on the bulkhead job it should consider those problems as they relate to subsurface conditions when bidding on K-pier. (September 15, 1988 Tr. 131-132).

Appellant's previous bulkhead construction experience and the test pile data obtained from that work, while not absolutely reliable indicators of subsurface conditions within the relatively small area of K-pier at a somewhat different location, would have put a reasonably prudent contractor with actual knowledge and experience at the site, as Appellant had here, on notice that it could expect subsurface conditions to vary to some degree from hard to relatively soft conditions throughout Somers Cove. In short, Appellant was aware of factual information that points to somewhat varying subsurface conditions at Somers Cove.

As alluded to above, the bulkhead is located at a higher elevation toward the land side of the cove. Thus the bulkhead test piles theoretically were driven based on different load requirements and at a higher soil strata than that required for bearing for the piles driven at K-pier. However, the K-pier subsurface conditions were similar to, or the same as, those previously experienced during the bulkhead project, since they varied between hard and relatively soft soil material.

According to the State's expert, Mr. Rohm, to encounter nonuniform bottom conditions during pile driving in the Somers Cove area is normal. Mr. Rohm testified that the conditions Appellant encountered at K-pier "were normal conditions [and a] contractor should always anticipate that bottom conditions may vary within a given area and that they may vary with depth as a pile is driven." (Rohm Direct Testimony, p. 4). He further testified

that encountering soft conditions, hard conditions and layers of varying hardness and softness is normal for the Somers Cove area. (Rohm Direct Testimony, pp. 4-5).

The testimony of Appellant's expert is consistent with Mr. Rohm's testimony. Appellant's expert witness, Mr. McGeady, testified that Appellant's difficulty in achieving specified bearing along C, D, E, F, G, H and I bulkhead walls during Appellant's previous work on the bulkhead project under previous contracts indicated that it was probably "a very soft bottom." He further testified with respect to K-pier that "in the first 20' you may never get bearing at Somers Cove," and beyond the first 20' "there's no way to tell, it might be soft or it might be hard." (September 14, 1988 Tr. 214-219).

Appellant contends, however, that a Type 2 differing site condition existed at K-pier because the driving conditions Appellant experienced were erratic. The word "erratic" is defined as "lacking consistency, regularity or uniformity." American Heritage Dictionary (1981). This describes the situation Appellant encountered where it had difficulty achieving minimum bearing using a 35 foot pile at some locations but not with other piles of 40 feet in length at nearby locations. The subsurface conditions were erratic in the sense that the bottom was softer in one area, harder at another, softer at this depth, harder at that depth. Yet, as Mr. Rohm testified, with Appellant's expert in agreement, such conditions are normal in the Somers Cove region and should have been anticipated.

Appellant next maintains that a Type 2 differing site condition occurred at K-pier as shown by the fact that the piles it drove did not drive straight into the ground and had to be straightened using additional cross bracing on the main pier and finger piers. In pile driving parlance, it is said that the piles "walked-off" their line of driving.

"Walking" or "walking-off" of piles occurs if the pile deviates from the straight path desired as it is being driven. This occurs because a pile will follow the line of least resistance and "walk-off" the perpendicular line or direction desired when material of a different resistance, for example, soft material, is encountered. However, the contractor is responsible for controlling the plumb of the pile when this circumstance occurs.

In this regard, Appellant's suspect driving methods, we find, provide a plausible explanation as to why the piles did not drive straight into the ground. For example, there is a potential for piles to deviate from the straight line desired using a pile hammer with "fixed leads"[5] when driving from a floating barge, particularly if the barge is not properly stabilized, than when using "swinging leads" or "semi-fixed leads."

Appellant used fixed leads to drive the piles. To reiterate, it is more difficult to determine whether piles are being driven straight when using "fixed leads" during the driving. In addition, adjustments that must be made to deviating piles in order to drive them straight are more difficult to make when using fixed leads. On the other hand, when using swinging leads or semi-fixed leads, alignment adjustments between the hammer and pile can be made during driving to assure that piles are driven in a straight manner. (Rule 4 file, Tab 10, pp. 2-3). Appellant has not otherwise shown by any probative evidence that a subsurface obstruction or similar subsurface condition existed that could have caused the piles to experience an excessive

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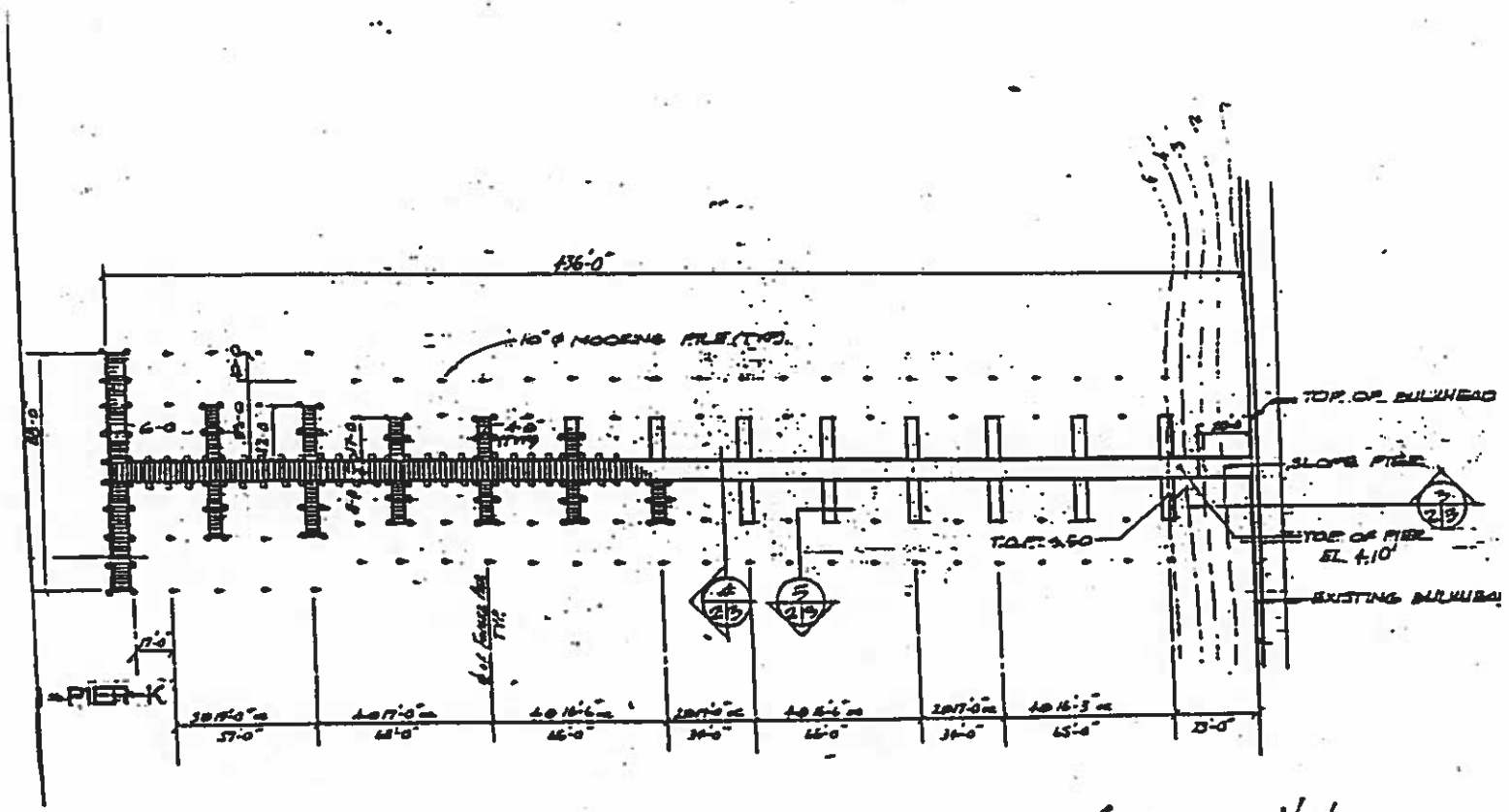
[5]The lead is the guide for the pile being driven by the hammer. The fixed lead used by Appellant was rigidly attached to Appellant's barge and crane. When a fixed lead is used, the pile cannot be moved relative to the pile driving rig in order to straighten piles that are driving in a crooked manner. A swinging or semi-fixed lead is an alternative to use of a fixed lead. A swinging lead or semi-fixed lead swings freely as it hangs from the crane during pile driving.

deflection, i.e., walkoff or drive in a crooked manner. (Rule 4, Tab 10, pp. 2-3). In short, the fact that Appellant, which was responsible for using appropriate driving methods, drove piles that did not drive straight does not establish that Appellant encountered a Type 2 differing site condition under the factual circumstances of this appeal.

Based on the above, Appellant has failed to prove by a preponderance of the evidence that a Type 2 differing site condition occurred. In particular, the variation in lengths of pile used was only between 35 foot piles and 40 foot piles and this only occurred in a very few locations throughout construction of K-pier. This indicates an immaterial and insignificant variation in subsurface conditions at Somers Cove. The weight of the evidence is that the subsurface site conditions were normal or those ordinarily encountered and should have been expected. It follows that Appellant did not experience subsurface conditions that were unusual, unknown, or not normally encountered.

For the foregoing reasons, therefore, Appellant's appeal is denied.



ADDENDUM No 1
SOMERS COVE MARINA

F-020-792-316
MARCH 13, 1986
DRAWING No. ADD-1

APPENDIX A