ARMED SERVICES BOARD OF CONTRACT APPEALS

Appeals of --	)	
	)	
Blake Construction Co., Inc.	)	ASBCA Nos. 52305, 52475
	)	
Under Contract No. N68711-91-C-0116	)	

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OPINION BY ADMINISTRATIVE JUDGE PEACOCK

These appeals concern whether the appellant is entitled to an equitable adjustment for repairs made to a fuel pipeline installed at Camp Pendleton, California. Only entitlement is for decision.

FINDINGS OF FACT

1. Blake Construction Co., Inc. (Blake or appellant) was awarded the captioned contract by the Southwest Division, Naval Facilities Engineering Command, San Diego, California (Government) on 16 June 1992 in the initial amount of $14,484,000 for construction of a Landing Craft Air Cushion (LCAC) complex at the Marine Corps Base, Camp Pendleton, California. Modifications A00001 through A00106 increased the contract price to $18,723,599 and extended the completion date to 31 October 1997. The work included the construction of numerous buildings, site improvements, fuel lines and stations and utilities. (R4, tab 1) The contract incorporated FAR 52.236-7 PERMITS AND RESPONSIBILITIES (NOV 1991) (R4, tab 26).

2. The dispute in these appeals concerns the underground fuel lines. The contract required the installation and testing of a double wall secondary containment fiberglass reinforced plastic (FRP) fuel pipeline system. The pipeline consisted of an inner, carrier or product pipe enclosed within an outer, containment pipe. Sections 15482 and 15486 of the contract's specifications contained requirements for the system.

3. Specification section 15482 DOUBLE WALL SECONDARY CONTAINMENT FIBERGLASS REINFORCED PLASTIC (FRP) PIPING (FOR PETROLEUM) contained requirements for four-hour pneumatic testing of all installed FRP pipe at 15 and 50 psig (¶¶ 3.6.3.1 and 3.6.3.2) as well as the following provisions (R4, tab 1):

> 1.3.3.2. Final Certification of FRP Pipe System
>
> Upon completion of the project and before final acceptance, deliver to the Contracting Officer a statement signed by the principal officer of the contracting firm stating that the installation is satisfactory and in complete accordance with the contract plans and specifications and the FRP pipe manufacturer's prescribed procedures and techniques.
>
> 1.3.4 SD-76, Certificates of Compliance
>
> a. Glass fiber reinforced plastic fuel systems
>
> Certify the systems and products required to conform to the testing requirements of MIL-P-29206 do and that all the products provided meet the specified requirements and were manufactured with the same materials and procedures as those tested.
>
> . . . .
>
> 2.1.1 FRP Pipe and Fittings
>
> MIL-P-29206. FRP pipe Type I (filament wound) or Type II (centrifugally cast); FRP fittings Type I (filament would), Type II (molded), for both inner fluid carrying pipe and outer containment pipe.
>
> . . . .
>
> 3.6 FIELD INSPECTION AND TESTS
>
> Furnish everything required for performing inspections and tests. Correct defects and repeat the respective inspections and tests.
>
> . . . .

3.6.2 Field Inspections

Prior to initial operation, inspect piping system for conformance to drawings, specifications, and manufacturer's submittals; . . . .

. . . .

3.6.4 Field Repairs of Pipe and Joints

The Contractor shall be responsible for the repair of all leaks or other deficiencies caused by faulty workmanship or materials. Make repairs to leaking pipe or joints, whatever the cause, by removing and replacing the faulty section or a short length containing the fault. Over wrapping the fault with any type of patch or other material will not be permitted. If a joint is damaged during the laying operation, it can be cut off and a coupling bonded to the cutoff end and laid in the line as a normal pipe. If damage occurs to a pipe after it has been laid, the damaged section shall be cut out and replaced with a new pipe section in accordance with the manufacturer's instruction.

4. Specification section 15486 FUEL DISTRIBUTION AND DISPENSING required (R4, tab 1):

PART 2 PRODUCTS

2.1 SPECIAL REQUIREMENTS

. . . .

2.1.2 System

Capacity and efficiency of equipment shall not be less than that indicated. System components, including piping, equipment, valves, and accessories shall be suitable for maximum working pressure of ANSI Class 150 (275 psig at 100° F).

. . . .

2.11 FIBERGLASS PIPE

Section 15482, “Double Wall Secondary Containment Fiberglass Reinforced Plastic (FRP) Piping for Petroleum.”

. . . .

2.15 EQUIPMENT

Design pressure components of equipment for minimum working pressure of ANSI Class 150 (275 psig at 100° F).

. . . .

3.2 INSTALLATION

Provide exterior aviation fuel distribution systems including above ground piping, buried piping, piping in manholes, dispensing hardware and related work. . . . The work includes installing piping up to and including the pumping equipment and valves. Provide each system complete and ready for operation.

. . . .

3.8.2 Piping Tests

Before final acceptance of the work, test each system as in service to demonstrate compliance with contract requirements.

3.8.2.1. Pneumatic Test

Pneumatically test each piping system to 25 psig, examine joints with soap solution. Gradually increase to 50 psig and hold for 1 hour. . . .

3.8.2.2 Hydrostatic Tests

Upon completion of pneumatic testing, hydrostatically test each piping system [to 65 psig] . . . with no leakage or reduction in gauge pressure for 4 hours. Thoroughly flush piping before placing in operation. . . . Correct defects in work provided by the Contractor and repeat tests until work is in compliance with contract requirements. . . .

. . . .

> 3.8.4 Equipment Acceptance Tests
>
> Upon completion and before final acceptance of the work, each system shall be tested as in service to demonstrate conformance with the contract requirements and in accordance with the requirements of ANSI B31.3 and NFPA 30. Contractor shall demonstrate to the "Contracting Officer" that the system performs each step of the "Sequences of Operation" specified in this section. Defects in the work provided by the Contractor shall be corrected by him at his own expense, and the test repeated until the work is proven to be in compliance with the contract requirements.

5. As noted above, section 15482 required the system to comply with the testing requirements of MIL-P-29206. That Military Specification contained numerous requirements applicable to a FRP "pipe and fittings system . . . together with adhesive for joint assembly, intended for service up to . . . 150 pound-force per square inch (psi) operating pressure and surges up to 275 psi. . . ." (ex. G-5, ¶ 1.1; see also ¶ 6.1). Among other things, sample pipe and joint assemblies were to have been extensively tested by the manufacturer including hydrostatic tests with pressures of 275 to 300 psi without any evidence of porosity or other failure (ex. G-5, ¶¶ 3.5, 3.6, 3.11, 4.4.2, 4.4.3, 4.4.8).

6. The original solicitation at both specification sections 15482 and 15486 provided for four-hour hydrostatic tests of the installed system at 225 psi prior to backfilling. Amendment 0003 of the solicitation deleted all hydrostatic tests from section 15482 and reduced the hydrostatic test in section 15486 to 65 psi. (R4, tab 1, amend. 0003)

7. Submittal No. 697, relating to the FRP system, was sent to the Government by Blake on 22 March 1993. Among other things, the submittal contained a certification that the materials and system to be installed complied with MIL-P-29206 as required by specification section 15482. (Ex. G-2) The system was initially to operate at a pressure of 50 psig (R4, tab 5).

8. The Government approved the submittal and Blake's subcontractor, T.F. Austin Plumbing Co. (Austin) proceeded with installation. Austin constructed the joint assemblies for the pipeline by hand in the field. Austin installed a sensor cable on the outside of the carrier (*i.e.*, inner) pipe and inside the containment pipe to detect moisture and leakage. The leak detection system is sometimes referred to by the parties and hereinafter as the PermAlert system. Prior to burying the pipe approximately three feet deep, the system passed the pneumatic test requirements of the specifications but no hydrostatic tests were performed. Austin completed the backfilling/compaction process on

or about 29 October 1993. The pipeline was not accepted by the Government at that time. (R4, tabs 25, 27; tr. 34-35, 39-41, 75-76, 99, 278-79, 309-11, 337, 345, 442-43, 452-53, 511)

9. Prior to burial of the pipeline, Blake was aware that design changes and additional testing of the pipeline system were contemplated by the Government (tr. 307-09). After the pipeline was buried, the Government had discussions with Blake about hydrostatically testing the system, as well as other modifications to the contract. In addition, appellant continued to perform other contractual work. Blake temporarily demobilized from the site in approximately mid-1994 pending finalization of various design changes and reinstatement of the hydrostatic test requirements but continued to visit the site throughout the period in dispute. (Tr. 38-39, 47, 73, 75, 77, 88, 99, 222-23, 307-10, 314-15, 524-25, 585; R4, tabs 3, 4, 7)

10. Other Government contractors performed other work on indeterminate dates at the LCAC complex after Blake demobilized and prior to resolution of the requirement for hydrostatic testing. Some of this other work involved excavation in the vicinity of the installed underground pipeline. (Tr. 56-57, 294, 585, 591-92)

11. Bilateral contract Modification No. A00099 (Mod. 99) was executed by the parties, effective 11 March 1996, increased the contract price in the amount of $716,792 and extended the performance period five months. Among other things, the modification required the contractor to hydrostatically test the carrier pipe of the FRP pipeline for 30 minutes at 225 psi as provided in procedure OP-15486-1, as revised August 1995. (R4, tabs 2, 12)

12. Appendix B of OP-15486-1, entitled HYDROSTATIC TEST PROCEDURE, contained detailed test requirements including the following pertinent provisions (R4, tab 12):

> B1. PURPOSE
>
> B1.1 The primary purpose of this procedure is to hydrostatically test new and existing piping as described below . . . .
>
> - Existing Underground Fuel piping from the Fuel Farm to the Direct Fueling Stations (piping is double containment FRP piping with PermAlert leak detection system installed in the containment piping).
>
> . . . .

> B4. HYDROSTATIC TEST OF EXISTING
> UNDERGROUND FRP PIPING
>
> B4.1 General: The entire length of the Fuel System existing underground fuel main piping from the Fuel Farm to all three Direct Fueling Stations shall be hydrostatically tested. . . . This procedure will supersede Specification Section 15482 specifically for the Hydrostatic Test of this piping [installed on a previous phase of this project].
>
> . . . .
>
> B7. HYDROSTATIC TEST PROCEDURE
>
> . . . .
>
> B7.2.1 . . . Maintain pressure at 225 psig for 30 minutes.
>
> > Note: If a leak on the underground piping is detected by the PermAlert leak detection system, reduce pressure to 165 psig immediately, and hold this pressure for 30-minutes to see if any additional leaks will be detected. Since any repairs to buried piping will be a major expense, try to determine the location of any other leaks before reducing pressure to zero for repairs.
>
> . . . .
>
> B7.2.3 Criteria for a successful hydrostatic test of underground buried piping is [sic] that no leaks were detected by the PermAlert system, and no visible welded joints were leaking or weeping. If any of the criteria was [sic] not successful, repair the affected pipe, and retest. If pipe had to be uncovered and repaired, retest shall be successfully completed prior to burying the affected pipe sections.

13. Blake priced the Mod. 99 hydrostatic test requirements after a series of meetings with its field employees and its subcontractors about field conditions. Because Austin was no longer in business, Blake entered into a new subcontract with University Mechanical and Engineering (UMEC) for performance of the work added to the contract by Mod. 99 that related to the pipeline, including the testing. During the negotiations preceding execution of Mod. 99, Blake was aware of and concerned about the risks and uncertainty inherent in testing the previously installed, underground pipeline at 225 psi. It

also knew that repairs might be required to the pipeline and considered these risks in pricing Mod. 99. It also knew that construction activities continued adjacent to the pipeline after it demobilized from the site in 1994. (Tr. 72-73, 79, 294-97, 316-18, 525-26, 532, 555, 580-85, 589-92; R4, tab 5) Appellant also knew in 1995 that the pipeline contained silt and water (tr. 47-48, 221-23, 142-43, 223-25, 296-97, 341-42, 583, 589). Appellant accepted Mod. 99 as a "complete equitable adjustment" and "an accord and satisfaction" releasing the Government without reservation from further liability, *inter alia*, "for any and all costs" arising out of or incidental to the revised work (R4, tab 2, Mod. 99 at 2, 6).

14. Blake commenced hydrostatically testing the carrier pipe of the underground system in August 1996. The initial test failed when the pressure in the carrier pipe was increased to approximately 220 psi at which time water was observed shooting out of the ground sending "a heck of a shock both ways" (tr. 149) along the pipeline. The cause of the failure was an improperly assembled carrier pipe joint fitting that pulled apart. The failed fitting had been installed by Austin and was replaced by UMEC. The pipe was retested in September 1996. The second test resulted in a similar failure of the same joint and also revealed a pinhole leak in the carrier pipe. These leaks were repaired by the manufacturer of the pipe replacing the fitting. Following completion of these repairs, the Government permitted Blake to test the carrier piping at 100 psi. The carrier pipe passed the relaxed hydrostatic test on 16 September 1996. The joint failures during the first two hydrostatic tests were the result of poor workmanship. (Tr. 64, 95, 108-09, 143-46, 149-50, 152-53, 231-32, 277-78, 354, 362-64, 366, 371, 416, 451)

15. The two hydrostatic test failures damaged the containment pipe to an indeterminate extent (tr. 110, 120, 132, 149, 203-04, 293-94, 335). After the successful 100 psi hydrostatic test of the carrier piping, the containment pipe was patched in the areas near the joint failures and pinhole leak in the carrier pipe. Blake then proceeded to pneumatically test the containment piping. The containment piping would not hold the pressure. Blake had considerable difficulty in locating the leaks and ultimately isolated and repaired the leaks only after uncovering approximately 80 percent of the underground pipe and soaping every joint. Repairs to the containment pipe were finally completed and a pneumatic test was successfully conducted on 3 March 1997 at 5 psi for one hour per a Government directive of 4 December 1996. Many repairs to the containment pipe were concentrated near areas where other construction work had been performed at indeterminate times after the pipe had originally been buried. However, repairs to other portions of the pipeline were not close to any other construction activity. Blake's own crews paved over the pipeline after it was installed in the fuel farm area. Blake cut through the concrete paving at the fuel farm to perform substantial repairs to the containment pipe that was installed under that concrete. The leaks in the containment (and carrier) pipe were concentrated in the pipeline's joints originally installed by Austin. Blake's site superintendent, who supervised the repairs and was present throughout that process, had no prior experience with the piping system involved in this dispute and "really [did] not know"

(tr. 216-17) what caused the damage. (Tr. 153-55, 157, 196-98, 201-04, 211-12, 214-17, 234-35, 264-66, 273-74, 277-79; exs. A-5, -7; SR4, tab 6)

16. Although OP-15486-1 did not expressly require pneumatic testing of the containment pipe after correction of the defects discovered as a result of the hydrostatic tests, § 15482, ¶ 3.6 of the specifications (finding 3 above) required Blake to "[c]orrect defects and repeat the respective tests." We find that the "respective tests" to be repeated in the context of § 15482 and OP-15486-1 included the pneumatic tests included in ¶¶ 3.6.3.1 and 3.6.3.2. There is no evidence or contention that the acceptability of the containment pipe could have been established by a retest procedure that was less expensive than the one hour, 5 psi pneumatic test or that the pneumatic retest requirement was otherwise unreasonable.

17. Although the joint failures during the hydrostatic tests of the carrier pipe caused localized damage to the containment pipe, the extent to which those failures damaged the joints of the containment pipe throughout its entire length is uncertain (tr. 110, 120, 132, 149, 203-04, 293-94, 297-98, 367, 399-401). Contemporaneously, however, appellant suspected that because the rupturing of the product pipe also "blew the containment apart," that pipe was "probably damaged in some other areas" because the test failures "could very well" have "shake[n] the whole system" (tr. 61, 105-06, 10, 149, 297-98).

18. Contemporaneously, the contractor consistently attributed the containment pipe leaks to stress damage caused by the high pressures to which the carrier pipe was subjected during the hydrostatic tests. The contractor considered that the 225 psi test pressure was excessive. (R4, tabs 20, 21, 25; SR4, tab 6; tr. 146-47) There is no written contemporaneous notice attributing the leaks to adjacent construction activity (*cf*. tr. 186-88). None of the daily construction reports associate the leaks with that activity (AR4, tab 6, attach. D).

19. Appellant's expert, Mr. George Swink, holds a Bachelor of Science degree from California State Polytechnical University in San Luis Obispo, California and has extensive experience in fuel pipelines. He testified that the most likely causes of the extensive leaks in the containment pipe were damages resulting from the rupture of the carrier pipe during the hydrostatic tests, excessive pressures used in the hydrostatic tests and construction activity by other contractors near the pipeline after it was buried and prior to the hydrostatic testing. Although there was no evidence that the underground pipe was damaged or penetrated by any of these activities, Mr. Swink opined that vibration from construction equipment might have stressed the pipe and joints sufficiently to have caused the leaks (tr. 131-33). Mr. Swink also considered that the 225 psi pressure of the hydrostatic test prescribed in Mod. 99 was unreasonably high because the initial operating pressure of the system installed was only 50 psi. According to Mr. Swink, a reasonable test pressure, consistent with good engineering practice, would have only been 55-75 psi (tr. 126-31).

20. The Government's expert, Mr. Galen Marks, holds a Bachelor of Science degree from the University of Arizona and has extensive experience in designing and analyzing jet fuel piping systems such as the pipeline in dispute (ex. G-4; tr. 347-49). Mr. Marks concluded that the most likely causes of the problems experienced by Blake with both the carrier and containment pipe were mishandling and/or poor workmanship, in particular faulty assembly of the pipeline's joints (ex. G-4; tr. 354, 363-66, 371, 388-89, 415-19). According to Mr. Marks, the probable cause of the leaky improperly sealed fittings that "just [weren't] put together correctly" could have been a "void in the epoxy" resulting from improper surface preparation, mixing of glue, or cleaning of the surfaces of the fittings (tr. 364, 417-18; ex. G-4).

21. Based on Mr. Marks' credibility and the consistency of his opinions with the record facts, we find his testimony to be the most persuasive as to the likely cause of the leaks in the containment pipe. In Mr. Marks' opinion it was unlikely that post installation work by others in the vicinity of the pipeline caused Blake's problems if the pipeline had been properly assembled and installed by Austin. He noted that Austin's own compaction efforts directly over the pipeline when it was buried would have provided more vibration than any nearby construction activities. (Tr. 366-71, 388-90, 392-93, 402-03, 414-16; see also 277-78)

22. Blake eventually filed a claim, dated 8 December 1998, seeking an equitable adjustment of $250,656 and a time extension to compensate it for the time and money expended to repair the pipeline (R4, tabs 47 through 49). On 4 August 1999, the contractor filed an appeal from a deemed denial of the claim. That appeal was docketed as ASBCA No. 52305. On 3 November 1999, the contracting officer issued a final decision denying the claim. By notice of appeal dated 22 November 1999, Blake appealed that decision. The latter appeal was docketed as ASBCA No. 52475. The appeals are duplicative involving the same scope and subject matter.

DECISION

The Government maintains that under Mod. 99 and the contract Blake was required to repair the pipeline without additional compensation. Appellant argues that repair of the containment pipe was beyond the scope of Mod. 99 and that the pipeline was damaged by other Navy contractors after the pipeline was installed and buried. We consider that the repairs were Blake's responsibility under the contract as modified and were necessitated by appellant's poor workmanship.

Modification 99

Blake contends that Mod. 99 addressed only the reinstated hydrostatic testing of the carrier pipe. It emphasizes that the outer, containment pipe had previously passed the pneumatic tests conducted in 1993 before the pipeline was compacted and buried without any requirement for hydrostatic tests.

Regardless of whether the containment pipe was to be tested under Mod. 99 prior to the discovery of leaks, that outer pipe suffered significant, albeit not precisely determinable, damage as a result of the hydrostatic test failures of the inner, carrier pipe. The post-test inspections of the extent of the damage to both the inner and outer pipes revealed appellant's pervasive poor workmanship in constructing the joints of the pipeline. Blake was responsible for rectifying that poor workmanship and providing the Government with an operational system under the contract. The buried pipeline could not satisfy contractual requirements for acceptance without Blake repairing acknowledged leaks in the containment pipe.

In particular, under ¶ 3.6.4 of specification section 15482, appellant was "responsible for the repair of all leaks or other deficiencies caused by faulty workmanship or materials." As discussed in greater detail below, we consider that the damages to the pipe and attendant repairs resulted from Blake's poor workmanship. Without the repairs, appellant also could not certify in good faith that the installation was "satisfactory" as required by ¶ 1.3.3.2 of section 15482. It knew there were extensive defects in the system. The fact that only the carrier pipe was hydrostatically tested under Mod. 99, did not mean that the appellant had no duty to remedy those containment pipe defects, however discovered. Blake concedes as much to the extent that the containment pipe defects were unmistakably related to the two carrier pipe failures. Although the extent of the damage caused to the entire pipeline by the hydrostatic test failures is uncertain, we consider that Blake, as a minimum, also had the obligation to make repairs resulting from its poor workmanship.

Contemporaneously, appellant argued that the 225 psi test pressure was excessive and that any damages caused by the overtesting were the Navy's responsibility. Blake appears to have abandoned this position on appeal. The specifications indicate that the pipeline materials should have withstood the test pressures if the pipeline had been properly assembled (findings 3, 4, 5). Moreover, the pressures were unambiguously required by Mod. 99. Appellant is foreclosed from recovering on that basis by virtue of the release contained in the modification and the doctrine of accord and satisfaction. Although the initial operating pressure may only have been 50 psi, the contractor was responsible for providing a pipeline that fully complied with the specifications. The system should have been capable of meeting the 225 psi requirements that were specified in detail. The piping was certified to have complied with the specifications (finding 7). Mod. 99 required no greater test pressures than Blake certified it could withstand.

Poor Workmanship

As appellant's theories of relief have evolved through the briefing stage of these appeals, its primary contention now is that the pipeline was damaged by other Government contractors performing work in the vicinity of the pipeline after it was buried. This contention is unpersuasive and unsupported by the record.

The best available evidence as to the cause of the leaks was the testimony of the Government's expert, Mr. Marks. He concluded that Blake's poor workmanship in assembling the joints of the pipeline was responsible. That opinion comports with other facts. The carrier pipe test failures were clearly caused by faulty joint fittings. The repairs to the containment pipe were concentrated at the joints and we consider that they also were a consequence of poor workmanship, perhaps exacerbated by the shocks to the pipeline resulting from the carrier pipe test failures.

In contrast, appellant's theory is inconsistent with and/or refuted by the facts. Among other problems, there was no contemporaneous written notice that the leaks were caused by other contractors. Although many of the repairs were proximate to other post-installation construction, other repairs were in areas of the pipeline well removed from those activities. Appellant's site superintendent who supervised the repair process declined to speculate as to the cause (finding 15). If anything, appellant's contemporaneous view was that the high pressures generated during the hydrostatic tests caused damages throughout the length of the pipeline (finding 17). Without contemporaneous documentation, observations or other credible evidence relating to the causes of pipe damage that might lend credence to its third party damage theory, appellant's arguments are mere speculation.

In addition, much of the nearby construction activity involved appellant's own crews on this contract. Certain repairs required appellant to cut through concrete that it had installed at the fuel farm. Moreover, to the extent, if any, that construction activities may have adversely impacted the pipeline, the most proximate work was appellant's own compaction work directly over the pipeline at the time it was buried.

According to Mr. Marks, it is unlikely that the post-installation work caused the leaks. Appellant's own expert posits three reasons for the damage, including the high test pressure and the effects of the carrier pipe ruptures during the hydrostatic tests, not solely post-installation construction activities.

We conclude that the damages to the containment pipe, as well as the carrier pipe, were caused by Blake's poor workmanship. Accordingly, appellant was responsible for repairing damaged pipe without additional compensation.

CONCLUSION

ASBCA No. 52305 is denied. ASBCA No. 52475 is dismissed as duplicative.

Dated: 12 February 2002

ROBERT T. PEACOCK
Administrative Judge
Armed Services Board
of Contract Appeals

I concur

EUNICE W. THOMAS
Administrative Judge
Acting Chairman
Armed Services Board
of Contract Appeals

I concur

DAVID W. JAMES, JR.
Administrative Judge
Acting Vice Chairman
Armed Services Board
of Contract Appeals

I certify that the foregoing is a true copy of the Opinion and Decision of the Armed Services Board of Contract Appeals in ASBCA Nos. 52305, 52475, Appeals of Blake Construction Co., Inc., rendered in conformance with the Board's Charter.

Dated:

EDWARD S. ADAMKEWICZ
Recorder, Armed Services
Board of Contract Appeals