In the United States Court of Federal Claims

Nos. 99-951C, 00-437C, 00-438C, 00-439C
Filed: November 5, 2003

CEMS, INC.,		**Breach of Contract; Equitable Adjustment; Implied Duty to Cooperate and Not to Hinder; Suspension of Work; Delay; Differing Site Conditions; Changes; Constructive Changes; Damages.**
	Plaintiff,	
v.		
UNITED STATES,		
	Defendant.	

RICHARD E. ALEXANDER, Stoel Rives, LLP, Portland, Oregon, for the plaintiff. **CHARLES F. ADAMS** and **CHAD R. CHAMBERS**, of counsel.

MICHAEL D. AUSTIN, Trial Attorney, **DAVID M. COHEN**, Director, Commercial Litigation Branch, Civil Division, United States Department of Justice, for the defendant.

O P I N I O N

HORN, J.

The plaintiff, CEMS, Inc. (CEMS), filed a complaint in this court arising out of contract no. DTFH70-98-C-00011 for the construction of a bicycle path on a portion of the Historic Columbia River Highway in Cascade Locks, Oregon. On April 6, 1998, the Department of Transportation, Federal Highway Administration (FHA), Western Federal Lands Highway Division awarded the contract to CEMS for the construction of the bicycle path on a 3.888 kilometer portion of the Historic Columbia River Highway between the Columbia Fish Hatchery and the Bridge of the Gods, in the amount of $1,676,154.00. The plaintiff's complaint alleges "changes, delays and other compensable acts or omissions of the FHA," and requests an equitable adjustment under the terms of the contract, and such further relief as is appropriate.

The plaintiff originally filed three separate appeals before the Department of

Transportation Board of Contract Appeals (DOTBCA) arising under CEMS' first certified claim to the contracting officer (CO). During the pendency of the plaintiff's appeals before the DOTBCA, the plaintiff submitted a second, certified, comprehensive claim to the CO, including sixty-two separate claims. Following the denial of many of plaintiff's claims by the CO,[1] CEMS filed its complaint in this court. The plaintiff subsequently filed a motion to consolidate the DOTBCA appeals with this case. The court granted the plaintiff's motion and consolidated the plaintiff's DOTBCA appeals with the above captioned case. Following the plaintiff's voluntary dismissal of certain claims, and the settlement of additional claims preceding trial in this case, the plaintiff seeks $1,241,203.70 in compensation for numerous claims under the contract. Although listed separately by the parties, many of the plaintiff's claims are related in subject matter, but occurred at different intervals on the bicycle path. Based on the presentation of the evidence at trial by the parties, the court's opinion has grouped the plaintiff's claims involving similar subject matter to avoid repetition.

FINDINGS OF FACT

I. Claim A1 - Government Delayed the Notice to Proceed

The FHA awarded the contract at issue to CEMS on April 6, 1998. The contract specified performance was to begin within ten calender days after receipt of the notice to proceed. The contract was to be completed on or before September 30, 1998, "subject to such extensions as may be authorized by the terms of the contract and the specifications made a part thereof." The contract specified that the completion date of September 30, 1998 was based on the assumption that CEMS would receive the notice to proceed by April 1, 1998. The contract further provided that:

> The completion date will be extended by the number of calender days after the above date that the contractor receives the notice to proceed, except to the extent that the delay in issuance of the notice to proceed results from the failure of the contractor to execute the contract and give the required performance and payment bonds within the time specified in the offer.

CO Parsons, by letter dated April 6, 1998, notified CEMS of the award of the contract and stated that the plaintiff's "offer of $1,674,154.00 for construction of the above project is accepted." The April 6, 1998 letter by CO Parsons indicating the bid amount was type-written in the amount of $1,674,154.00. On April 14, 1998, CEMS transmitted to the FHA performance and payment bonds in the FHA requested amounts of $1,674,154.00 and $669,661.60, respectively. The April 14, 1998 transmittal indicated that the FHA received the performance and payment bonds, notes that the bonds were in the incorrect

[1] On August 23, 1999, CO William L. Parsons issued a final decision on CEMS' claims, allowing $76,102.12, plus interest, for a total amount of $78,095.00, and granting a one-day extension of time.

amounts, and that the incorrect performance and payment bonds were returned on April 16, 1998 to CEMS. CEMS submitted corrected performance and payment bonds in the amount of $1,676,154.00 and $670,461.60, respectively, on April 16, 1998, with the FHA indicating receipt of the corrected bonds on that same date.

On April 16, 1998, the FHA provided the plaintiff with the notice to proceed on the bicycle path contract. The April 16, 1998 notice to proceed indicated that as a result of the government's delay, the contract was not awarded until April 6, 1998, and although the government was prepared to issue the notice to proceed on April 13, 1998, the FHA stated that as a result of the plaintiff's failure to provide correct performance and payment bonds, the issuance of the notice to proceed was delayed. The April 16, 1998 FHA letter stated, "the Fixed Completion Date is extended by 12 calender days, to October 12, 1998." On April 23, 1998, CEMS notified the defendant that due to the delay in the issuance of the notice to proceed, the plaintiff was requesting an extension of the contract completion date of fifteen days, until October 15, 1988.

On June 12, 1998, the parties executed a negotiation memorandum for contract modification no. 1. The negotiation memorandum and contract modification no. 1, although not explicitly addressing the delay in the issuance of the notice to proceed, noted the following, "On the 20th of April 1998, CEMS, Inc. receives [sic] the Notice to Proceed including the revised Fixed Completion Date of October 12, 1998."

At the trial of this matter, David Conway, the president and owner of CEMS and the first project superintendent on the bicycle path contract,[2] testified that the initial correspondence by the FHA regarding the performance and payment bonds requested an incorrect amount for the bonds. Mr. Conway stated that the FHA subsequently requested corrected bonds once the error was discovered and CEMS submitted the performance and payment bonds in the corrected amount. According to Mr. Conway, prior to the issuance of the notice to proceed, CEMS checked with the subcontractors and suppliers, walked the project site, and began gathering scheduling information. Mr. Conway further testified that CEMS lost productivity because CEMS employees and equipment were idle or underutilized until the project could proceed. As a result of the delay in the issuance of the notice to proceed and the failure to conduct a preconstruction conference almost two weeks after the notice to proceed, Mr. Conway stated that he "couldn't see how we were

[2] David Conway was the owner of CEMS, who initially oversaw project management of the bicycle path as the project superintendent, with assistance from Jeffrey Cox and Michael Thompson. However, by letter dated July 31, 1998, the FHA's project engineer, Clifford Chew, directed Mr. Conway to relinquish his superintendent status pursuant to FAR 52.236-5, the Material and Workmanship clause (April 1984). See 48 C.F.R. § 52.236-5 (1997). Mr. Cox replaced Mr. Conway as the project superintendent after the latter's removal. Mr. Cox subsequently was removed by Mr. Chew by letter dated September 3, 1998, again pursuant to the Material and Workmanship clause in the contract. Mr. Thompson replaced Mr. Cox as the project superintendent after the latter's removal.

going to complete by our scheduled deadline ... ."

The contracting officer's final decision denied CEMS' claim for an equitable adjustment for the delay in the issuance of the notice to proceed because it was determined that CEMS had already been granted a sixteen day extension for the delay, and that it was a reasonable delay for which CEMS was not entitled to an equitable adjustment. The contracting officer's final decision also determined that CEMS was responsible for three days of the delay due to the submission of payment and performance bonds in an incorrect amount. CO Parsons' testimony at trial regarding the delay in issuing the notice to proceed indicated that CEMS was afforded a "day-for-day" extension of contract time. CO Parsons testified that the original bid opening date was delayed by the FHA from March 10, 1998 to March 20, 1998, and it was his election not to amend the notice to proceed date, but allow for an extension of contract time if the issuance of the notice to proceed was delayed. Although recognizing that due to a bid opening date of March 20, 1998, the timeframe for the issuance of the notice to proceed by April 1, 1998 could be difficult, CO Parsons testified:

> Well, we had sufficient time to award in advance of April 1 to basically meet the April 1st date, but at that time I was relying upon awarding as soon as we might in allowing for a day-for-day shift in that period of performance that clause set out and allowed.

CO Parsons further testified that, based on his experience, the period of time normally required between bid opening and the issuance of the notice to proceed is "four-plus-or-minus weeks" and eleven days was "unduly short" to issue the notice to proceed on April 1, 1998, with a bid opening of March 20, 1998.

The contracting officer's final decision also concluded that the incorrect performance and payment bonds submitted by the plaintiff on April 14, 1998, caused a three day delay charged to the plaintiff. During cross-examination, CO Parsons was shown a copy of his April 6, 1998 letter notifying CEMS of the award of the contract and the amount of CEMS' bid. CO Parsons stated that after a review of the April 6, 1998 letter in court, his contracting officer's final decision had incorrectly charged CEMS with three days of delay for incorrect performance and payment bonds due to the use of the incorrect bid amount in his April 6, 1998 letter.

II. A2 - Government enforcement of excessively rigid and arbitrary surface tolerances for subgrade and aggregate courses

The construction plans and drawings for the bicycle path contract state that the type of construction involves grading, base, paving, retaining walls, and a pedestrian underpass under a portion of Interstate Highway 84 (I-84). The contract construction drawings reference the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-96" (FP-96). The contract incorporates the FP-96 into the contract and provides Special Contract Requirements which amend and supplement the FP-96. The FP-96 provides the following language in its preface: "These Standard Specifications

for the Construction of Roads and Bridges on Federal Highway Projects are issued primarily for constructing roads and bridges on Federal Highway [P]rojects under the direct administration of the Federal Highway Administration. These specifications are cited as 'FP-96' indicating Standard Specifications issued in 1996."

The FP-96 provides definitional terms for various phases of construction, as well as overall specifications for the bicycle path construction. Subsection 101.02 of the FP-96 explains the specifications format and provides the following:

> 101.02 Specifications Format. These specifications are divided into 10 Divisions.
>
> Division 100 consists of general contract requirements for which no direct payment is made. The requirements contained in Division 100 are applicable to all contracts.
>
> Division 150 consists of project contract requirements that are applicable to all contracts. Work under Division 150 is paid for directly when there is a pay item in the bid schedule. When there is no pay item in the bid schedule, no direct payment is made.
>
> Divisions 200 through 600 consist of construction contract requirements for specific items of work. Work under these Divisions is paid for directly or indirectly according to Subsection 109.05 and the Section ordering the work.
>
> Division 700 contains the material requirements for Divisions 150 through 600. No direct payment is made in Division 700. Payment for material is included as part of the work required in Divisions 150 through 600.
>
> The first three digits of the pay item number identify the Section under which the work is performed.

The plaintiff bid on several pay items under the contract that relate to the construction of the roadway of the bicycle path, which, in turn, relate to the plaintiff's A2 claim. The pay items included: (1) 20401, Roadway Excavation; (2) 30301, Roadway Reconditioning; (3) 30802, Roadway Aggregate Method 2; and (4) 40201, Minor Hot Asphalt.

The contract construction drawings provided "Typical Sections" of various points in the construction of the bicycle path. For the bicycle path surface, the contract construction drawings provide for a roadway aggregate surface overlaid with minor asphalt concrete. The construction of the bicycle path consisted of the placement of a subgrade,[3] followed

[3] The FP-96 defines the "Subgrade" as "[t]he top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed."

by the aggregate base course[4] referenced in the construction drawings, and finally the placement of asphalt concrete as the surface course,[5] also depicted in the construction drawings.

For roadway excavation under pay item 20401, the FP-96 states that the work consists of excavating material and constructing embankments. Section 204 of the FP-96 states that the work for roadway excavation includes "furnishing, hauling, stockpiling, placing, disposing, sloping, shaping, compacting, and finishing earthen and rocky material." The procedure for roadway excavation is directed by the FP-96 in subsection 204.06(a), and states that the contractor shall "[e]xcavate material suitable for backfill, roadbed finishing, topping, or other purposes in a sequence that permits the placement of the excavation directly into its final position or in stockpiles for subsequent placing."

The aggregate base course that was placed on the road bed for the construction of the bicycle path was designated as pay item 30802, Roadway Aggregate Method 2. Pay item 30802 comes under FP-96 section 308, Minor Crushed Aggregate. The description of the work under FP-96 section 308 states that the "work consists of furnishing and placing crushed aggregate for bedding, backfill, and roadway aggregate courses." The designation of "Method 2" for the roadway aggregate designates the specification requirements for the compacting and finishing of the crushed aggregate. The material designated by FP-96 section 308 for Roadway Aggregate Method 2 is designated in FP-96 subsection 308.02, which states that the crushed aggregate must conform to subsection 703.06. Subsection 703.06 of the FP-96 states:

> 703.06 Crushed Aggregate. Furnish hard, durable particles or fragments of crushed stone or gravel conforming to the size and quality requirements for crushed aggregate material normally used locally in the construction and maintenance of highways by Federal or state agencies. Furnish crushed aggregate with a maximum size of 25 millimeters as determined by AASHTO [American Association of State Highway and Transportation Officials] T 27 and T 11. Furnish crushed aggregate uniformly graded from coarse to fine and free of organic matter, lumps or balls of clay, and other deleterious matter.

Subsection 308.05 of the FP-96 states that the surface of the Roadway Aggregate Method 2 shall be finished according to FP-96 subsection 301.06. Subsection 301.06 provides that, if grade finishing stakes are required, finish the surface to within plus or

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[4] The FP-96 defines "Base" as "[t]he layer or layers of material placed on a subbase or subgrade to support a surface course."

[5] The FP-96 defines "Surface Course" as "[t]he top layer or layers of a pavement structure designed to accommodate the traffic load and resist skidding, traffic abrasion, and weathering."

minus ten millimeters from the stake line and grade. FP-96 subsection 152.01 states that the "work consists of furnishing qualified personnel and necessary equipment and material to survey, stake, calculate, and record data for the control of work." The Special Contract Requirements modified the FP-96 and provided that the FHA would provide the "Roadway centerline" for the initial reference lines and control points for the staking of the bicycle path. FP-96 subsection 152.02 states that the initial reference lines established by the FHA, i.e., the roadway centerline, "will set horizontal and vertical control points, and will furnish the data for use in establishing control for completion of each element of the work."

The placement of minor hot asphalt concrete was designated as pay item 40201 under the bicycle path contract. The corresponding section for pay item 40201 in the FP-96 was section 402, which described the work as "constructing minor hot asphalt concrete for sidewalks, paved waterways, curbs, and roadways."

Mr. Conway, the president and owner of CEMS, as well as the initial project superintendent, testified at trial that the defendant was "excessively scrupulous, aggressive, hypercritical, [and] excessively vigilant [in the] enforcement of the tolerances for finishing of the surfaces of the subgrade and the aggregate base courses" on the bicycle path. Mr. Conway testified to the use of a two-foot level for the acceptance or rejection of the aggregate base by government inspectors. Mr. Conway also testified to increased costs as a result of government direction to change and replace completed work of the subgrade and aggregate course. Mr. Conway stated, "[f]or example, certain slopes were changed, certain ditches were established or eradicated, grades were changed, things of that nature." Mr. Thompson, at one point, the project superintendent on the bicycle path contract, testified that at times, the defendant would check the grades on the subgrade and aggregate course two or three times in a single area of the construction before final government approval.

The construction diaries of the plaintiff and defendant evidence the type of finishing inspections and the changes of grades in the subgrade and aggregate course. Mr. Conway's daily log for July 29, 1998 states that the defendant had decided to redesign the grades due to an error in design in the area of the bicycle path designated as 4+220 and 4+565.[6] On July 27, 1998, Mr. Conway's daily log notes that Gregory Parsons, an FHA inspector on the bicycle path contract, identified some areas of the aggregate course at the Cascade Fish Hatchery Parking Lot "that were a few millimeters low or high" and would not approve the finishing. Mr. Conway's July 28, 1998 daily log notes that on June 15, 1998, the defendant directed the plaintiff to rework the grade elevations "that were different from those indicated in the original and revised plans."

[6] The length of the bicycle path was 3.888 kilometers. The contract construction plans and drawings designated work along the bicycle path as stations, which began at station 2+800 and ended at station 6+860. The FP-96 defines a station as "[a] measure of distance used for highways and railroads. A station is equal to one kilometer."

Jeffery Cox, also a CEMS project superintendent for a time, maintained a daily log, in which he stated that on July 24, 1998, the government inspector, Gregory Parsons, "did not like how we [CEMS] graded the CFH [Cascade Fish Hatchery] parking lot to the curbs... we had AA [Surveying] stake it ... spent all day hand raking & compacting." On August 4, 1998, Mr. Cox's daily log states the following: "Cliff [Chew, the FHA project engineer] came down and... wrote several spots that were 1 to 3 cm high or low. I asked them last week to do this & they said they did & it was acceptable (see log). Now that Benge is here to pave it, just like I told the [sic] last week they would be, they no longer like it so we are regrading it at 9:30." On October 1, 1998, Mr. Cox's daily log notes that the Bridge of the Gods parking lot needed to be regraded, "[f]or the last two days they [government inspectors] have told him [Mr. Thompson] it looks good just a little fine grading on the edges[,] now they say it is all wrong."

Mr. Thompson's daily log references the instances of defendant's approval of the subgrade and aggregate surface. On September 30, 1998, Mr. Thompson's daily log states that the government inspectors "double check[ed]" previously approved surfaces prior to paving. On October 1, 2003, Mr. Thompson wrote the following: "I, then, went to shoot grade to try to finish for approval. I will keep trying to get it. My crew tried several more times to appease Clifford's [Mr. Chew's] difficult demands, but fell short each time."

One of the two FHA inspectors on the bicycle path project, Gregory Parsons, testified at the trial that he often inspected the finishes of the bicycle path work with a two-foot "SmartLevel." Inspector Parsons testified that he would notify defendant's project engineer Chew of deviations of ten to fifteen millimeters over the two foot length of the SmartLevel, and would reject the plaintiff's work based on those measurements. Inspector Parsons' daily log noted that FHA rejected work based on his use of the SmartLevel. CEMS employees who worked on the bicycle path also testified that, often, hand raking of the bicycle path grades was required to comply with the requests of FHA inspectors.

The changes in grades of the bicycle project also produced difficulty when, according to FHA inspector Richard McNichols' daily log, the FHA "had to make a lot of [changes] to the ditch & other areas in the field due to the frequency of asphalt in underlying areas & that in some places it was 15" thick." CEMS' daily logs also stated that project engineer Chew "acknowledged that he had made a mistake regarding the grades for the trail subgrade in the vicinity of 4+220 to 4+565."

III. A11 - Government Direction to Change Roadway Obliteration Work By Directing Removal of Additional Existing Pavement

CEMS' bid on the pay item 21101, Roadway Obliteration, estimated 150 square meters, with a unit bid price of $6.00 for a total amount bid of $900.00. Section 211 of the FP-96 specified the work under pay item 21101. Subsection 211.01 states that Roadway Obliteration "consists of obliterating and recontouring roadways, turnouts, parking areas, and other widened areas." Subsection 211.02 provides the general construction requirements for Roadway Obliteration and provides: "Scarify and bury or remove the existing pavement structure. Break down and bury or remove old structures. Fill ditches

and restore the obliterated roadway to the approximate original ground contour or shape to blend with the terrain."

The construction plans and drawings for the bicycle path indicate 145 square meters of Roadway Obliteration at the bicycle path underpass of I-84. The construction plans and drawings also provide "Typical Sections" indicating representative work to be performed by CEMS at various stages of the bicycle path. The typical section for the portion of the bicycle path indicates that CEMS was required to "Scarify to 200 mm [millimeters] depth." The construction plans and drawings also indicate that at various areas along the bicycle path, CEMS was to "[d]ig out asphalt and replace." The construction plans and drawings instruct CEMS to "[o]bliterate existing roadway" at an area located at the Cascade Fish Hatchery, the starting point of the bicycle path. Other areas of the construction plans and drawings indicate that CEMS was required to remove existing asphalt at the I-84.

The FHA's Geotechnical Report no. 14-96, issued in August, 1997, indicated that much of the path of the bicycle path consisted of native material, and a majority of the work for the preparation for the construction of the bicycle path consisted of "minimal grading work," "minor grading work," and excavation of "native soils." The Geotechnical Report also stated that boring logs indicated "very loose to medium dense, gravelly, silty sand with cobbles and occasional small boulders to a depth of 12.5 meters." The Geotechnical Report further stated that the soil encountered, "with a plasticity index of 20, will likely be difficult to work when wet." In addition, the Geotechnical Report indicated areas of the proposed layout of the bicycle path that have "scattered areas of old asphalt concrete pavement." The report continued: "The Bike Path alignment traverses a segment of the historic highway in this segment. Grading in this segment will primarily involve removing organic litter from the asphalt concrete surface." Moreover, the Geotechnical Report, under the heading of "Pavement Recommendations," provided the following analysis:

> The existing pavement surface on the detour segment (4+220 to 4+565) is thin and has been damaged by tree roots. The recommended treatment for this segment is to scarify the existing surface and place 100 mm of crushed aggregate base and 75 mm of asphalt concrete.
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> * * *
>
> At the few locations where the existing surface is damaged by tree roots or potholed, cut out the damaged pavement and replace it with 150 mm of crushed aggregate base and 35 mm of asphalt concrete prior to placing the overlay. ... Because roots from these trees have damaged the historic pavement, the recommended pavement structure in this area is the reconstruction design.
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> * * *
>
> The recommended pavement structure for the detour segment is to scarify the existing surface and place 100 mm of crushed aggregate base and 75 mm of asphalt concrete.

Project engineer Chew testified during cross-examination that the boring logs accompanying the Geotechnical Report did not indicate existing historic pavement structures at certain points in the bicycle path layout.

The pay notes submitted by CEMS during the project indicate that the FHA accepted work as Roadway Obliteration during the initial phases of the bicycle path construction, and then subsequently denied payment and classified the work under pay item 20401, Roadway Excavation.

The daily logs of the bicycle path project note the various instances when asphalt was removed during construction. For example, on August 21, 1998, Mr. Cox notes the following in his daily log: "Matt & Leon with grader spent 5 1/2 hrs removing the AC [asphalt concrete] edge at 4+220 & 4+565 where the AC was obliterated. This is not shown on the plans or in the specs. They directed us to do it." On August 31, 1998, Mr. Cox notes the following: "We had to saw cut it last week, spent 6 hrs last Friday on it plus the removal of the AC before that. It is not shown on the plans & was buried under debris prior to us ariving [sic] onsite. Once the debris was removed you could see waves in the AC & Rick [inspector McNichols] directed us to remove them." On September 22, 1998, Mr. Thompson wrote: "I asked Rick if he would like me to remove asphalt from 5+450 +/-. He said yes, we agreed & we removed 28 m^2."

The testimony at trial established that CEMS encountered asphalt concrete at differing points in the construction of the bicycle path. Mr. Conway testified that he "didn't remember verifying the quantity that the government had in the contract [for Roadway Obliteration]. I just went with whatever they had." Mr. Conway testified that he did not spend a lot of time verifying the 150 square meters of Roadway Obliteration because it "is not a lot of asphalt" to consider when bidding on such a large project. Mr. Conway testified to examples during the construction of a portion of the bicycle path when CEMS was excavating down through "normal soil that you would expect when all of a sudden, we got down and we started hitting asphaltic pavement... . And Mr. McNichols [FHA inspector] directed us to remove the pavement." Mr. Conway also testified regarding the removal of asphaltic concrete as follows:

> Q. Why did you think this was a change?
>
> A. Well, the reason I thought this was a change is for that particular bid item, the only asphaltic pavement that I can recall right now that's required under the contract is at the I-84 area. I can't remember if there's a – If there is a couple other spots, it might be at the fish hatchery or somewhere else. It's really minor. It's a real little – Well, we ended up taking thousands of cubic yards – cubic meters of this material – square meters of it – and – to the point where we didn't anticipate excavating this much material. It takes a lot of time to pry it out of there – 15 inches thick, piece by piece with excavator. That's one problem. Way slower than what we anticipated; hard on our equipment. Number two, at first, Mr. [FHA inspector] McNichols indicated we could bury it in the – the embankments. But the pieces, I think, got so big

that he's, like "No. You know, maybe a few pieces or something like that. But you can't bury this stuff in there." And we didn't have any provisions for what to do with it. So we ended up having to haul it off site in order to get rid of the stuff.

Q. What was the Federal Highway Administration's position?

A. Well, at first, we were issuing pay notes with these square meters. That's how the bid item was set up for removal of existing asphalt. We were issuing these to the Government inspectors, and they were signing them. And I believe we even received payment. I can't remember the specifics. But then as – as the relationship spiraled downward, all of a sudden, these – these start coming back to us. And we were told we weren't going to be paid for it.

Mr. Conway testified to his understanding of Roadway Obliteration as follows: "You can use scarification and excavation, and you can use roadway obliteration. It's my understanding that the difference is that roadway obliteration, you are also obliterating an existing structure. Whereas, in excavation, you are just moving native material." Mr. Conway also testified at trial of the additional expenses that CEMS encountered for the removal of the concrete asphalt encountered on the bicycle path project. Mr. Conway explained that the additional costs claimed for the removal of the concrete asphalt included trucking time for the removal of the asphalt concrete from the job site, and disposal of the asphalt concrete at disposal areas.

IV. A14 - Government Failure to Make Timely and Complete Payments

Section 109 of the FP-96 provides general guidelines for measurement methods for payment under the pay items. Subsection 109.01 states that "[u]nless otherwise specified, measure when the work is in place, complete, and accepted. ... The Measurement Subsection of each Section details specifics and exceptions for measuring work under each Section. The CO will verify Contractor Measurements." In subsection 109.02, the FP-96 defines "Contract quantity" as follows:

> The quantity to be paid is the quantity shown in the bid schedule. The contract quantity will be adjusted for authorized changes that affect the quantity or for errors made in computing this quantity. If there is evidence that a quantity specified as a contract quantity is incorrect, submit calculations, drawings, or other evidence indicating why the quantity is in error and request, in writing, that the quantity be adjusted.

Subsection 109.05, "Scope of Payment," also states the following regarding quantities and the bid schedule:

> The quantities shown in the bid schedule are approximate unless designated as a contract quantity. Limit pay quantities to the quantities staked, ordered,

> or otherwise authorized before performing the work. Payment will be made for the actual quantities of work performed and accepted or material furnished according to the contract. No payment will be made for work performed in excess of that staked, ordered, or otherwise authorized.

Mr. Conway testified at trial that CEMS would receive monthly payments by FHA for work performed under the contract based on pay notes submitted by the plaintiff. According to Mr. Conway, CEMS would submit a pay note to the FHA monthly, or at certain intervals that occurred more frequently. The pay notes described a certain quantity of work performed for a particular pay quantity item. At the end of the month, Mr. Conway testified that CEMS would total the pay notes, submit a multi-page pay estimate request to the FHA, and the defendant would generate a pay voucher and issue payment in accordance with the pay voucher. CEMS employees testified that when completing the pay notes, they endeavored to be as accurate as possible. Project engineer Chew testified that he relied upon inspector McNichols and inspector Greg Parsons to review the quantities reflected in the pay notes submitted by CEMS and then proceeded to incorporate the quantities approved by the inspectors when completing the monthly progress payments.

A. Pay Item 15603E, Corrective Work by the Oregon Department of Transportation at I-84

The FHA unilaterally deducted from CEMS' payments the $5,000.00 FHA paid the Oregon Department of Transportation (ODOT) for repairs to the I-84 detour pavement. The FP-96 states that under subsection 156.04, the contractor is responsible for the maintenance of the roadway and detours in a safe and acceptable condition. If the government directs the contractor to take corrective action and the corrective action is not taken immediately by the contractor, the FP-96 states that "the condition may be corrected and the cost of the corrective action deducted from monies due the Contractor."

On September 10, 1998, Dennis C. Quarto, FHA Construction Operations Engineer, sent a letter signed on his behalf by project engineer Chew to CEMS stating that certain repairs to the temporary pavement at the I-84 detour for the construction of the bicycle path underpass were the responsibility of CEMS. The September 10, 1998 letter stated that the "pavement distress" was repaired by ODOT and that the cost of the ODOT repair would be deducted from CEMS' progress payments. Mr. Conway testified at trial regarding his view that CEMS was not responsible for the failure of the pavement at the I-84 detour:

> Like I said earlier, the failures in the pavement of the detour were due to two situations: One, the reverse super elevation on the asphaltic pavement around the detour, which put most of the weight of the trucks on the outside duels and overstressing the minimally [sic] thickness designed pavement that the Federal Highway Administration directed be placed there. Secondly, the Federal High – The failures took place in existing earthen areas of pavement that were underlain by rock; underlain by existing subgrade, existing earth outside the structural backfill area. And those areas had been tested and accepted by the Government and approved to be paved by their authority as

reflected in Mr. [FHA inspector] McNichols' logs.

B. Pay Item 20401, Roadway Excavation

CEMS' bid on the bicycle path included Roadway Excavation under pay item 20401. CEMS' bid indicated 11,000 cubic meters, with a unit bid price of $8.00, and a total amount bid of $88,000.00. The Special Contract Requirements supplemented the FP-96 and directed the measurement of the Roadway Excavation by CEMS to be accomplished using "the volume shown in the plan column on the summary of quantities sheet of the plans. The volume is subject to adjustments resulting from changes to slope stakes." Subsection 204.17 of the FP-96 provides that the "accepted quantities, measured as provided above, will be paid at the contract price per unit of measurement for the pay items listed below that are shown in the bid schedule. Payment will be full compensation for the work prescribed in this Section."

Final pay estimate no. 10, issued by the FHA on May 2, 2000, stated that the total quantity to date for pay item 20401, Roadway Excavation, was 10,401 cubic meters. At the trial of this matter, the court entered into evidence plaintiff's exhibit 1233. Plaintiff's exhibit 1233 provides the plaintiff's analysis and calculations for the various pay items claimed under A14. Plaintiff's exhibit 1233 claims that the total quantity of pay item 20401, Roadway Excavation, was 13,457.20 cubic meters. Plaintiff's exhibit 1233 quantity analysis relies on pay notes submitted by CEMS from May 30, 1998 through December 9, 1998, and a deduction of 261.5 cubic meters calculated by Mr. Conway on August 10, 2002.

C. Pay Item 20803, Structural Backfill

CEMS bid pay item 20803, Structural Backfill at $38.00 for 3,400 cubic meters, for a total bid price of $129,200.00. Backfill is defined in subsection 101.04 of the FP-96 as "[m]aterial used to replace or the act of replacing material removed during construction. Material placed or the act of placing material adjacent to structures." The Structural Backfill was used to support the precast concrete walls of the pedestrian underpass of I-84 of the bicycle path. Subsection 208.13 of the FP-96 provides the appropriate measurement for backfill. Subsection 208.13 states:

> Measure structural backfill by the cubic meter in place. Limit the volume of structural backfill measured to that placed inside vertical planes located 450 millimeters outside and parallel to the neat lines of footings or foundations. Use these vertical planes to determine pay quantities regardless of the amount of backfill material placed outside these planes.

Subsection 109.02(b)(1) states that for the measurement of "Cubic meter in place," the contractor shall "[m]easure solid volumes by a method approved by the CO or by the average end area method as follows ... ." The FP-96 subsection 109.02(b)(1) proceeds to provide three alternate measurement techniques for the average end method.

On August 25, 1998, Mr. Conway submitted a letter and attached calculations for

the pay item 20803, Structural Backfill. The August 25, 1998 letter provided Mr. Conway's calculations for the Structural Backfill quantities in accordance with subsection 208.13 of the FP-96 and, based on those calculations, determined that the quantity for Structural Backfill was 3,987.11 cubic meters. Mr. Conway testified at trial that plaintiff's exhibit 1233 provided an updated quantity for Structural Backfill of 2,834.20 cubic meters. According to the plaintiff, the reduction in the quantity claimed for Structural Backfill is based on three factors: 1) quantity calculations as required pursuant to FP-96 subsection 208.13; 2) variations in quantities; and 3) "[a]ny unforseen [sic] CEMS liability regarding this pay quantity."

According to the defendant's final pay estimate no. 10, dated May 2, 2000, the FHA determined that CEMS was paid for 1,927.8 cubic meters. Project engineer Chew testified at trial that the FHA originally based the Structural Backfill quantities on CEMS' truck tickets, which provided the quantities of Structural Backfilled hauled to the bicycle path construction site. On June 5, 2000, Mr. Chew also performed a calculation of the Structural Backfill quantities based on the contract drawings and determined that the original pay quantity of 1608.3 cubic meters estimated by the FHA was close to his June 5, 2000 calculations of 1,778 cubic meters.

D. Pay Item 21101, Roadway Obliteration

According to subsection 211.07, the FP-96 directs that Roadway Obliteration is to be measured by the square meter before the work is performed. CEMS bid pay item 21101, Roadway Obliteration, at $6.00 per square meter, and estimated 150 square meters for the quantity of Roadway Obliteration on the bicycle path. Based on plaintiff's exhibit 1233, CEMS calculated the Roadway Obliteration quantity on the bicycle path to be 7,197.87 square meters. Mr. Conway testified at trial that CEMS encountered existing asphaltic concrete in excess of the contract documents and was given government direction to remove the material.

E. Pay Item 30802, Roadway Aggregate Method 2

The aggregate base course that was placed on the road bed for the construction of the bicycle path was designated as pay item 30802, Roadway Aggregate Method 2. CEMS bid Roadway Aggregate Method 2 at $28.00 per metric ton, with a quantity of 4,500 metric tons, for a total bid price of $126,000.00. Pay item 30802 comes under FP-96 section 308, Minor Crushed Aggregate. Subsection 308.07 of the FP-96 provides the appropriate measurement for Roadway Aggregate Method 2 and states that the contractor shall "[m]easure crushed aggregate by the cubic meter in the hauling vehicle, by the metric ton, or by the square meter."

The construction plans and drawings for the bicycle path indicate that 3,979 metric tons of Minor Crushed Aggregate Method 2 would be placed along the road bed of the constructed bicycle path. The construction plans and drawings also indicate that 321 metric tons of the Minor Crushed Aggregate Method 2 would be placed at the I-84 underpass for the bicycle path. The diary entries from FHA inspectors and project engineer Chew indicate that the FHA directed CEMS to provide Minor Crushed Aggregate

Method 2 in areas outside the road bed and I-84 Underpass. Mr. Chew also testified that during construction of the Cascade Fish Hatchery Parking Lot, he instructed CEMS to bring additional Minor Crush Aggregate Method 2 to the parking lot excavation area, "I would just pay them for the additional rock to bring it up to the correct grades."

The method for measuring the quantity of Minor Crush Aggregate Method 2 CEMS employed involved weighing an empty truck at the gravel pit, then weighing the loaded truck before delivery to the bicycle path construction site. The weight differential between the empty and loaded trucks established the quantities for which CEMS sought compensation. According to Mr. Conway, CEMS would accumulate "truck tickets" and submit them to the FHA, with the appropriate pay notes, on a weekly or monthly basis. The plaintiff also has provided a tabulation of the truck tickets it claims to represent the Minor Crushed Aggregate Method 2 used on the project. According to plaintiff's exhibit 1233, CEMS claims that the correct pay quantity for Minor Crushed Aggregate Method 2 is 8,324.2 metric tons based on the pay notes submitted by CEMS during the course of the bicycle path project. The FHA calculated the quantity of Minor Crushed Aggregate Method 2 that CEMS placed at the bicycle path project as 4,217.8 metric tons, and an additional 166 metric tons under the contracting officer's final decision, for a total 4,383.3 metric tons.

F. Pay Item 40201, Minor Hot Asphalt Concrete

According to CEMS' bid, Minor Asphalt Concrete for the bicycle path project totaled 3,000 metric tons, at $60.00 a ton, for a total bid price of $180,000.00.

The placement of Minor Hot Asphalt Concrete was designated as pay item 40201 under the bicycle path contract. Subsection 402.10 states that the contractor shall measure the quantities of Minor Hot Asphalt Concrete by the metric ton. The construction plans and drawings designate the placement of the Minor Hot Asphalt Concrete on the mainline of the bicycle path, truck turnarounds, widening areas, trail approaches, and at the I-84 underpass.

At trial, Mr. Conway testified that the Minor Hot Asphalt Concrete quantity claimed by CEMS is the sum of the quantity delivered to the bicycle path project and placed on the job by the subcontractor, including the I-84 underpass detour work. CEMS' exhibit 1233 provides the total quantity claimed by the plaintiff for Minor Hot Asphalt Concrete to be 3,165.51 metric tons.

The FHA has paid CEMS for 2,614.3 metric tons of Minor Hot Asphalt Concrete. The contracting officer's final decision also awarded the plaintiff an additional 445.5 metric tons of Minor Hot Asphalt Concrete placed at the bicycle path project, for a total of 3,059.8 metric tons. Following a review of the plaintiff's evidence at trial, the defendant states: "[i]n reviewing CEMS's weight tickets submitted as evidence at trial, the Government has discovered weight tickets supporting an additional 72.2 metric tons of minor hot asphalt concrete. ... Accordingly, CEMS should be paid an additional $4,332.00 (72.2 x $60) for this item."

G. Pay Item 62506, Mulching, Hydraulic Method

CEMS' bid for the bicycle path contract included bid item 62506, Mulching, Hydraulic Method, for ten slurry unites at $200.00, for a total bid of $2,000.00. Section 625 governs this pay item and is titled "Turf Establishment," which consists of "soil preparation, watering, fertilizing, seeding, and mulching." Pursuant to FP-96 section 625, CEMS was obligated to apply mulch following seeding in certain areas of the bicycle path using "hydro-type" equipment for the uniform application of the mulch. Subsection 625.11 provided the measurement for quantities under Mulching, Hydraulic Method, and specified that the slurry unit was acceptable. A slurry unit "consists of approximately 4000 liters of water plus the specified turf establishment material. Ten slurry units contain the material to cover one hectare." Mr. Conway testified that the difference between the CEMS claim for seventeen slurry units and the FHA payment for twelve slurry units was based on the Mulching, Hydraulic Method used to complete the bicycle path project.

H. Pay Item 63509, Flagger

Pay item 63509, flagger, relates to the bid item for contractor flaggers used in the detour construction at the I-84 underpass for the bicycle path. According to project engineer Chew, the detour that CEMS constructed during the work at the I-84 underpass failed and required twenty-four hour flaggers at the designated positions of the detour. According to the plaintiff's exhibit 1233, CEMS is entitled to 1,562.5 hours for flaggers and the defendant has only paid for 600.5 hours of flagger time.

I. Pay Item 63511, Temporary Concrete Barrier

The plaintiff bid pay item 63511, Temporary Concrete Barriers, placed during the detour construction of the I-84 underpass work for the bicycle path, at $55.00 per meter, for a total bid price of $18,150.00. The FP-96 measurement for the Temporary Concrete Barriers was along the face of the barrier and such barriers were to be measured once, exclusive of relocation or replacement. The plaintiff relied on submitted pay notes to calculate the length on concrete barriers used on the bicycle path contract and, according to plaintiff's exhibit 1233, CEMS used 695 meters of Temporary Concrete Barriers.

J. Pay Item 63524, Variable Message Sign

CEMS bid pay item 63524, Variable Message Sign, as two units at $6,000.00 a piece, for a total bid of $12,000.00. Similar to Flaggers, and Temporary Concrete Barriers, Variable Message Signs fall under section 635 of the FP-96, Temporary Traffic Control. Subsection 635.01 states that the work consists of "furnishing, maintaining, relocating, and removing temporary traffic control devices and services as ordered for the control and protection of public traffic through the project." A Variable Message Signs is a "self-contained, trailer mounted sign system consisting of a sign message panel, controller, power source, and structural support system. Make the trailer and sign support system safety orange."

Project engineer Chew testified at trial that the FHA required CEMS to furnish an

addition Variable Message Sign for the I-84 detour while the bicycle path I-84 underpass was being constructed. Although CEMS used three Variable Message Signs on the bicycle path contract, the FHA allowed payment for only one of the Variable Message Signs due to the FHA conclusion that CEMS caused safety problems arising from CEMS' operation of the I-84 detour.

K. Pay Item 63559, Traffic Control Laborer

CEMS bid pay item 63559, Traffic Control Laborer, at $40.00 per hour for 400 hours, for total bid price of $16,000.00. Based on the Special Contract Requirements, Traffic Control Laborers were responsible for the following activities:

> (a) Handling portable construction signs, barricades, drums, cones, tubular markers, and other traffic control devices as follows:
>
> (1) Temporary set up and removal
> (2) Relocation on the project according to the traffic control plan
> (3) Relocation to and from temporary storage on the project
> (4) Cleaning and replacing construction signs or other traffic control devices on the project which are damaged by a third party[.]
>
> (b) Operating the vehicle(s) while transporting the portable construction signs, barricades, drums, cones, tubular markers, and other traffic control devices[.]
>
> (c) Providing temporary flagging assistance[.]
>
> (d) Cleaning construction signs and other traffic control devices when they become illegible because of weather or other conditions[.] Furnish all vehicles and incidentals necessary to handle and transport the portable construction signs, barricades, drums, cones, tubular markers, and other traffic control devices[.]

Mr. Conway testified that the FHA denied compensation for Traffic Control Laborers, or rescinded previously approved pay notes for such work. According to the plaintiff's exhibit 1233, and relying on the paynotes submitted to the FHA by CEMS, the plaintiff claims entitlement to 1,151.0 hours for Traffic Control Laborers.

L. Pay Item 63560, Traffic Safety Supervisor

CEMS bid pay item 63560, Traffic and Safety Supervisor, for 400 hours at $45.00 per hour, for a total bid price of $18,000.00. The contract required CEMS to provide a "traffic and safety supervisor who is certified by a state highway agency or other acceptable certification program." CEMS was not allowed to designate the Superintendent as the Traffic and Safety Supervisor. In addition, the contract specified that "[a]ny work described for the Traffic Control Laborer and performed by a Traffic Control Supervisor will not be

measured for payment." The Traffic and Safety Supervisor was to perform eight control tasks during the performance of the contract, including periods of suspensions and work stoppages. The Special Contract Requirements added five more tasks relating to "control devices, including those in staging, storage, material sources, and disposal areas... ." Based on the pay notes submitted by CEMS to the FHA, plaintiff's exhibit 1233 identifies 546.5 hours that the Traffic Safety Supervisor performed on the bicycle path contract.

V. A17 - Government Direction to Provide Testing in Excess of the Specifications

CEMS bid pay item 15401, Contractor Testing, as a lump sum price of $5,000.00. Section 154 of the FP-96, Contractor Sampling and Testing, governs the pay item. Subsection 154.01 states that: "This work consists of obtaining samples for testing. When there is a contract pay item for Contractor testing, it also consists of testing and reporting required test results. It does not include Contractor quality control testing required under Section 153." Subsection 154.03 describes the testing of work performed under this pay item and states that tests shall be performed as required by the "Sampling and Testing Tables" for all applicable work. The contractor was required to "[a]llow the CO the opportunity to witness all testing." The Special Contract Requirements also state that "[t]he testing schedule is listed in the individual sections ordering the work." The reporting procedures of the test results by the contractor to the defendant included the obligation to furnish the test results in a reasonable time between the tests and the transmission of the results to the defendant.

Section 153 of the FP-96 governs the specifications for "Contractor Quality Control," which consisted of "obtaining samples for Contractor quality control testing, performing tests for Contractor quality control, providing inspection, and exercising management control to ensure that work conforms to the contract requirements." In accordance with section 153, the contractor was required to submit a quality control plan for acceptance by the FHA to meet contract specifications.

The Special Contract Requirements for the bicycle path project provided approximately twenty "Sampling and Testing" tables for testing under bid pay item 15401, Contractor Testing. The various Sampling and Testing tables provided the material or product to be tested, the characteristic of the testing, the testing method, the sampling frequency, the tolerance, point of sampling, reporting time, special remarks, among other information. The Special Contract Requirements also specified that the sampling frequency to be performed by the contractor would be determined based on the particular material installed by the contractor. For example, with certain work, the Sampling and Testing tables stated that sampling frequency would be left to the discretion of the CO, while other Sampling and Testing tables specified that tests would take place at specified intervals of the work.

Mr. Conway testified at trial that he agreed with the contracting officer's final decision, which determined that 397 tests were taken on the bicycle path to determine whether CEMS' work met contract specifications. Mr. Conway also agreed that 98 of the 397 tests failed. Mr. Conway testified that the 98 failed tests were attributed to

inappropriate directives by the FHA for the use of unsuitable testing procedures in the subgrade, the high moisture content of the subgrade that distorted testing results, failing tests as a result of the FHA directives for the finishing of the Roadway Aggregate Method 2, and that the FHA required inappropriate testing methods for soil conditions of the bicycle path.

Mr. Cox testified that the FHA directed testing and sampling on the bicycle path project in excess of the specifications. For example, the FHA required three consecutive compaction tests in a twenty by ten foot area, the FHA was directing density testing approximately every ten to fifteen feet, daily cylinder testing for mortar placed on the bicycle path, and in some cases, testing every two feet. Indeed, it appears from the testimony received at trial, that the FHA inspectors required additional testing if they perceived an area to involve a "critical item" of the bicycle Path.

Mr. Cox's August 20, 1998 daily log provided further examples of the FHA's testing requirements:

> Tested 3+495 it passed. We then went to CFH [Cascade Fish Hatchery] while we filled the water truck. We took a shot [test] in the center area on the north end & it was low so we watered & rolled it & it passed. Rich [FHA inspector McNichols] then said to test the center on the south side so we water & rolled it & it passed. While we were watering & rolling Rich had them test 3 other spots that all passed. Total there are 9 shots that have passed in this area. Once again I explained to Rich how the spec says on[e] test per 500 tons but he said I was wrong.

CEMS submitted a quality control plan and designated Mr. Cox as the quality control manager. Mr. Thompson testified that the CEMS quality control program was supplanted by the directives of the FHA, and that government directions "became the quality control program." According to CEMS, at the time the contract required tests were performed, the plaintiff would provide the FHA with the test reports and provide an additional copy of the test results through the mail. The FHA also required full-time testing on certain areas of the bicycle path project. Mr. Conway testified to the impact of the additional testing, which included "the crew standing by; the lower productivity; whatever else is associated with that additional testing."

Project engineer Chew testified regarding his oversight of the testing procedures on the bicycle path. He required approval of the compaction tests of the subgrade prior to the placement of the Roadway Aggregate Method 2, and compaction of the Roadway Aggregate Method 2 prior to the placement of the asphaltic concrete pavement. FHA inspector McNichols testified that CEMS was unable to proceed with work on the bicycle path project unless the FHA observed the testing on the project. In addition, the FHA inspectors provided conflicting testimony regarding the use of "rounded-up" testing results. FHA inspector Parsons testified that the acceptance of a 94.7 percent test result would be "inferred" when nearby test results were 95 percent or more. Inspector Parsons, however, testified that he had rejected a 94.7 percent test result. Inspector McNichols testified that

he was "quite sure" that at no "time during [his] involvement with the bike path project, did [he] inform anyone working for a subcontractor for CEMS that they could round up a compaction test result lower than 95 percent... ." Inspector McNichols, however, acknowledged an occasion on which he permitted paving an area which had failed a compaction test.

VI. A27 - Government Suspension of Work

The contract included the Suspension of Work clause, Federal Acquisition Regulation (FAR) 52.242-14(b), which states in relevant part:

> If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified in this contract (or within a reasonable time if not specified), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by the unreasonable suspension, delay, or interruption, and the contract modified in writing accordingly.

48 C.F.R. § 52.242-14(b) (1997).

The bicycle path contract also specified that the "[w]ork shall be completed on or before September 30, 1998, subject to such extensions as may be authorized by the terms of the contract and the specifications made a part thereof." The contract included an incentive clause for the early completion of the bicycle path underpass at the I-84 highway. The incentive clause provided a $5,000.00 monetary incentive to the contractor for each day the underpass work was completed before the thirty day completion window, with a $75,000.00 cap on the monetary incentive. If the contractor exceeded the thirty day work window for the I-84 underpass work, the contractor would be assessed liquidated damages of $5,000.00 per day.

On April 14, 1998, the FHA received a CEMS schedule for the completion of the bicycle path in August, 1998. The April 14, 1998 schedule indicated the critical path of the bicycle path project, the activities on the critical path, and termination of the float time in the activities that could effect the critical path. According to Mr. Conway, the completion of the six month bicycle path project in four months was "conservative" and achievable. Indeed, project engineer Chew testified that based on a preliminary scheduling he performed, a contractor could have completed the contract in eighty work days.

During the course of the bicycle path project, CEMS submitted, at a minimum, twenty-one revised construction schedules to the FHA. The constructions schedules spanned from April, 1998 through November, 1998, and included two week narratives for upcoming work, preliminary schedules, or critical path schedules. For example, on September 23, 1998, CEMS submitted its seventeenth revised schedule, with tabulation and written narrative. The transmittal letter, also dated September 23, 1998, noted several

changes on the project affecting the CEMS schedule:

> The work duration for the Bridge of the Gods parking area has increased due to the numerous Government changes and delays. ... Other changes are noted in the attached copy of Daniel J. Lynch's letter dated August 27, 1998. ... CEMS has requested the Government to issue documentation of all changes so their total impact can be determined.

In an October 8, 1998 transmittal letter for CEMS' twenty-first revised construction schedule, tabulation, and written narrative, CEMS notes "that several Government changes and delays are extending scheduled work beyond the current completion date. These scheduled work items, changes and delays include, but are not limited to, the following...."

Mr. Conway testified regarding his submission of the construction schedules, the alleged impact of FHA delays and changes to the bicycle path project schedules of CEMS, and, in particular, regarding a schedule showing completion of the project on November 16, 1998.

> Q. Mr. Conway, when you prepared this schedule, did you have an opinion as to whether the dates on here were achievable if there were no further delays and changes by the Government?
>
> A. Yes. And I want to clarify something. I had actually sent a letter to the Government telling them that, you know – sometime in this area in the fall, I believe – that it was, you know – sending one of my schedules into them keeping them updated as to where things were at, that it was nearly impossible for me to, you know, definitely say when a completion date was going to be because of the ongoing changes. But with the information I had at that particular time with that particular schedule, you know, if nothing else further changed and if there wasn't any further delays on the part of the Government, this would be the completion date. But every time I'd submit those schedules, there would be changes and delays. And so I don't see why this schedule would be any different than the – that previous one I just mentioned, in that at that particular moment, if nothing else changed, this is what the completion date would be.

Mr. Conway also testified regarding a letter sent to the FHA by CEMS on October 30, 1998. The October 30, 1998 letter stated that "the project is, and has been, substantially complete in as much as it is available, and has been utilized, for its intended use. Therefore, it would be inappropriate to assess liquidated damages." Mr. Conway explained that although there remained minor work to be performed on the bicycle path project, including the paving of approximately 100 to 120 feet of the approximately 2.4 mile bicycle path, the project was substantially completed on October 30, 1998, as evidenced by public use of the trail. An FHA status report issued by project engineer Chew for the month ending June, 1998, indicated that prior to October, 1998, CEMS was obligated to perform the contract work in a manner that would allow the safe weekend use of the

bicycle path for bicyclists and hikers.

CO Parsons testified that in his opinion, the bicycle path was not substantially complete because the remaining paving required on the project posed "both an impediment to use and potentially to safety." On November 20, 1998, CO Parsons issued a letter to CEMS describing certain work that remained to be completed by the plaintiff on the bicycle path project. CO Parsons' November 20, 1998 letter also extended the contract completion date and stated the following:

> However, timely completion of the work is essential, and the Government is, therefore, reestablishing a new contract completion date. Based on our assessment of your performance capabilities, the reestablished contract completion date is May 22, 1999. This contract completion date is based on a suspension of work due to weather related conditions considered unsuitable for performance of work from November 25, 1998 through April 19, 1999. This contract completion date is contingent upon the weather conditions on April 20, 1999 allowing CEMS to proceed with the corrective work and remaining work.
>
> The Government hereby directs that all work is suspended effective November 25, 1998 through April 19, 1999 due to unsuitable weather related conditions in the Columbia River Gorge. Liquidated damages will not be assessed during this period of suspension.

CO Parsons testified that in his opinion, the suspension of the project until April 19, 1999, was warranted due to the climactic conditions prevalent during the winter months in the Columbia River Gorge. CO Parsons further testified that he did not consider the cost of the suspension period and focused on the "base rock work to be done and paving, and end of November and December, it just wasn't good weather to pave in."

On June 4, 1999, the FHA issued a memorandum regarding the remaining work on the bicycle path project and stated that CEMS has hired subcontractors to complete the "punchlist items" to satisfy contract completion. The June 4, 1999 memorandum also stated that:

> The grading sub proceeded to work on the punchlist items on April 22. The bike path section at the I-84 tunnel was paved on May 6, which should constitute substantial completion. The remaining punch list [sic] items were completed on May 22, the date that we established as the revised final completion of the project in accordance with our Cure Notice.

By letter June 21, 1999, the FHA notified CEMS that the work on bicycle path project was completed on June 11, 1999. The June 21, 1999 letter also informed CEMS that the project was substantially complete on May 6, 1999, subsequent to the completion of the paving work at the pedestrian underpass at the I-84 highway. The June 21, 1999 letter also informed CEMS that, "liquidated damages will be assessed from April 20 through

May 6, in addition to the liquidated damages assessed in 1998." [7] Final Pay Estimate no. 15, issued by the FHA, states that CEMS was assessed $32,800.00 in liquidated damages, at $800.00 a day for forty-one days.

VII. C1 - Government Direction to Subexcavate and Backfill Soft Subgrade near Station 3+00 to 3+030

The FP-96, subsection 308.06, provides, "[p]reparation of the surfaces on which crushed aggregate is placed will be evaluated under Section 303 and 209 as applicable." Subsection 303.04 of the FP-96 instructs the contractor to repair soft and unstable areas in accordance with subsection 204.07. Subsection 204.02(a)(2) defines subexcavation as, "[m]aterial excavated from below subgrade elevation in cut sections or from below the original groundline in embankment sections." Subsection 204.07, Subexcavation, states that the material shall be excavated to limits designated by the CO and backfill the subexcavation with "topping" or other suitable material. The construction plans and drawings of the bicycle path contract designate the area from 3+00 to 3+030 to be an area of excavation.

The plaintiff's claim to the CO described the soft subgrade near station 3+00 to 3+030 as follows:

> While excavating for the bike path alignment CEMS discovered an approximately 30 meter long by 4 meter wide soft spot in the existing subgrade beginning at station 3+000. The Government expressed concern and CEMS indicated that this area should be subexcavated to a point approximately two feet below the specified subgrade elevation and backfilled with roadway aggregate.

On June 23, 1998, project engineer Chew noted in his construction daily log: "Dave Conway called wanting direction on the subgrade from 3+000 to 3+300[.] I told Dave I know about the saturated material and the questionable rolling pattern done last week. I told Dave I was not going to direct him how or when to work the subgrade; that we will only inspect the results."

Mr. Conway testified at the trial of this matter that during the excavation for the subgrade, CEMS discovered that the material was too soft to support the intended loads for the area. Mr. Conway further testified that because the contract requires that the contractor request direction from the government on how to proceed, CEMS would request direction for the correction of the "soft spots" and absent response from the FHA, CEMS would "mitigate the situation and correct them to the best of our ability."

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[7] FHA progress payment estimate no. 6, dated November 26, 1998, had indicated that CEMS was assessed liquidated damages of $20,800.00, a rate of $800.00 per day for twenty-six days.

VIII. C3 - Government Direction to Remove Additional Curbs and Patch from Station 2+940 to 3+000

CEMS bid pay item 20302A, Removal of Concrete Curb, at $8.00 per meter, for eighty-seven meters, with a total bid amount of $696.00. Section 203 of the FP-96 calls for the removing of curbs that interfere with the project work and are not designated to be removed. The construction plans and drawings of the bicycle path indicate that eighty-seven meters of concrete curb were to be removed from station 2+936 to station 3+023.

On May 20, 1998, CEMS noted in a Contractor's Daily Record of Construction Operations that the plaintiff excavated eighty-seven meters of curb from station 2+936 to station 3+023. An additional four meters were excavated by CEMS on May 27, 1998, at station 3+002.

IX. C4 - Government Direction to Remove and Reinstall, at a Different Alignment, the Concrete Barriers From 2+929 to 3+225

The construction plans and drawings of the bicycle path indicate that 375 meters of concrete barriers were to be placed from station 2+939 to station 3+314. The defendant stipulates that the record is clear that the "Government directed CEMS to realign the concrete barriers because of an error in alignment in the Government plans." Indeed, when addressing the plaintiff's claim regarding the placement of the concrete barriers, the contracting officer's final decision concluded that:

> The Government was responsible for providing data by which CEMS installed the barriers in accordance with the Contract from Station 2+929 to 3+225. This data resulted in the barriers being installed in a crooked line. The Government is responsible for the costs incurred in repositioning that line of barriers so that the barriers were in a straight line.

On July 20, 1998, one of CEMS' project managers, Mr. Cox, noted in his daily log that he had "repe[a]tedly" informed project engineer Chew that, with the movement of concrete barriers, "the more chipped and broken they get !!!" Mr. Chew testified that the damage that occurred to the concrete barriers was a result of the plaintiff's use of the concrete barriers for the planned detour on I-84 during the construction of the pedestrian underpass of the bicycle path. Mr. Conway confirmed that CEMS used the concrete barriers as temporary barriers at the I-84 detour. Mr. Conway further stated that due to government direction, "we handled them more than we expected" and "every time you move them ... you damage them."

X. D1 - Differing Site Condition Due to Actual Cut and Fill Volumes from Station 3+000 to Station 3+865 Not Matching Contract Specified Quantities and G1 - Lack of Excess Excavation from between Station 5+137 and Station 5+405 for Embankment between Station 5+405 and Station 5+720 Delayed Completion of the Roadway between Station 5+405 and Station 5+720

The construction plans and drawings of the bicycle path contract indicates that

1,973 cubic meters of excavation was required between station 3+000 and station 3+865. The construction plans and drawings also indicate that CEMS was to perform 1,274 cubic meters of embankment at the same area of the bicycle path. The FHA issued a document titled "Earthwork Data" for the bicycle path project that described, among other things, the anticipated quantities of earthwork that would be performed on the project. The Earthwork Data document provides a "shrink" factor to determine the adjusted excavated volume total and instructs that .75 is the appropriate factor to consider. The Earthwork Data document also indicated that the adjusted volume for embankment totaled 1,274 cubic meters, arrived at by a multiplication factor of 1.00.

Mr. Conway testified at the trial that CEMS encountered excavation quantities at station 3+000 to station 3+865 in excess of the quantities indicated in the contract, as a result of FHA direction to change the course of the bicycle path. Mr. Conway further testified that the excess quantities were not suitable for use as embankment on the bicycle path due to the high moisture content and that CEMS, therefore, was obligated to haul the excavated material off site at additional cost. Although a contractor would normally stockpile the excess quantities of the excavated material and allow for the moisture to dissipate, Mr. Conway stated that CEMS was precluded from taking such action as a result of direction from the defendant.

Project engineer Chew also testified regarding the excess excavation that occurred at station 3+000 to station 3+865. He stated that, based on his recollection of the Earthwork Data, CEMS should have expected the excess excavation at the location. Project engineer Chew testified that due to the excess material excavated, CEMS hauled 700 to 800 cubic meters in seventy to eighty truck loads from the project site. Project engineer Chew stated that, although the material excavated at station 3+000 to station 3+865 contained excess moisture, CEMS was not precluded from dissipating moisture through temporary storage at the project site.

Mr. Conway's daily log for June 29, 1998, notes that he had informed project engineer Chew regarding the excavation quantities "near station 5+600." Mr. Conway's June 29, 1998 daily log also observes that "CEMS continued to haul material excavated from the roadway just west of the Ruckle Creek Bridge to fill at 5+600." Mr. Thompson's daily log, dated July 2, 1998, notes that there was an ongoing discussion regarding the quantities of excavation and embankment for station 5+300 to station 5+700, and, although the quantities were insufficient at approximately station 5+600, Project engineer Chew advised CEMS that embankment material could be used from the excavation at the pedestrian underpass at I-84.

XI. D5 - Differing Site Condition Regarding Excessively Wet Earthen Material at Approximately Station 3+690

Geotechnical Report no. 14-96 for the bicycle path project stated that "[n]ative soils on the project, due to the higher fines content or plasticity index, will typically be difficult to work when wet." The Geotechnical Report also advised that in the area from station 3+650 to 3+880, "[c]onstruction in this area should be limited to dry periods without rain," due to

potential rock fall "during and after heavy rains." Excavation also was recommended "only in dry periods without rain," with the further warning to "not leave portions of the excavation open overnight or when work is not in progress." Concerning subsurface sources of moisture, the Geotechnical Report only accounts for seeps "from 3+929 to 3+975."

Mr. Conway testified that because seeps differ from standing water, CEMS was not aware of the "excessive" moisture encountered near station 3+690. According to Mr. Conway, the ongoing and pervasive seepage kept the subgrade wet, preventing or impairing compaction and grading.

The FHA status report for the bicycle path project for June, 1998 stated that during excavation, "natural springs were encountered." Inspector McNichols noted in his daily logs that during excavation on the bicycle path "high clay content soil" was encountered and there was "extreme saturation" of the existing soils. Inspector McNichols also noted in his June 30, 1998 daily log that, "[i]t should be noted, that I doubt if anyone was ready for 31%" content of the excavated material. Inspector McNichols further wrote in his daily logs that CEMS attempted to alleviate the moisture problems, but CEMS failed, and "much of the area [was] clearly unsuitable."

XII. D8 - Government Actions and Inactions Caused CEMS to Incur Additional, Unanticipated Mobilization Costs

The plaintiff's claim to the CO states the following regarding the government actions and inactions, allegedly causing CEMS to incur additional, unanticipated mobilization costs:

> As described by numerous CEMS claims enclosed herein, in many different ways the Government changed, delayed, suspended, stopped and interfered with the work. These Government actions and inactions caused CEMS to incur additional, unanticipated mobilization costs. Differing site conditions also adversely impacted CEMS' mobilization costs.
>
> The attached quantum spreadsheet details the mobilization costs originally anticipated by CEMS and those that were actually incurred. CEMS requests compensation for the additional costs.

The FHA inspectors on the project testified that it appeared CEMS' approach to the work was inefficient due to a "hopscotch pattern" of work or a "checkerboard approach." Mr. Conway testified to the resulting approach CEMS took on the bicycle path, "because we weren't able to work as we planned, we were constantly jumping around like, you know, a frog in a skillet trying to get the thing done in different pieces all over the place," because of all the changes on the project.

XIII. E2 - Government Direction to Suspend and then Change Subgrade Work from Station 4+220 to Station 4+565

The construction plans and drawings indicate that excavation was to be conducted sporadically along the bicycle path station 4+220 to station 4+565, and Roadway

Reconditioning also was to be performed. The construction plans and drawings provided detailed plans for the work on station 4+220 to station 4+565. The detailed plans in the construction plans and drawings state that the contractor was required to perform scarification to a depth of 200 millimeters, the placement of roadway aggregate to a fifty millimeter compacted depth, and the placement of minor asphalt concrete to a seventy-five millimeter depth to complete the work on station 4+220 to station 4+565. The Geotechnical Report for the bicycle path project had addressed the area between station 4+220 and station 4+565 by noting that the existing pavement surface was "thin and has been damaged by tree roots." The Geotechnical Report recommended that this segment of the bicycle path be scarified, with the placement of aggregate base course and asphaltic concrete.

Mr. Conway's daily log for July 29, 1998 documented the activity on the bicycle path between station 4+220 and station 4+565, as follows:

> This morning at 7 am, Dave met with Ron and Aaron of AA Surveying and explained the situation regarding the Government's directive to stop work on the subgrade between station 4+220 and 4+565. Dave noted that the Government had told us they are redesigning the grades in this area. Dave asked Ron to get a hold of someone from the Government to confirm these new grades as soon as possible so that this area can be staked and work resumed.
>
> * * *
>
> After consulting with Ron Quimby of AA Surveying, Clifford Chew acknowledged that he had made a mistake regarding the grades for the trail subgrade in the vicinity of 4+220 to 4+565. He was uncertain of what the Government's directive would be; however, it appears that the directive would probably involve placing and grading a minimal depth of crushed rock, allowing Ron Quimby to establish a new grade through this area, and then finishing it accordingly.
>
> * * *
>
> Shortly after that, Clifford acknowledged that the Government had made a mistake in regards to the grading elevations between 4+220 and 4+565.

Project engineer Chew's July 27, 1998 daily log also notes the activity at station 4+220 and station 4+565, and states that CEMS excavated the existing pavement when the contract documents did not require excavation. Project engineer Chew's July 27, 1998 daily log further states that CEMS obliterated the existing pavement when the construction plans and drawings did not require obliteration.

Mr. Conway testified at trial that based on the contract documents, CEMS scarified the area between station 4+220 to station 4+565. According to Mr. Conway, when the FHA discovered the work performed by CEMS, project engineer Chew and the FHA inspectors were "baffled" at the work performed by CEMS. According to inspector McNichols, the existing pavement between station 4+220 and station 4+565 only required patching and

then a placement of an "overlay," and he was "stunned" by the work performed by CEMS at this portion of the bicycle path.

XIV. F7 - Government Directives Regarding the Layout of the I-84 Detour

The bicycle path required the construction of a pedestrian underpass through I-84 to allow the bicycle path to follow the historic highway from the Cascade Fish Hatchery to the City of Cascade Locks. The detour was scheduled to begin in June, 1998 and conclude within thirty days, with a monetary incentive if CEMS completed the detour work early. The construction plans and drawings for the project required the construction of a temporary two-stage detour for the bicycle path pedestrian underpass under I-84. In the first stage of the detour, the construction plans and drawings required the contractor to construct a temporary roadway detour north of the existing interstate while the contractor constructed the south side of the pedestrian underpass. The second stage of the detour required a corresponding roadway south of the interstate while the contractor constructed the north side of the pedestrian underpass.

On April 23, 1998, CEMS submitted a proposed temporary traffic control plan to provide three lanes of traffic during construction of the south side of I-84. The FHA accepted the proposed detour by CEMS, citing the benefit to the public for three lanes of traffic during construction of the south side of the pedestrian underpass, in comparison to the two lanes of traffic originally indicated in the construction plans and drawings. On June 4, 1998, the FHA addressed a letter to CEMS regarding the change in the detour for the construction of the pedestrian underpass at I-84. The June 4, 1998 FHA letter provided that:

> Temporary traffic control on the South side of Interstate 84 during the first stage of construction will provide for one lane in each direction. Temporary traffic control on the North side of Interstate 84 during the second stage of construction will provide for one lane in the West bound direction and two lanes in the East bound direction. The single lanes will have a minimum travel width of 4.9 meters and the double lane will have a minimum travel width of 8.6 meters.

The June 4, 1998 FHA letter also made various additions and deletions to the temporary traffic control plan indicated in the construction plans and drawings.

On June 22, 1998, CEMS forwarded to project engineer Chew an "Updated I-84 Traffic Control Plan," which included plans and drawings for the proposed detour for the I-84 underpass construction. The June 22, 1998 transmission from CEMS provided the chronological sequence of work and the shifting of highway traffic on and off the detour during the underpass construction. Within the June 22, 1998 Updated Traffic Control Plan, CEMS listed various pay items for certain aspects of the detour work and also indicated: "[o]ther pay quantities not calculated here."

On June 23, 1998, the FHA and CEMS executed bilateral contract modification no.

1, for the following work:

> This work consists of constructing an embankment, compacting, and constructing a geotextile retaining wall to support the north side of Interstate 84 during the construction of a pedestrian underpass. This includes a two stage construction with a provision for three detour lanes during the second stage of construction for a pedestrian underpass. There will be an increase of four days in the contract time as a result of this modification.

Contract modification no. 1 included the material necessary for the scope of the work described above, including "unclassified borrow," "geotextile," and "crushed aggregate." CEMS' proposed layout of the detour, incorporated in the contract by contract modification no. 1, provided a 200 meter "radii" for the curvature of the detour. The plaintiff's surveying subcontractor laid out the "north side of the paving ... with wooden stakes and white paint marks according to the detour plan submitted by CEMS, Inc. and approved by the Federal Highway Administration." According to Mr. Conway, CEMS placed the "survey adjusted" staking and pavement as directed and approved by project engineer Chew.

XV. F15 - Government Direction to Excavate, Backfill, and Place Steel Plates to Correct Soft Spots in the Pedestrian Underpass I-84 Detour

The construction plans and drawings for the bicycle path project specified temporary detour pavement to consist of 75 millimeters of asphaltic concrete placed over 150 millimeters of roadway aggregate placed over the subgrade. Inspector McNichols testified regarding his daily log and a notation regarding the native soils as unsuitable for use as subgrade material for I-84. During the construction of the detour, CEMS was required to repair soft spots in the roadway. Following the corrective work, project engineer Chew inspected the work and "approved it for diversion of the westbound [I-84] traffic."

On July 18, 1998, FHA directed CEMS to place steel plates over another soft spot in the detour roadway; other soft spot corrections also were required. On the night of July 19, 1998, the FHA sought corrective work on a soft spot of the detour by the Oregon Department of Transportation and deducted the cost of the repair from CEMS' progress payments. Project engineer Chew's daily log noted that he attempted to contact CEMS to perform the corrective work, but was unable to reach CEMS personnel.

XVI. F18 - In Order to Minimize the Effect of a Seam in the Traffic's Tire Lane, the Government Directed CEMS to Saw Cut and Remove Asphaltic Concrete Previously Placed at I-84

The record indicates that on July 13, 1998 project engineer Chew spoke to Mr. Conway because he "was concerned about having a longitudinal joint in the final I-84 asphalt." The record also indicates that on July 24, 1998, project engineer Chew worked with CEMS' survey crew to "lay out staggered joint" to avoid a "cold joint lengthwise in the wheel rut of I-84" west bound lane. Mr. Conway testified about the asphaltic concrete at

the I-84 roadway:

> We had placed the asphaltic concrete on the first half of the detour and placed it, you know, as far as we could place it. And then we did the second half of the detour. And when the second half needed to be paved, Mr. Chew was looking at where that existing – that line of existing asphalt lay in relation to the future lanes that were going to be reestablished on the interstate freeway. And he told me that he was concerned that by leaving that existing edge of the asphalt where it was, that there would be a seam – a line in the tire groove for the tires traveling on the interstate once it's reopened. And he told me that this created a - a driving hazard. And he directed me to saw cut the asphalt so that that seam would be moved out of that tire lane and – and then remove all the asphalt that had been previously placed so that that seam would move back.

XVII. F27 - Government Direction to Add Stone Bench

CEMS bid on pay item 62009, stone masonry bench, in the amount of $1,200.00 per meter, for eleven meters, for a total bid price of $13,200.00. The parties agree that the contract required construction of a stone masonry bench on the south side of the pedestrian underpass, and by unilateral contract modification no. 6, that the FHA required the construction of an additional stone masonry bench on the north side of the pedestrian underpass. The defendant has paid CEMS $17,263.80 for the additional bench.

Project engineer Chew was considering adding an additional stone bench in early May, 1998. On August 12, 1998, however, CEMS wrote to the FHA and stated that "[d]ue to the impact of previous delays, changes and differing site conditions, CEMS hereby requests the Government not to direct CEMS to perform any additional or changed work such as access roads, stone benches, or any others." Following the direction from the FHA to construct the stone masonry bench on the north side of the underpass, the FHA calculated the cost of modification no. 6 based on CEMS' bid amount for pay item 62009, stone masonry bench, for the total modification price of $13,200.00, in addition to $3,321.8 allowed by the contracting officer's final decision, and $742.00 under a July 30, 1999 invoice payment.

XVIII. H6 - Government Untimely Direction to Remove and Reinstall Previously Placed Concrete Barriers Along a New Alignment in the Vicinity of Station 6+258 to Station 6+819

The construction plans and drawings required CEMS to place the toe of the concrete barriers 2.45 meters from the existing guardrail from station 6+281 to station 6+720 and the center of the barrier to be 1.85 meters from the centerline, from station 6+720 to station 6+860. Special Contract Requirements subsection 152.02 provided that the FHA had set the initial reference lines and control points for the project, which included the "Roadway centerline." By letter dated August 28, 1998, project engineer Chew sent CEMS a typical section for station 6+280 to station 6+720 which aligned the toe of the

concrete barriers 2.5 meters from the existing edge of pavement.

The daily logs of Mr. Thompson indicate that prior to the placement of the concrete barriers between station 6+258 to station 6+819, CEMS sought direction for the placement of the barriers. Mr. Thompson's daily log for September 9, 1998, indicated that he began placing the concrete barriers at station 6+258 and noted that he does not have a fixed point for the reference due to FHA's inability to respond to requests for direction. Project engineer Chew's daily log for September 9, 1998 indicated that Mr. Thompson informed project engineer Chew that the construction plans and drawings were not clear and that based on Mr. Thompson's placement of the concrete barriers, they were misaligned. Mr. Conway testified that because the construction plans and drawings relied upon the existing asphalt for the alignment of the concrete barriers in this area, and the existing pavement was irregular, the misalignment of the concrete barriers resulted.

XIX. I6 - Government Changes of Curbs, Grades, Planter, Pillars, and the Wall at the Bridge of the Gods Parking Area

The construction plans and drawings required the construction of the Bridge of the Gods Parking Area. The Bridge of the Gods Parking Area was designed for 15 parking spaces, encompassing approximately 780 square meters of asphaltic concrete pavement. The work also included the construction of a stone curb, drinking fountain, sidewalk, a stone masonry planter, ten stone masonry pillars, a stone masonry wall, and a kiosk, among other items of work.

The FHA issued contract modification no. 4 on October 5, 1998, for the additional work at the Bridge of the Gods Parking Area. Contract modification no. 4 redesigned the elevation grades of the parking area due to improper design elevations in the construction plans and drawings, and the revised design drawings were supplied to CEMS on June 8, 1998. In addition to the redesign of the elevation grades of the parking area at the Bridge of the Gods, the FHA revised a number of designs for the layout of the parking area, which included: 1) changed curbs; 2) redesign of the stone masonry planter; 3) redesign of the stone masonry stone pillar grades; 4) correction of elevation errors for a wall footing; 5) exposure of a city water line; 6) extension of the sidewalk; 7) redesign of the placement of the kiosk; and 8) an additional light fixture. Contract modification no. 4 was a fixed price modification of $22,606.84, and included a contract time extension of seven days.

Mr. Conway testified that CEMS was required to perform additional work at the Bridge of the Gods Parking Area, for which plaintiff seeks additional compensation. Mr. Conway testified to numerous items of additional work, including: 1) additional subcontracting surveying to assist in design changes; 2) additional clearing of the area; 3) locating existing fiber optic cables; 4) excavation of waterlines; 5) execution of the design changes for drainage; 6) changes to the planters; 7) submissions of shop drawings for certain aspects of the work; 8) suspension of work associated with the stone masonry work; 9) changes to curb design; 10) changes to sidewalk designs; 11) changes to pavement grades; 12) an additional light fixture; 13) additional work due to FHA improper staking and direction; 14) changes to the kiosk positioning; 15) changes to traffic control

devises; 16) improper testing of subgrade and base compaction and grade; and 17) changes in the dimensions for certain concrete work.

DISCUSSION

I. Implied Duty Not to Hinder Performance and to Cooperate

The plaintiff contends that the defendant has breached its implied duty to cooperate and its implied duty not to hinder performance. There is an "implied provision of every contract, whether it be one between individuals or between an individual and the Government, that neither party to the contract will do anything to prevent performance thereof by the other party or that will hinder or delay him in its performance." Lewis-Nicholson, Inc. v. United States, 213 Ct. Cl. 192, 204, 550 F.2d 26, 32 (1977) (citations omitted). Not only must the government not breach this implied provision, the government "must do whatever is necessary to enable the contractor to perform." Id. (citations omitted). If the government's delay in providing materials or finishing work stems from its failure to do what is necessary to allow the contractor to perform:

> it will have to respond in damages for the resulting additional outlays which are proved to have been caused the contractor. Under this principle, the plaintiff cannot prevail merely by proving that there was a lapse of time in receiving materials or even that the defendant was the source of that lapse. The lapse of time must be tied to the defendant's breach of its obligation of reasonable cooperation. The nature and scope of that responsibility is to be gathered from the particular contract, its context, and its surrounding circumstances. Once a breach of this type has been established, the contractor must still show, as in all contract cases, that damage ensued.

Commerce Int'l Co. v. United States, 167 Ct. Cl. 529, 536, 338 F.2d 81, 85 (1964) (citations omitted).

In Precision Pine & Timber, Inc. v. United States, the court elaborated on the implied duty not to prevent, hinder or delay performance in a government contract. Precision Pine & Timber, Inc. v. United States, 50 Fed. Cl. 35, 58-59 (2001). The Precision Pine & Timber court identified the implied duty not to hinder performance of contracts and the implied duty to cooperate as subspecies of the implied duty of good faith. Id. at 59. "If the contract contains a specific warranty, a breach of that warranty breaches the implied duty to cooperate." Id. "[I]f there is no specific warranty, an unreasonable delay that is caused in some way by the Government can breach the implied duty not to hinder." Id.; see also Lewis-Nicholson, Inc. v. United States, 213 Ct. Cl. at 205, 550 F.2d at 32 (holding that government-caused delay in contractor performance violated the implied duty not to hinder performance of the other party).

With regard to the implied duty not to hinder a contractor's performance, the United States Court of Appeals for the Federal Circuit has held that, "[e]very contract, as an aspect of the duty of good faith and fair dealing, imposes an implied obligation 'that neither

party will do anything that will hinder or delay the other party in performance of the contract.'" Essex Electro Eng'rs, Inc. v. Danzig, 224 F.3d 1283, 1291 (Fed. Cir. 2000) (quoting Luria Bros. v. United States, 177 Ct. Cl. 676, 688, 369 F.2d 701, 708 (1966)) (citations omitted). The implied duty to cooperate, on the other hand, has been described as follows: "When some government action is essential for the contractor to perform and the government wrongfully fails or refuses to take that action, then the government has breached its implied duty to cooperate." Ryco Constr., Inc. v. United States, 55 Fed. Cl. 184, 192 (2002).

A. Claim A1 - Government Delayed the Notice to Proceed

The plaintiff asserts that it is undisputed "that issuance of the notice to proceed was delayed three days by Government error in providing incorrect bonding amounts to CEMS and 13 days by other Government inaction." The plaintiff further states that, "[a]s a result of Government acts or omissions, this delay was unreasonable." The defendant has responded by asserting that "for CEMS to recover costs, it must show that the contracting officer unreasonably delayed the performance of the contract, which caused it to incur additional costs. CEMS cannot meet its burden."

Actions that hinder or delay a contractor's performance must be found unreasonable for the government to be found liable. See C. Sanchez & Son, Inc. v. United States, 6 F.3d 1539, 1542 (Fed. Cir. 1993) ("The government must avoid actions that unreasonably cause delay or hindrance to contract performance."). Moreover, the government has an "'ever-present obligation to carry out its contractual duties within a reasonable time.'" Essex Electro Eng'rs, Inc. v. Danzig, 224 F.3d 1283, 1291 (Fed. Cir. 2000) (quoting J.D. Hedin Constr. Co. v. United States, 171 Ct. Cl. 70, 97, 347 F.2d 235, 253 (1965)). "'[R]easonableness is, in each instance, a question of fact.'" Commercial Contractors, Inc. v. United States, 29 Fed. Cl. 654, 663 (1993) (quoting Parish v. United States, 120 Ct. Cl. 100, 125, 98 F. Supp. 347, 349 (1951), cert. denied, 342 U.S. 953 (1952)); see also Scott Timber Co. v. United States, 333 F.3d 1358, 1369 (Fed. Cir.) (holding that the reasonableness determination for the appropriateness of the suspension of timber sale contracts was a question of fact), reh'g denied (2003); Gen. Dynamics Corp. v. United States, 187 Ct. Cl. 597, 606, 410 F.2d 404, 409 (1969) ("The question of reasonableness is a question of fact.").

The United States Court of Appeals for the Federal Circuit recently stated:

> there is an implied obligation on the part of the government to issue the notice to proceed within a reasonable time. Ross Eng'g Co. v. United States, 92 Ct. Cl. 253 (1940). Therefore, damages for unreasonable delay in issuing the notice to proceed may be recovered under the suspension clause. See Triax-Pacific v. Stone, 958 F.2d 351, 354-55 (Fed. Cir. 1992) (noting that a delay in issuing a notice to proceed is not remediable as a breach but that costs may be recovered as an equitable adjustment under the suspension of work clause.

Nicon, Inc. v. United States, 331 F.3d 878, 886 (Fed. Cir. 2003).

The solicitation for the contract was issued on February 6, 1998, and the scheduled bid opening date was March 10, 1998. On March 6, 1998, the FHA issued contract modification no. 2 to the solicitation, informing potential bidders that the bid opening date would be extended by a third amendment to the solicitation. On March 10, 1998, the FHA issued contract modification no. 3 to the solicitation and changed the bid opening date to March 20, 1998. CO Parsons testified that the original notice to proceed issue date of April 1, 1998 was based on the original bid opening date of March 10, 1998. CO Parson explained why he did not extend the notice to proceed date when he issued amendment three, which extended the bid opening date to March 20, 1998:

> It was my election not to amend that clause and that date. We basically looked at a schedule of an advertising and bid opening date that coincided with – allowed us ample time to review bids, confirm responsibility, and award. It was close at the March 10th date, it was 10 days closer at March 20th. We did have very little time to award before – Well, we had sufficient time to award in advance of April 1 to basically meet the April 1st date, but at that time I was relying upon awarding as soon as we might in allowing for a day-for-day shift in that period of performance that clause set out and allowed.

The day-for-day shift alluded to by CO Parsons in his testimony was reflected in the language of the solicitation, which informed potential bidders of the notice to proceed date. The solicitation stated that:

> The completion date is based on the assumption that the successful offeror will receive the notice to proceed by April 1, 1998. The completion date will be extended by the number of calender days after the above date that the contractor receives the notice to proceed, except to the extent that the delay in issuance of the notice to proceed results from the failure of the contractor to execute the contract and give the required performance and payment bonds within the time specified in the offer.

The defendant cites the United States Court of Appeals for the Federal Circuit's decision in M.A. Mortenson Co. v. United States, to suggest that because the issuance of the notice to proceed on April 1, 1998 was an "assumed" date, the government cannot be liable. See M.A. Mortenson Co. v. United States, 843 F. 2d 1360, 1362 (Fed. Cir. 1988) ("An assumption [that the successful bidder will receive the notice to proceed by a certain date] is not a promise. The quoted language [in Mortenson] did not bind the government to deliver a notice to proceed by any particular date ... ."). The Federal Circuit in M.A. Mortenson Co. addressed the plaintiff's claim in that case under the Changes clause of the contract, and held that the delay of the issuance of the notice to proceed was not compensable under that clause. See id. ("Because there was no 'change' in the contract for which the Changes clause would afford a remedy, the board did not err in declining to award Mortenson the relief it sought."). The Federal Circuit has held that "damages for unreasonable delay in issuing the notice to proceed may be recovered under the

suspension [of work] clause." Nicon, Inc. v. United States, 331 F.3d at 886.

Plaintiff has raised the issue of whether the FHA breached its implied duty not to hinder CEMS' performance when CO Parsons failed to issue the notice to proceed on April 1, 1998. Initially, the court considers CO Parsons' decision not to extend the April 1, 1998 date for the issuance of the notice to proceed when he extended the date for the bid opening to March 20, 1998. CO Parsons testified that, based on his experience, the period of time normally required between bid opening and awarding the contract is "four-plus-or-minus weeks" and eleven days was "unduly short" to award the contract and issue the notice to proceed on April 1, 1998, with a bid opening of March 20, 1998. When questioned why he did not extend the date for the issuance of the notice to proceed while extending the date for the bid opening, CO Parsons testified that he did not extend the April 1, 1998 date prior to bid opening because he determined that between the bid opening date of March 20, 1998, "the opportunity to expedite awards may happen." CO Parsons testified that he did not choose to move the April 1, 1998 date, instead electing "to let the day-for-day slippage or the day-for-day adjustment of the contract period flow after April 1," and indicated that choosing an arbitrary date for the extension of the issuance of the notice to proceed date would only serve to delay the work on the contract. The contract provided that if there was a delay in the issuance of the notice to proceed, the contract completion date would be extended by the number of days attributable to the delay. As provided for by contract provision, a day-for-day adjustment was made by the FHA, with the contract completion date extended by sixteen days to reflect the extension of the issuance of the notice to proceed from April 1, 1998 to April 16, 1998.

Under these facts, the court does not find that CO Parson acted unreasonably when he retained the April 1, 1998 notice to proceed date. The court, however, also must consider the FHA's actions following the award date of April 6, 1998. By letter dated April 6, 1998, the FHA informed CEMS that it was awarded the contract. The April 6, 1998 letter instructed CEMS to submit performance and payment bonds. CO Parsons testified that the amounts indicated for the performance and payment bonds in the government's April 6, 1998 letter were incorrect. On April 14, 1998, CEMS submitted performance and payment bonds in the incorrect amount as provided by FHA's April 6, 1998 letter. The performance and payment bonds transmittal letter, dated April 14, 1998, indicated that the FHA received the documents on April 16, 1998. After CEMS corrected the performance and payment bonds and submitted them to the FHA on April 16, 1998, the FHA was able to issue the notice to proceed on the same day, April 16, 1998.

Based on the documents in evidence that demonstrate the exchanges between CEMS and the FHA, the court does not find that the FHA acted unreasonably. Even if the FHA's April 6, 1998 contract award letter had indicated the correct amount of the performance and payment bonds, the FHA did not receive CEMS' first incorrect, and then correct bonds, until April 16, 1998, and the FHA was able to issue the notice to proceed on that same date, April 16, 1998. Plaintiff has argued, but not demonstrated, that the FHA breached an implied duty not to hinder CEMS' performance when it issued the notice to proceed on April 16, 1998, the same day CEMS submitted its performance and payment bonds, in both the incorrect and correct amounts.

B. A2 - Government Enforcement of Excessively Rigid and Arbitrary Surface Tolerances for Subgrade and Aggregate Courses.

Although the government may insist upon contractor compliance with the terms of the contract, "'the government cannot impose a more stringent testing procedure or standard for demonstrating compliance than is set forth in the contract.'" SIPCO Servs. & Marine, Inc. v. United States, 41 Fed. Cl. 196, 217 (1998) (quoting United Technologies Corp., Sikorsky Aircraft Div. v. United States, 27 Fed. Cl. 393, 397 (1992) (citations omitted)).

CEMS alleges that the government breached its implied duty to cooperate when delay occurred due to excessive supervision or control of the finishes of the subgrade and aggregate base course. The plaintiff alleges that the FHA's over-testing and imposition of tests not specified by the contract resulted in a constructive change to the contract, rendering the government liable for the increased costs. According to the plaintiff, because of the FHA's actions and inactions regarding both subgrades and aggregate base course finishes, CEMS' budget and schedules were adversely impacted. CEMS states that for subgrade, the FHA improperly applied the stringent finishing specifications of subsection 204.13 of the FP-96, while the proper provision of the FP-96 was subsection 106.02, which provided for visual inspections. Regarding aggregate base finishes, CEMS alleges that the FHA inspected the work "excessively" and argues that the standards for the finishes of aggregate base are found in subsection 301.06 of the FP-96. CEMS also claims that the FHA "repeatedly changed the grades to which CEMS was required to finish surfaces." CEMS further alleges that the FHA used "improper" means for checking finished surfaces, employing devices that resulted in improper measurements.

The United States Court of Appeals for the Federal Circuit stated in Jowett, Inc. v. United States that:

> In interpreting a contract, we begin with the plain language. We give the words of the agreement their ordinary meaning unless the parties mutually intended and agreed to an alternative meaning. In addition, we must interpret the contract in a manner that gives meaning to all of its provisions and makes sense.

Jowett, Inc. v. United States, 234 F.3d 1365, 1368 (Fed. Cir. 2000) (citations omitted); see also Hunt Constr. Group, Inc. v. United States, 281 F.3d 1369, 1372 (Fed. Cir. 2002) ("We begin with the plain language when interpreting a contract. ... The contract must be considered as a whole and interpreted to effectuate its spirit and purpose, giving reasonable meaning to all parts.") (citations omitted); Giove v. Dep't of Transp., 230 F.3d 1333, 1340-41 (Fed. Cir. 2000) ("In addition, we must interpret the contract in a manner that gives meaning to all of its provisions and makes sense. Further, business contracts must be construed with business sense, as they naturally would be understood by intelligent men of affairs.") (citations omitted).

When the terms of a contract are clear and unambiguous, there is no need to resort to extraneous circumstances for its interpretation. See Sea-Land Serv., Inc. v. United States, 213 Ct. Cl. 555, 567, 553 F.2d 651, 658 (1977), cert. denied, 434 U.S. 1012 (1978). Construction of an unambiguous writing, therefore, is an appropriate matter for summary judgment. See Martin v. United States, 20 Cl. Ct. 738, 745 (1990); Kelley v. United States, 19 Cl. Ct. 155, 161 (1989). A written agreement is ambiguous when a plain reading of the contract could result in more than one reasonable interpretation. See also Metric Constructors, Inc. v. NASA, 169 F.3d 747, 751 (Fed. Cir. 1999); Grumman Data Sys. Corp. v. Dalton, 88 F.3d 990, 997 (Fed. Cir. 1996); A-Transport Northwest Co. v. United States, 36 F.3d 1576, 1584 (Fed. Cir. 1994) ("A contract is ambiguous only when it is susceptible to two reasonable interpretations."); Tacoma Dep't of Pub. Utils. v. United States, 31 F.3d 1130, 1134 (Fed. Cir. 1994) (citing Hills Materials Co. v. Rice, 982 F.2d 514, 516 (Fed. Cir. 1992)). It is not enough that the parties differ in their interpretation of the contract clause. See Cmty. Heating & Plumbing Co. v. Kelso, 987 F.2d 1575, 1578 (Fed. Cir. 1993). Nor may a court look to extrinsic evidence in determining whether a contract is ambiguous. See McAbee Constr., Inc. v. United States, 97 F.3d 1431, 1435 (Fed. Cir.), reh'g denied and en banc suggestion declined (1996); Tacoma Dep't of Pub. Utils. v. United States, 31 F.3d at 1134 ("Outside evidence may not be brought in to create an ambiguity where the language is clear."); Interwest Constr. v. Brown, 29 F.3d 611, 615 (Fed. Cir. 1994) ("Extrinsic evidence ... should not be used to introduce an ambiguity where none exists."). However, because an ambiguous or uncertain writing sometimes can only be understood upon consideration of the surrounding circumstances, extrinsic evidence will be allowed to interpret an ambiguous clause. See Sylvania Elec. Prods., Inc. v. United States, 198 Ct. Cl. 106, 126, 458 F.2d 994, 1005 (1972).

For the bicycle path surface, the contract construction drawings provided for a roadway aggregate surface overlaid with minor asphalt concrete. Mr. Conway testified that for the construction of the bicycle path, CEMS would "grade the subgrade," then the "[a]ggregate base is brought in and roughly placed upon it," and "[t]hen you place the asphaltic pavement." The FP-96 defines "subgrade" as the "top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed." "Roadbed" is defined as the "graded portion of a highway prepared as a foundation for the pavement structure and shoulders." The aggregate base course is governed by section 303 of the FP-96. According to subsection 308.03(a), prior to placement of the aggregate base course, the contractor was required to "[p]repare the surface on which the aggregate course is placed according to Subsection 303.07." Subsection 303.07(a) requires roadbeds to be "[f]inish[ed]... to the required line, grade, elevation, and cross-section." The roadbed, therefore, required finishing prior to the placement of the aggregate base course. As noted above, the top of the roadbed is the subgrade, and as stated by Mr. Conway, CEMS was required to "grade the subgrade."

The finishing requirements for the subgrade are described in subsection 204.13(d), "Finishing":

> Remove all material larger than 150 millimeters from the top 150 millimeters of the roadbed. Remove unsuitable material from the roadbed and replace

> it with suitable material. Finish earth roadbeds to within ± 15 millimeters and rock roadbeds to within ± 30 millimeters of the staked line and grade. Finish ditch cross-sections to within ± 30 millimeters of the staked line and grade. Maintain proper ditch drainage.

The plaintiff asserts that subsection 204.13(d) does not apply to finishing of subgrade because "it pertains to a limited amount of work for subgrades at 'slopes, ditches, culverts, riprap, and other underground minor structures before placing courses.'" The language that the plaintiff asserts limits the applicability of subsection 204.13(d) is the introductory language of subsection 204.13, which states: "Sloping, Shaping, and Finishing. Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish as follows ... ." The plaintiff, however, incorrectly limits the applicability of subsection 204.13 based on the introductory language of the subsection that instructs the contractor it must complete "underground minor structures" prior to the final preparations of the roadbed for the placement of the aggregate course. The overall structure of section 204 of the FP-96 does not support the plaintiff's argument. Section 204 describes the contractor's responsibility for the excavation and embankment necessary for the roadway. Roadway is defined in the FP-96 as, "[i]n general, the portion of a highway, including shoulders, for vehicular use." The roadbed is the graded portion of a highway prepared as a foundation for the pavement structure and shoulders, with the subgrade as the top surface of a roadbed upon which the pavement structure, shoulders, and curbs are constructed. Section 204 carefully addresses all aspects for the preparation of the roadway, the construction of the roadbed, and the construction of the underground minor structures, prior to the final finishing of the top portion of the roadbed, the subgrade. Subsection 204.13 provides instructions for the final preparations of the subgrade prior to the placement of the aggregate base course. The plaintiff's argument that subsection 204.13 does not apply to the subgrade is not persuasive in consideration of subsection 204.13, which dictates the work that must be performed prior to the laying of the aggregate base course.

Plaintiff also argues that because subsection 204.13(d) describes the finishing requirements for "rock roadbeds" and "earth roadbeds," the subsection is not applicable to asphaltic concrete roadbeds as the roadbed relevant to this project. The plaintiff mistakenly assumes that because subsection 204.13(d) describes the finishing required for rock and earth roadbeds, the subsection only applies to roadways with earth or rock as the surface course.[8] Roadbeds, however, are the foundation for the final pavement structure, the difference being the type of material used in the foundation. Indeed, earlier in section 204, the FP-96 defines rock roadbeds and earth roadbeds and specifies acceptable components of each. The plaintiff's interpretation of subsection 204.13(d) that refers to "rock" and "earth" roadbeds is not reasonable since a roadbed is not the final

[8] FP-96 subsection 101.04 defines surface course as the "top layer or layers of a pavement structure designed to accommodate the traffic load and resist skidding, traffic abrasion, and weathering."

surface, but is the foundation for the final surface. The words "rock roadbeds" and "earth roadbeds" do not indicate the final surface course that is the "top layer or layers of a pavement structure," but indicate the foundation for the final pavement structure.

The plaintiffs' argument that subsection 204.13(d) does not apply to the finishing requirements for the subgrade is not persuasive in consideration of the provisions of the required roadway construction requirements for the bicycle path project. Because the evidence at trial offered by the plaintiff did not establish that the FHA required finishing in excess of the requirements of subsection 204.13(d) of the FP-96, the plaintiff's claim fails.

The plaintiff also has alleged that the FHA improperly enforced the aggregate base course finishes on the bicycle path project. CEMS alleges that the FHA inspected the finishing of the aggregate base course "excessively," and would reject work even when aggregate base course finishing complied with contract requirements.

The contract required finishing for the aggregate base course in accordance with subsection 301.06 of the FP-96. Subsection 301.06 states that "[i]f grade finishing stakes are required, finish the surface to within ± 10 millimeters from staked line and grade elevation." Subsection 152.03(f) of the FP-96 governs grades finishing stakes, and states, "[s]et grade finishing stakes, for grade elevations and horizontal alignment, on centerline and on each shoulder at roadway cross-section locations. Set stakes at the top of subgrade and the top of each aggregate course."

The plaintiff argues that the FHA used improper methods for the inspection of finished surfaces of the aggregate base course, improperly "compared the level surface of the aggregate [base course] to an irregular surface at the top of a stone curb," and "repeatedly changed the grades to which CEMS was required to finish surfaces."

Mr. Conway testified at trial that the defendant insisted on "excessively scrupulous, aggressive, hypercritical, excessively vigilant enforcement of the tolerances for finishing of the surfaces of the subgrade and the aggregate base courses" on the bicycle path. Mr. Conway testified to the use of a two-foot level for the acceptance or rejection of the aggregate base by government inspectors. Mr. Conway also testified to increased costs as a result of government direction to change and replace completed work of the subgrade and aggregate course. Mr. Conway stated, "[f]or example, certain slopes were changed, certain ditches were established or eradicated, grades were changed, things of that nature." Mr. Thompson, at one time, the project superintendent on the bicycle path contract, testified that, at times, the defendant would check the grades on the subgrade and aggregate course two or three times in a single area of the construction before final government approval.

The construction diaries of the plaintiff and defendant evidence the type of finishing inspections and the changes of grades in the aggregate course. Mr. Conway's daily log for July 29, 1998 states that the defendant had decided to redesign the grades due to an error in design in the area of the bicycle path designated as 4+220 and 4+565. On July 27, 1998, Mr. Conway's daily log stated that inspector Parsons noted areas of the aggregate course at the Cascade Fish Hatchery Parking Lot that were a "few millimeters

low or high" and would not approve the finishing. Mr. Conway's July 28, 1998 daily log noted that on June 15, 1998, the defendant directed the plaintiff to rework the grade elevations "that were different from those indicated in the original and revised plans."

Mr. Cox's daily log states that on July 24, 1998 inspector Parsons, "did not like how we [CEMS] graded the CFH [Cascade Fish Hatchery] parking lot to the curbs[,] we had AA [Surveying] stake it ... spent all day hand raking & compacting." On August 4, 1998, Mr. Cox's daily log states that FHA project engineer Chew:

> wrote several spots that were 1 to 3 cm high or low. I asked them last week to do this & they said they did & it was acceptable (see log). Now that Benge is here to pave it, just like I told the [sic] last week they would be, they no longer like it so we are regrading it at 9:30 AM.

On October 1, 1998, Mr. Cox's daily log notes that the Bridge of the Gods parking lot needed to be regraded, "[f]or the last two days they [government inspectors] have told him [Mr. Thompson] it looks good just a little fine grading on the edges now they say it is all wrong."

Mr. Thompson's daily log cites the instances of defendant's approval of the aggregate surface. On September 30, 1998, Mr. Thompson's daily log states that the government inspectors "double check[ed]" previously approved surfaces prior to paving. On October 1, 2003, Mr. Thompson wrote the following: "I, then, went to shoot grade to try to finish for approval. I will keep trying to get it. My crew tried several more times to appease Clifford's [Mr. Chew's] difficult demands, but fell short each time."

Inspector Parsons testified at the trial that he often inspected the finishes of the bicycle path work with a two-foot "SmartLevel." Inspector Parsons testified that he would notify project engineer Chew of deviations of the ten to fifteen millimeters over the two foot length of the SmartLevel, and would reject the plaintiff's work based on those measurements. Inspector Parsons testified that measurements obtained from the use of a SmartLevel can lead one to think that a grade is "more out of tolerance than you could imagine." Inspector Parsons' daily log noted that FHA rejected work based on the inspector using the SmartLevel. CEMS employees who worked on the bicycle path also testified that often hand raking of the bicycle path grades was required to comply with the requests of FHA inspectors.

The changed grades of the bicycle project also produced difficulty when, according to FHA inspector McNichols' daily log, the FHA "had to make a lot of [changes] to the ditch & other areas in the field due to the frequency of asphalt in underlying areas & that in some places it was 15" thick." CEMS daily logs also indicate that project engineer Chew "acknowledged that he had made a mistake regarding the grades for the trail subgrade in the vicinity of 4+220 to 4+565."

The defendant asserts that the plaintiff has offered allegations of improper inspections of the aggregate base courses and changes of grades "without proof." The

defendant further asserts:

> evidence shows that where the Government changed grades, it compensated CEMS. Government insistence that CEMS build to grades previously established does not constitute a change in grade. Further, CEMS has not shown that the Government used improper methods to approve or deny finished surfaces.

Based on the testimony and documents in the record, the defendant has not rebutted the affirmative evidence offered by CEMS to show that the FHA used improper methods for the inspection of finished surfaces of the aggregate base course, improperly measured the level surface of the aggregate base courses, and changed the grades to which CEMS was required to finish surfaces. The FHA breached its implied duty of cooperation when it used those methods for the inspection of the aggregate base course and changed the grades of the bicycle path project, which resulted in increased work on the part of the plaintiff. The court will address the plaintiff's claim for an equitable adjustment in the damages portion of the opinion.

II. Constructive Changes to the Contract

The plaintiff has alleged that the FHA made numerous constructive changes to the contract in the form of additional work ordered to be performed by project engineer Chew. As an initial matter, however, the court must determine whether project engineer Chew had the authority to change the work under the bicycle path contract. "As a general matter, the Government remains bound only by the words or actions of those possessed with authority to bind the Government." Miller Elevator Co. v. United States, 30 Fed. Cl. 662, 693, appeal dismissed, 36 F.3d 1111 (Fed. Cir. 1994) (table). However, even if project engineer Chew had no express actual authority to bind the government, under the present facts, he possessed implied actual authority. The United States Court of Appeals has explained the doctrine of implied actual authority as follows:

> To recover for breach of an express or implied-in-fact contract with the United States, Landau must show "that the officer whose conduct is relied upon had actual authority to bind the government in contract." H.F. Allen Orchards v. United States, 749 F.2d 1571, 1575 (Fed. Cir. 1984), cert. denied, 474 U.S. 818, 106 S. Ct. 64, 88 L. Ed. 2d. 52 (1985). Although apparent authority will not suffice to hold the government bound by the acts of its agents, see Federal Crop Ins. Corp. v. Merrill, 332 U.S. 380, 384, 68 S. Ct. 1, 3, 92 L.Ed. 10 (1947), implied actual authority, like expressed actual authority, will suffice. Cf. Branch Banking & Trust Co. v. United States, 98 F. Supp. 757, 766, 120 Ct. Cl. 72 (explaining that "an officer authorized to make a contract for the United States has the implied authority thereafter to modify the provisions of that contract particularly where it is clearly in the interest of the United States to do so"), cert. denied, 342 U.S. 893, 72 S.Ct. 200, 96 L.Ed. 669 (1951). "Authority to bind the [g]overnment is generally implied when such authority is considered to be an integral part of the duties

> assigned to a [g]overnment employee." J. Cibinic & R. Nash, Formation of Government Contracts 43 (1982); see also United States v. Bissett-Berman Corp., 481 F.2d 764, 768-69 (9th Cir.1973) (holding that the government's attorney had the implicit authority to bind the government although the CO had the expressed authority).

H. Landau & Co. v. United States, 886 F.2d 322, 324 (Fed. Cir.), as amended on reh'g (1989) (alterations in original); see also Salles v. United States, 156 F.3d 1383, 1384 (Fed. Cir. 1998); Son Broadcasting, Inc. v. United States, 52 Fed. Cl. 815, 820-21 (2002).

Mr. Chew served as the project engineer on the bicycle path project, and acted as the on-site representative of CO Parsons, who admittedly visited the project site rarely. Project engineer Chew, not CO Parsons, authored and negotiated the contract modifications during the performance of the contract. Based on the testimony received at trial from the CO, Mr. Chew, and the other witnesses who testified on behalf of the defendant and the plaintiff, as well as the evidence of project engineer Chew's daily inspections and other actions, the court concludes that CO Parsons had delegated broad discretion in supervising this contract, which project engineer Chew exercised daily. For example, project engineer Chew testified that he would often direct CEMS to perform work outside contract requirements, which would be memorialized in a contract modification several months later. Project engineer Chew also testified that he would expect CEMS to proceed with work based on oral directives given on the project site. Project engineer Chew also testified regarding an instance in which he directed the reversal of culverts during the project, but did not put the directive in the form of a modification for the increased work or change in specifications. CEMS reasonably concluded that project engineer Chew had been delegated plenary authority to resolve such matters arising under this contract. On these facts, the court finds that project engineer Chew possessed implied actual authority to bind the government. See Miller Elevator Co. v. United States, 30 Fed. Cl. at 691-94 (The on scene Assistant Field Office Manager authorized, and the contractor was paid for, work beyond contract requirements, pursuant to delegated authority from the contracting officer and contracting officer's representative.); see also Northrop Grumman Corp. v. United States, 47 Fed. Cl. 20, 64-66 (2000) (A program manager, who had not been delegated contract authority, was not designated the contracting officer's technical representative, and attempted to alert contractor personnel to his lack of authority, lacked express or implied actual authority to make contract changes.); SIPCO Servs. & Marine, Inc. v. United States, 41 Fed. Cl. at 221-22 (The contracting officer's technical representative was delegated broad responsibility to oversee the contract.).

"A constructive change generally arises where the Government, without more, expressly or impliedly orders the contractor to perform work that is not specified in the contract documents." Lathan Co. v. United States, 20 Cl. Ct. 122, 128 (1990) (citing Chris Berg, Inc. v. United States, 197 Ct. Cl. 503, 525, 455 F.2d 1037, 1050 (1972)); see also Aydin Corp. v. Widnall, 61 F.3d 1571, 1577 (Fed. Cir.) ("Where it requires a constructive change in a contract, the Government must fairly compensate the contractor for the costs of the change."), reh'g denied (1995). The constructive change doctrine provides recovery

for contractors as “the rationale for constructive changes involves the objective of persuading a contractor to continue to work pending resolution of any dispute involving the work at issue.” Miller Elevator Co. v. United States, 30 Fed. Cl. at 678 (citing Am. Line Builders, Inc. v. United States, 26 Cl. Ct. 1155, 1176 (1992)).

There are two basic components to the constructive change doctrine--the change component and the order/fault component. Id. at 678 (citing Al Johnson Constr. Co. v. United States, 20 Cl. Ct. 184, 204 (1990)). "The 'change' component describes work outside of the scope of the contract, while the 'order/fault' component describes the reason that the contractor performed the work." Id. at 678 (citing Embassy Moving & Storage Co. v. United States, 191 Ct. Cl. 537, 545, 424 F.2d 602, 607 (1970); Eggers & Higgins & Edwin A. Keeble Assocs., Inc. v. United States, 185 Ct. Cl. 765, 785, 403 F.2d 225, 236 (1968)).

A constructive change issue arises for work "if the Government either expressly or impliedly ordered work outside the scope of the contract, or if the Government otherwise caused the contractor to incur additional work ... ." Miller Elevator Co. v. United States, 30 Fed. Cl. at 678 (citing Lathan Co. v. United States, 20 Cl. Ct. at 128). The question presented is whether the facts in this case support a finding that project engineer Chew's changes were constructive changes to the contract. CEMS "must show the performance of work in addition to or different from that required under the contract (the change component), either by express or implied direction of the Government or by Government fault (the order/fault component)." Id. at 679. The court is guided by the principle that each case shall be judged according to its own facts, considering the scope and quality of the changes ordered and the cumulative effect of such direction on the project as a whole. Ralph L. Jones Co. v. United States, 33 Fed. Cl. 327, 334 (1995) (citations omitted). In any event, "the Government must have directed the contractor to perform the additional work." Calfon Constr. Inc. v. United States, 18 Cl. Ct. 426, 434 (1989) (citing Singer Co., Librascope Div. v. United States, 215 Ct. Cl. 281, 289-90, 568 F.2d 695, 701 (1977)), aff’d, 923 F.2d 872 (Fed. Cir. 1990) (table), reh’g denied (1991). The work must not have been volunteered. Calfon Constr., Inc. v. United States, 17 Cl. Ct. 171, 177 (1989) (citing Len Co. & Assoc. v. United States, 181 Ct. Cl. 29, 38-39, 385 F.2d 438, 443 (1967)).

A. A11 - Government Direction to Change Roadway Obliteration Work by Directing Removal of Additional Existing Pavement

The plaintiff alleges that it was required to perform additional obliteration work by the FHA on the bicycle path project, which was not included in the contract estimated pay item quantity of 150 square meters. CEMS alleges that it performed 7,197.87 square meters of roadway obliteration on the project and claims $26,436.66 based on the additional equipment, labor, and overhead, and two invoices for additional services required by the increased quantity of removed asphaltic concrete. According to the defendant, although CEMS may have removed more asphaltic concrete on the bicycle path project than specified in the contract, the excess asphaltic concrete encountered should be considered as roadway excavation, under pay item 20401, and not as roadway obliteration, under pay item 21101.

Subsection 204.02(a)(1) of the FP-96 states that excavation consists of "[a]ll material excavated from within the right-of-way or easement areas, except subexcavation ... and structure excavation ... . Roadway excavation includes all material encountered regardless of its nature or characteristics." The overall purpose of section 204 was to prepare the roadway and subgrade for the base course of the bicycle path. Section 204 limits its application to "earthen and rocky material" and does not address existing roadways.

Subsection 211.01 states that Roadway Obliteration "consists of obliterating and recontouring roadways, turnouts, parking areas, and other widened areas." Subsection 211.02 provides the general construction requirements for Roadway Obliteration and states: "Scarify and bury or remove the existing pavement structure. Break down and bury or remove old structures. Fill ditches and restore the obliterated roadway to the approximate original ground contour or shape to blend with the terrain." Section 211, Roadway Obliteration, of the FP-96 does not state that the work described is limited to any portion of the bicycle path project. Subsection 211.01 states that the work consists of "obliterating and recontouring roadways." Roadway is defined in the FP-96 as "the portion of a highway within the construction limits." Roadway Obliteration is specific in the work it includes, as indicated by the FP-96 subsection 211.02 construction requirements quoted above.

The court finds that when CEMS scarified and removed the asphaltic concrete, the work was not governed by the general language for Roadway Excavation contained in subsection 204.01, which describes the work necessary when working with "earthen and rocky material," but was governed by the specific language of subsection 211.02 for Roadway Obliteration, which addresses work involving "existing pavement structure[s]." See Abraham v. Rockwell Int'l Corp. v. United States, 326 F.3d 1242, 1254 (Fed. Cir. 2003) ("'Where specific and general terms in a contract are in conflict, those which relate to a particular matter control over the more general language.'") (quoting Hills Materials Co. v. Rice, 982 F.2d 514, 517 (Fed. Cir. 1992)) (emphasis omitted); United Pac. Ins. Co. v. United States, 204 Ct. Cl. 686, 694, 497 F.2d 1402, 1406 (1974); CJP Contractors, Inc. v. United States, 45 Fed. Cl. 343, 381 (1999) (holding that where two or more clauses of a contract conflict, the clause that is specifically directed to a particular matter controls over a clause that is general in its terms); Nielsen-Dillingham Builders, J.V. v. United States, 43 Fed. Cl. 5, 9 (1999).

At trial, the plaintiff presented testimonial and documentary evidence of the additional roadway excavation CEMS performed on the project. The construction plans and drawings for the bicycle path indicate 145 square meters of Roadway Obliteration at the bicycle path underpass of I-84. The construction plans and drawings also indicate that, at various areas along the bicycle path, CEMS was to "[d]ig out asphalt and replace." The construction plans and drawings instruct CEMS to "[o]bliterate existing roadway" at an area located at the Cascade Fish Hatchery, the starting point of the bicycle path. Other areas of the construction plans and drawings indicate that CEMS was required to remove existing asphalt at the I-84. Apparently, the FHA also considered much of the work CEMS performed in dealing with existing asphaltic concrete to be classified as Roadway

Obliteration. The pay notes submitted by CEMS during the project indicate that the FHA accepted work as Roadway Obliteration during the initial phases of the bicycle path construction, and then, subsequently, denied payment and classified the work under the pay item 20401, Roadway Excavation.

The daily logs of the bicycle path project note the various instances where asphaltic concrete was removed as Roadway Obliteration during construction. For example, on August 21, 1998, Mr. Cox notes the following in his daily log: "Matt & Leon with grader spent 5 1/2 hrs removing the AC [asphalt concrete] edge at 4+220 & 4+565 where the AC was obliterated. This is not shown on the plans or in the specs. They directed us to do it." On August 31, 1998, Mr. Cox notes the following example of Roadway Obliteration:

> We had to saw cut it last week, spent 6 hrs last Friday on it plus the removal of the AC [asphalt concrete] before that. It is not shown on the plans & was buried under debris prior to us arriving onsite. Once the debris was removed you could see waves in the AC & Rick [inspector McNichols] directed us to remove them."

On September 22, 1998, Mr. Thompson wrote: "I asked Rick [inspector McNichols] if he would like me to remove asphalt from 5+450 +/-. He said yes, we agreed & we removed 28 m^2."

The testimony at trial established that CEMS encountered asphalt concrete at differing points in the construction of the bicycle path. Mr. Conway testified to examples during the construction of a portion of the bicycle path where CEMS excavating down through "normal soil that you would expect when all of a sudden, we got down and we started hitting asphaltic pavement. ... And Mr. [inspector] McNichols directed us to remove the pavement." Mr. Conway also testified regarding the removal of asphaltic concrete as follows:

> Q. Why did you think this was a change?
>
> A. Well, the reason I thought this was a change is for that particular bid item, the only asphaltic pavement that I can recall right now that's required under the contract is at the I-84 area. I can't remember if there's a – If there is a couple other spots, it might be at the fish hatchery or somewhere else. It's really minor. It's a real little – Well, we ended up taking thousands of cubic yards – cubic meters of this material – square meters of it – and – to the point where we didn't anticipate excavating this much material. It takes a lot of time to pry it out of there – 15 inches thick, piece by piece with excavator. That's one problem. Way slower than what we anticipated; hard on our equipment. Number two, at first, Mr. [inspector] McNichols indicated we could bury it in the – the embankments. But the pieces, I think, got so big that he's, like "No. You know, maybe a few pieces or something like that. But you can't bury this stuff in there." And we didn't have any provisions for what to do with it. So we ended up having to haul it off site in order to get rid

of the stuff.

Q. What was the Federal Highway Administration's position?

A. Well, at first, we were issuing pay notes with these square meters. That's how the bid item was set up for removal of existing asphalt. We were issuing these to the Government inspectors, and they were signing them. And I believe we even received payment. I can't remember the specifics. But then as – as the relationship spiraled downward, all of a sudden, these – these start coming back to us. And we were told we weren't going to be paid for it.

Mr. Conway testified at trial regarding the additional expenses that CEMS encountered for the excess Roadway Obliteration encountered on the bicycle path project. Mr. Conway explained that the additional costs claimed for the Roadway Obliteration included trucking time for the removal of the asphalt concrete from the job site, and disposal of the asphalt concrete at disposal areas.

Based on the evidence presented at trial, and a plain reading of the contract documents, the plaintiff should have been compensated for the additional Roadway Obliteration of asphaltic concrete. The plaintiff's equitable adjustment for the excess Roadway Obliteration will be addressed below in the damages section of the opinion.

B. A17 - Government Direction to Provide Testing in Excess of the Specifications

The plaintiff alleges that the defendant changed the nature and quantity of specified quality control testing. According to CEMS, the contract documents stipulated a finite amount of quality control and when CEMS submitted its bid, the plaintiff had access to, and only incorporated, the specified amount of testing. The plaintiff asserts that "FHA, however, directed and caused CEMS to provide testing in excess of the Contract specifications." CEMS alleges that the manner in which the defendant conducted tests, and the number of tests required by the defendant resulted in a constructive change to the contract.

The defendant states that, based on the history of the project, CEMS had a problem consistently passing contractually required tests and, as a result, a number of additional tests were performed. The defendant maintains that, although the FHA may have required "some" additional tests, the eighty-seven additional tests paid for, pursuant to the contracting officer's final decision, "more than compensates for any additional tests arising from the Government's order." Furthermore, according to the defendant, "CEMS has failed to show that the remaining additional tests were a result of anything other than its own inability to meet contract requirements."

The contract for the bicycle path project provided approximately twenty "Sampling and Testing" tables for testing under bid pay item 15401, Contractor Testing. The various Sampling and Testing tables provided the material or product to be tested, the

characteristic of the testing, the testing method, the sampling frequency, the tolerance, the point of sampling, the reporting time, and special remarks, among other information. The contract also specified that the sampling frequency to be performed by the contractor would be determined based on the particular material installed by the contractor.

The court heard and considered evidence of the circumstances surrounding the testing on the bicycle path project. Mr. Conway testified at trial that he agreed with the contracting officer's final decision, which determined that 397 tests were taken on the bicycle path to determine whether CEMS' work met contract specifications. Mr. Conway also agreed that 98 of the 397 tests failed. Mr. Conway testified that the 98 failing tests were attributed to inappropriate directives by the FHA for the use of unsuitable testing procedures in the subgrade, the high moisture content of the subgrade that distorted testing results, failing tests as a result of the FHA directives for the finishing of the aggregate base course, and FHA requiring inappropriate testing methods for soil conditions of the bicycle path.

CEMS submitted a quality control plan and designated Mr. Cox as the quality control manager. Mr. Cox testified that the FHA directed testing and sampling on the bicycle path project in excess of the specifications. For example, the FHA required three consecutive compaction tests in a twenty by ten foot area, the FHA was directing density testing approximately every ten to fifteen feet, daily cylinder testing for mortar placed on the bicycle path, and in some cases, testing every two feet. Indeed, it appears from the testimony received at trial, that the FHA inspectors required additional testing if they perceived an area to involve a "critical item" on the bicycle path.

Mr. Cox's August 20, 1998 daily log provided further examples of the FHA's testing requirements:

> Tested 3+495 it passed. We then went to CFH [Cascade Fish Hatchery] while we filled the water truck. We took a shot [test] in the center area on the north end & it was low so we watered & rolled it & it passed. Rich [inspector McNichols] then said to test the center on the south side so we water[ed] & rolled it & it passed. While we were watering & rolling Rich had them test 3 other spots that all passed ... in this area. Once again I explained to Rich how the spec says on[e] test per 500 tons but he said I was wrong.

According to CEMS, when tests were performed, the plaintiff would provide the FHA with the test reports and provide an additional copy of the test results through the mail. Mr. Thompson testified that the CEMS quality control program was supplanted by the directives of the FHA inspectors, and these government directions "became the quality control program." The FHA also required full-time testing on certain areas of the bicycle path project. Mr. Conway testified to the impact of the additional requirements, which included "the crew standing by; the lower productivity; whatever else is associated with that additional testing."

Project engineer Chew testified regarding his oversight of the testing procedures on

the bicycle path. He testified that he required approval of the compaction tests of the subgrade prior to the placement of the aggregate base course, and compaction of the aggregate base course prior to the placement of the asphaltic concrete pavement. Inspector McNichols testified that CEMS was unable to proceed with work on the bicycle path project unless the FHA observed the testing on the project. The FHA inspectors also provided conflicting testimony regarding the use of the "rounded-up" testing results. Inspector Parsons testified that the acceptance of a 94.7 percent test result would be "inferred" where results of nearby tests were 95 percent or more. Inspector Parsons, however, also testified that he had rejected a 94.7 percent test result. Inspector McNichols testified that he was "quite sure" that at no "time during [his] involvement with the bike path project, did [he] inform anyone working for a subcontractor for CEMS that they could round up a compaction test result lower than 95 percent ... ." Inspector McNichols, however, testified after reviewing his daily log, that he intermittently accepted rounded-up test results. Based on the evidence received by the court, the court finds that the FHA required additional testing beyond the requirements of the contract.

CEMS alleges in its claim that there were twenty-eight mortar tests taken and that the contract only required twenty mortar tests. The contract required "1 sample per installation (1 per week minimum)." According to the plaintiff's records, there were twenty-eight days when mortar was placed on the job site. The plaintiff has failed to show that the twenty-eight mortar tests were not reflective of the twenty-eight days that mortar was placed on the project site. The plaintiff's claim for an equitable adjustment for the additional mortar testing is denied.

The plaintiff alleges that the contract required six minor tests for concrete structures and that CEMS was obligated to perform thirty-three tests for minor concrete structures. The contract required a test of the first load and each 30 cubic meters afterward for minor concrete structures. According to the plaintiff's records, minor concrete structures were constructed on twenty days during the project. The defendant has demonstrated that once duplicate tests are removed, there are only twenty documented tests. The plaintiff has not shown that the defendant's documentation is incorrect, or otherwise responded. Therefore, the court does not find that the plaintiff has shown by a preponderance of the evidence that CEMS performed additional tests for minor concrete structures.

The plaintiff has alleged that it performed twenty tests for the compaction of subgrade on the project and that the contract only required seven tests. The contract required one compaction test for subgrade for every 2000 square meters. The plaintiff has calculated that there were 12,526.98 square meters of subgrade on the project that required testing. The defendant does not contest the plaintiff's calculations for the total square meters of subgrade testing. Because the contract required one test for every 2000 square meters of subgrade, CEMS was required to perform approximately seven tests. Because thirteen of the twenty tests conducted passed, the court finds that CEMS is entitled to an equitable adjustment to the contract for the additional six subgrade

compaction tests, at $20.21 per test.[9]

CEMS alleges that it performed 153 tests on the aggregate base course and that the contract only required 17 tests. The contract required one test of the aggregate base course for every 500 metric tons. The defendant has shown, and the plaintiff has not rebutted, that of the 153 tests taken, 53 tests failed. The plaintiff has provided evidence that for the aggregate base course, the contract required 17 tests. Based on the evidence received by the court, the plaintiff is entitled to an equitable adjustment for the 83 additional tests taken by CEMS, at $20.21 per test.

The plaintiff claims that the contract required 16 additional tests for structural backfill and that it performed 69 tests. The contract required 1 test for structural backfill for each 250 cubic meters placed on the project site. The defendant has documented that 67 tests of structural backfill were taken and that 23 failed. The plaintiff has not rebutted the evidence offered by the defendant. Based on the testimony received by the court, CEMS is entitled to an equitable adjustment to the contract for the additional 28 tests for structural backfill, at $20.21 per test.[10]

The plaintiff has alleged that the contract required 14 tests on asphaltic concrete laid on the project and that CEMS was directed to take 160 tests. The contract required 1 test every 1000 square meters of asphaltic concrete laid by the contractor. The plaintiff has calculated that it laid 13,819.2 square meters of asphaltic concrete. The defendant has not challenged the plaintiff's calculation for the testing of asphaltic concrete. The court finds that based on the record before the court, the plaintiff is entitled to an equitable adjustment for the additional 146 tests for asphaltic concrete, at $20.21 per test.

C. C1 - Government Direction to Subexcavate and Backfill Soft Subgrade near Station 3+000 to 3+030.

The plaintiff states that the construction plans and drawing for the bicycle path indicate that the area from station 3+000 to station 3+030 was to be an area of excavation and that while excavating for the bicycle path, it discovered "soft and unstable areas" in the existing subgrade beginning at station 3+000. According to CEMS, the area was subexcavated to a point approximately two feet below the specified subgrade elevation and the plaintiff backfilled the area with roadway aggregate. The plaintiff appears to claim it is entitled to an equitable adjustment due to the changed condition encountered on this area of the project site.

The defendant does not deny that the contractor encountered an area between

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[9] The figure of $20.21 per test for this test and for the tests described immediately below in claim A17 is taken from plaintiff's claim submitted to the contracting officer.

[10] A total of 67 tests performed, minus 16 tests required by the contract, yields 51 tests. If 23 of these 51 were failed tests, plaintiff is entitled to compensation for 28 additional structural backfill tests.

station 3+000 to station 3+030 that required compensation. The defendant asserts, however, that the government has compensated the plaintiff for the additional work. According to the defendant, CEMS has been compensated for the backfill work under pay item 30802, and the contracting officer's final decision awarded CEMS additional money for the excavation work under pay item 20401 for the additional work between station 3+000 to station 3+030.

The disagreement between the parties, therefore, appears to be whether the additional work from station 3+000 to station 3+030 should be compensated as a changed condition, which would entitle the plaintiff to an equitable adjustment. The FP-96, subsection 308.06, provides, "[p]reparation of the surfaces on which crushed aggregate is placed will be evaluated under Section 303 and 209 as applicable." Subsection 303.04 of the FP-96 instructs the contractor to repair soft and unstable areas in accordance with subsection 204.07. Subsection 204.02(a)(2) defines subexcavation as, "[m]aterial excavated from below subgrade elevation in cut sections or from below the original groundline in embankment sections." Subsection 204.07, "Subexcavation," states that the material shall be excavated to limits designated by the CO and to backfill the subexcavation with "topping" or other suitable material. The construction plans and drawings of the bicycle path contract designate the area from 3+000 to 3+030 to be an area of roadway excavation.

Mr. Conway testified at trial that during the excavation for the subgrade, CEMS discovered that the material was too soft to support the intended loads for the area. Mr. Conway further testified that CEMS would request direction for the correction of the "soft spots" and, absent response from the FHA, CEMS would "mitigate the situation and correct them to the best of our ability."

Based on the contract language of the FP-96 for subexcavation of subgrade, the court finds that the plaintiff has been compensated for the additional work between station 3+000 to station 3+030. The plaintiff has not offered testimony or documentary evidence to show that during the excavation between station 3+000 to station 3+030 it encountered "'subsurface or latent physical conditions at the site which differ materially from those indicated in th[e] contract.'" Comtrol, Inc. v. United States, 294 F.3d 1357, 1362 (Fed. Cir. 2002) (quoting FAR 52.236-2(a)(1) (1994) and describing a Type I differing site condition) (alteration in original). The court also finds that the plaintiff has failed to show by a preponderance of the evidence that the unknown physical condition was one "'that could not be reasonably anticipated by the contractor from his study of the contract documents, his inspection of the site, and his general experience[,] if any, as a contractor in the area.'" Randa/Madison Joint Venture III v. United States, 239 F.3d 1264, 1276 (Fed. Cir. 2001) (quoting Perini Corp. v. United States, 180 Ct. Cl. 768, 780, 381 F.2d 403, 410 (1967) and describing a Type II differing site condition) (alteration in original).

D. C3 - Government Direction to Remove Additional Curbs and Patch from Station 2+940 to Station 3+000

The plaintiff alleges that although the contract indicated work to be performed

between station 2+940 to station 3+000, the construction plans and drawings do not indicate that the contractor was required to remove "existing curbs, subexcavation, backfill of the resulting trench with roadway aggregate, or patching with asphaltic concrete pavement. However, FHA directed CEMS to perform this additional work." The plaintiff further contends that the original pay items for similar types of work for other areas of the bicycle path are inapplicable because "the nature of the work differed significantly" from the work CEMS had originally used to calculate its bid price.

The defendant contends that the construction drawings and plans indicate that there was required curb removal between station 2+940 to station 3+000, and that CEMS has been compensated for the work. The defendant further alleges that if the court finds that the work between station 2+940 to station 3+000 was in excess of the contract quantity, CEMS has not shown that the contractor's costs increased because of the alleged additional work.

CEMS bid pay item 20302A, Removal of Concrete Curb, at $8.00 per meter, for eighty-seven meters. Section 203 of the FP-96 calls for the removal of curbs that interfere with the project work and are not designated to be removed. The construction plans and drawings of the bicycle path indicate that eighty-seven meters of concrete curb were to be removed from station 2+936 to station 3+023.

The defendant claims that the plaintiff performed 147 meters of curb removal in the area of the bicycle path project from station 2+940 to station 3+000. An April 6, 1998 pay note in the record indicates that CEMS performed 147 meters of concrete curb removal and was paid pursuant to pay item 20302A, Removal of Concrete Curb. The plaintiff does not dispute the amount of concrete curb removal performed by CEMS on this area of the bicycle path project.

In ThermoCor, Inc. v. United States, 35 Fed. Cl. 480 (1996), the court examined the application of the Variation in Estimated Quantities (VEQ) clause[11] and the Changes

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[11] The bicycle path contract contained the Variation in Estimated Quantity clause (April 1984), which states in relevant part:

> If the quantity of a unit-priced item in this contract is an estimated quantity and the actual quantity of the unit-priced item varies more than 15 percent above or below the estimated quantity, an equitable adjustment in the contract price shall be made upon demand of either party. The equitable adjustment shall be based upon any increase or decrease in costs due solely to the variation above 115 percent or below 85 percent of the estimated quantity.

48 C.F.R. § 52.211-18 (1997).

clause.[12] In its discussion regarding the VEQ clause, the ThermoCor court held that the

[12] The bicycle path contract contained the Changes clause (August 1987), which states:

> (a) The Contracting Officer may, at any time, without notice to the sureties, if any, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract, including changes-
> (1) In the specifications (including drawings and designs);
> (2) In the method or manner of performance of the work;
> (3) In the Government-furnished facilities, equipment, materials, services, or site; or
> (4) Directing acceleration in the performance of the work.
> (b) Any other written or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances, and source of the order and (2) that the Contractor regards the order as a change order.
> (c) Except as provided in this clause, no order, statement, or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.
> (d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for an adjustment based on defective specifications, no adjustment for any change under paragraph (b) of this clause shall be made for any costs incurred more than 20 days before the Contractor gives written notice as required. In the case of defective specifications for which the Government is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.
> (e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting to the Contracting Officer a written statement describing the general nature and amount of proposal, unless this period is extended by the Government. The statement of proposal for adjustment may be included in the notice under paragraph (b) above.
> (f) No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

48 C.F.R. § 52.243-4 (1997).

VEQ clause does not allow for a repricing of overruns without adequate evidence of changes in unit costs due to excess work, and "[i]f plaintiff cannot prove this, it will not be entitled to an equitable adjustment under the VEQ clause." ThermoCor, Inc. v. United States, 35 Fed. Cl. at 489 (citing Foley Co. v. United States, 11 F.3d 1032, 1034-35 (Fed. Cir. 1993) and Victory Constr. Co. v. United States, 206 Ct. Cl. 274, 288, 510 F.2d 1379, 1387 (1975)); see also S & T Enters., AGBCA No. 2001-159-1, 03-2 BCA ¶ 32,282, at 159,722-23 (June 11, 2003).

The ThermoCor court also addressed whether a plaintiff could claim an equitable adjustment under the Changes clause of the contract and not the VEQ clause when the contractor was required to perform a "substantial" increase in contract work. Id. at 492. In holding that the VEQ clause does not supplant the Changes clause, the court held the following:

> Where the cost of performance greatly differs from the stated unit price due to changes ordered by the government, the Changes clause may override the VEQ clause. Appeal of C.H. Leavell & Co., 75-2 BCA ¶ 11,596, ENG BCA No. 3492, 1975 WL 1589 (1975). To hold otherwise, plaintiff would be without legal remedy if it cannot prove the requirements of the VEQ clause yet is still forced to bear substantial changes in costs due to changes by the government. There is no indication that the VEQ clause was to override the Changes clause nor that it was to be the exclusive means for obtaining a changes adjustment. Rather, by its terms, the VEQ clause supplements the Changes clause by providing limits to equitable adjustments for quantities absent ordered changes or extraordinary events. See, e.g., Reliance Ins. Co. v. United States, 931 F.2d 863, 865 (Fed. Cir. 1991). Where circumstances alter "the entire contemplated basis for performance of the contract," the Changes clause should not be ignored pursuant to another clause such as the VEQ clause. Morrison-Knudsen Co. v. United States, 184 Ct. Cl. 661, 689, 397 F.2d 826 (1968) (holding that a contract provision denying the contractor any compensation for changes unless total costs of contract adjustments exceeded 25% of the contract price should be overridden by the Changes clause because the basis of the contract was altered).

Id. at 492.

The plaintiff has alleged that, as to the concrete curb removal, "the nature of the work differed significantly from that which CEMS anticipated when it calculated the unit prices of its proposal." The plaintiff, however, has not offered testimonial or documentary evidence to support its claim that the costs of the additional concrete curb removal were different from the pay item it bid or that the additional work increased its costs to perform the work. The court also finds that the plaintiff has not shown that an equitable adjustment is warranted under the Changes clause. See ThermoCor, Inc. v. United States, 35 Fed. Cl. at 492 (As noted above: "Where the cost of performance greatly differs from the stated

unit price due to changes ordered by the government, the Changes clause may override the VEQ clause."). The documentary evidence in the record shows that the plaintiff performed additional concrete curb removal between station 2+940 to station 3+000, and that the plaintiff was compensated for the additional work pursuant to the pay item 20302A, Removal of Concrete Curb. The plaintiff's claim for an equitable adjustment is denied.

E. E2 - Government Direction to Suspend and then Change Subgrade Work from Station 4+220 to Station 4+565

The plaintiff appears to claim that, based on the construction plans and drawings, it performed Roadway Obliteration on the existing asphaltic pavement from station 4+220 to station 4+565 on the bicycle path project. The plaintiff claims that it is entitled to an equitable adjustment for the government's direction to suspend the Roadway Obliteration work and the costs associated with the government's changes of the subgrade work from station 4+220 to station 4+565.

The construction plans and drawings indicate that excavation was to be conducted sporadically along the bicycle path station 4+220 to station 4+565, for a total of 296 cubic meters. The construction plans and drawings also indicate that the contract was to perform Road Reconditioning along the bicycle path. The construction plans and drawings further indicate that between station 4+220 to station 4+565, the contractor was to "[s]carify to 200 mm depth." According to the FP-96, section 303, Road Reconditioning, the contractor was required to perform scarification. Pursuant to subsection 109.05(b) of the FP-96, "[w]ork for which direct payment is not provided is a subsidiary obligation of the Contractor. Payment for such work is indirectly included under other pay items shown in the bid schedule." Subsection 303.08, Scarification, is an item of work under section 303, Road Reconditioning, and states that "[w]hen required by the contract, scarify the material to the designated depth and width. Pulverize all lumps to a size one and one half times the maximum sized aggregate or to 40 millimeters, whichever is greater. Mix, spread, compact, and finish the material according to Section 301."

Based on the specifications in the FP-96, the court finds that the work from station 4+220 to station 4+565 required CEMS to perform scarification pursuant to subsection 303.08. Because the record reflects that CEMS was performing Roadway Obliteration, and not Road Reconditioning, in this portion of the contract, the plaintiff's reading of the contract is incorrect, and the defendant is not liable for the alleged suspension of operations and the alleged changes of the grades in this area while attempting direct corrective work due to the plaintiff's errors. See Baltimore Contractors, Inc. v. United States, 12 Cl. Ct. 328, 342-43 (1987).

F. F7 - Government Directives Regarding the Layout of the I-84 Detour

The FHA approved an alternate plan for the detour of I-84 during the construction of the pedestrian underpass. The plaintiff alleges that the second stage detour was constructed based on project engineer Chew's approval of the CEMS detour plan and field directives for the layout of the detour by the FHA. CEMS has claimed that due to the construction of the detour based on project engineer Chew's approved design, it was

required to perform additional work for which the government refuses to pay, based on the government's assertion that "CEMS failed to construct the detour according to plan, thereby causing at least one accident" on the detour.

The defendant argues that it approved the plaintiff's alternate plan for the construction of the I-84 detour, but the plaintiff did not construct the detour according to that alternate plan. The defendant further states that as a result of the plaintiff's failure to construct the I-84 detour correctly, the detour created a safety hazard that required the FHA to order additional safety features during the detour and other work to be performed by CEMS.

On April 23, 1998, CEMS submitted a proposed temporary traffic control plan to provide three lanes of traffic during construction of the south side of I-84 and the FHA accepted the proposed detour by CEMS. On June 4, 1998, the FHA addressed a letter to CEMS regarding the change in the detour for the construction of the pedestrian underpass at I-84. The June 4, 1998, FHA letter provided the following:

> Temporary traffic control on the South side of Interstate 84 during the first stage of construction will provide for one lane in each direction. Temporary traffic control on the North side of Interstate 84 during the second stage of construction will provide for one lane in the West bound direction and two lanes in the East bound direction. The single lanes will have a minimum travel width of 4.9 meters and the double lane will have a minimum travel width of 8.6 meters.

The June 4, 1998 FHA letter also listed various additions and deletions to the temporary traffic control plan indicated in the construction plans and drawings.

The plaintiff submitted revised plans for the detour on June 22, 1998. The revised detour plans also indicated that the two lanes traveling east would be 9.2 meters from the center of the barrier to the center of the barrier and the single lane traveling west would be 5.5 meters. The revised detour also indicated that the radii for the detour would remain 200 meters.

On September 10, 1998, the FHA addressed a letter to CEMS regarding claims by CEMS for the additional work during the construction of the I-84 detour. The September 10, 1998 letter informed the plaintiff that:

> The as-built detour layout from our survey showed alignment radii that were significantly less than the approved plan radii. The as-built alignment curves along the detour were less than 150 meters. Furthermore, the as-built detour lane widths were 5.9 meters and 5.1 meters for the eastbound lane and westbound lane, respectively. ... The sharp radii of the detour alignment and the reduced width of the detour lanes created a less than desirable alignment for the Interstate traffic, which could not easily handle the posted construction speed of 45 mph through the construction zone. As a result of the truck accident on July 19, the FHWA directed CEMS to implement 24-

hour flagging and additional traffic control items, which were not anticipated in the approved traffic diversion plan as originally submitted by CEMS. Had CEMS built the Stage 2 detour road as submitted and approved, the operational problems with the detour road could have been avoided.

The record reflects the conclusions of the FHA letter. CEMS constructed the detour, diverted traffic onto it, and when an accident occurred, the FHA directed additional corrective traffic safety devices. Subsequent to the FHA direction for additional corrective traffic safety devices, the FHA conducted a survey of the detour and found that the lane widths and the radii were not in compliance with the revised detour as proposed by the plaintiff and as accepted by the FHA. Under these facts, the cost of corrective safety devices should not be borne by the government.

G. C4 - Government Direction to Remove and Reinstall, at a Different Alignment, the Concrete Barriers from 2+929 to 3+225.

The plaintiff alleges that the FHA directed CEMS to remove and reinstall concrete barriers that CEMS had previously installed pursuant to FHA furnished survey data from station 2+929 to station 3+225. The plaintiff alleges that the FHA direction for the realignment of the concrete barriers and the removal and reinstallation at other times caused damage to the concrete barriers which required additional expenses for repair of the damage caused by the movement of the barriers and labor for relocation. The plaintiff asserted that due to government direction CEMS handled the barriers more than expected, and the evidence indicates that CEMS informed the defendant that every time the barriers were moved they risked being damaged.

The defendant stipulates that the plaintiff incurred additional cost due to realignment caused by an error in the construction plans and drawings. The defendant, however, asserts that the plaintiff has been compensated for the additional cost for the realignment by the contracting officer's final decision and that any further costs for repair of the concrete barriers due to the use of the barriers as temporary traffic devices for the I-84 detour prior to the final placement of the barriers on the bicycle path should be borne by the plaintiff.

The construction plans and drawings of the bicycle path indicate that 375 meters of concrete barriers were to be placed from station 2+939 to station 3+314. However, project engineer Chew testified that the damage that occurred to the concrete barriers was a result of the plaintiffs' use of the concrete barriers for the detour on I-84 during the construction of the pedestrian underpass of the bicycle path.

The court cannot determine, based on the evidence in the record, how the concrete barriers were damaged on the bicycle path project. According to the plaintiff, the barriers were damaged as a result of the defendant's direction to realign them between station 2+929 to station 3+225. The defendant has offered testimony to show that the concrete barriers were used in the I-84 detour, and were damaged during that use. Based on the record, the court finds that the plaintiff has not shown by a preponderance of the evidence

that the concrete barriers were damaged solely as a result of the government direction and not by the use of the barriers during the I-84 detour. The plaintiff's claim for additional compensation, therefore, is denied.

H. F15 - Government Direction to Excavate, Backfill, and Place Steel Plates to Correct Soft Spots in the Pedestrian Underpass I-84 Detour

The plaintiff alleges that the contract specifications for the I-84 detour were defective in that:

> (1) the existing underlying subgrade soils were not properly accounted for in designing the depths of asphaltic concrete and aggregate base for the temporary I-84 detour, (2) the specified depths of asphaltic concrete and aggregate base for the temporary I-84 detour were inadequate, and (3) the existing crown of the I-84 pavement surface was not properly accounted for in relation to the crown for the temporary detour surface.

The plaintiff alleges that as a result of the defective specification for the I-84 detour, CEMS incurred additional expenses to correct the "soft spots" in the asphaltic concrete on the I-84 detour. The defendant asserts that the plaintiff cannot establish that the design of the I-84 detour was the cause of the "soft spots" that required CEMS to perform corrective work. Defendant points instead to CEMS' manner of constructing the detour and places the burden of corrective work on the plaintiff.

It is established in government contract law that the government warrants the "performability" of the design specifications it issues. Neal & Co. v. United States, 36 Fed. Cl. 600, 627 (1996), aff'd, 121 F.3d 683 (Fed. Cir. 1997) (citing United States v. Spearin, 248 U.S. 132, 136-37 (1918); Blount Bros. Corp. v. United States, 872 F.2d 1003, 1007 (Fed. Cir. 1989); Hol-Gar Mfg. Corp. v. United States, 175 Ct. Cl. 518, 525, 360 F.2d 634, 638 (1966)). The United States Supreme Court established this basic precept by stating in Spearin that: "if the contractor is bound to build according to plans and specifications prepared by the owner, the contractor will not be responsible for the consequences of defects in the plans and specifications." United States v. Spearin, 248 U.S. at 136 (citations omitted). "Generally, 'design specifications created by the government contain an implied warranty that if the contractor adheres to the specifications, the result will be acceptable to the government.'" Neal & Co. v. United States, 36 Fed. Cl. at 627 (quoting Ehlers-Noll, GmbH v. United States, 34 Fed. Cl. 494, 499 (1995) (quoting T.L. Roof & Assoc. Constr. Co. v. United States, 28 Fed. Cl. 572, 578 (1993)).

The doctrine of an implied warranty for government design specifications promulgated in United States v. Spearin has been further defined by the United States Court of Appeals for the Federal Circuit:

> Spearin stands for the proposition that when the government includes detailed specifications in a contract, it impliedly warrants that (i) if the contractor follows those specifications, the resultant product will not be

> defective or unsafe, and (ii) if the resultant product proves defective or unsafe, the contractor will not be liable for the consequences. Spearin, 248 U.S. at 136-37, 39 S. Ct. at 61. As with any contract-based claim, however, to recover for a breach of warranty, a plaintiff must allege and prove (1) that a valid warranty existed, (2) the warranty was breached, and (3) plaintiff's damages were caused by the breach. San Carlos Irrigation and Drainage Dist. v. United States, 877 F.2d 957, 959 (Fed. Cir.1989); accord Wunderlich Contracting Co. v. United States, 351 F.2d 956, 968, 173 Ct .Cl. 180 [,199] (1965) (stating that a plaintiff asserting a claim for breach of an implied warranty of specifications has the "burden of establishing the fundamental facts of liability, causation, and resultant injury."). ... [T]he implied warranty of specifications covers problems arising after performance of the underlying contract. See Poorvu v. United States, 420 F.2d 993, 190 Ct. Cl. 640 (1970).

Hercules Inc. v. United States, 24 F.3d 188, 197 (Fed. Cir. 1994), aff'd, 516 U.S. 417 (1996). In addition, it is basic to this legal doctrine that: "The implied warranty is not overcome by the customary self-protective clauses the government inserts in its contracts ... requiring the contractor to examine the site, to check the plans, and to assume responsibility for the work, including its safekeeping, until completion and acceptance." Al Johnson Constr. Co. v. United States, 854 F.2d 467, 468 (Fed. Cir. 1988); see also United States v. Spearin, 248 U.S. at 137 ("The duty to check plans did not impose the obligation to pass upon their adequacy to accomplish the purpose in view.").

The construction plans and drawings for the bicycle path project specified temporary detour pavement to consist of 75 millimeters of asphaltic concrete placed over 150 millimeters of roadway aggregate placed in turn over the subgrade. Inspector McNichols testified regarding his daily log and a notation regarding the native soils as unsuitable for use as subgrade material for I-84. During the construction of the detour, CEMS was repeatedly required to repair soft spots in the roadway, and was required to place steel plates over other soft spots in the detour roadway. The FHA also was required to seek corrective work on a soft spot of the detour by the Oregon Department of Transportation and deducted the cost of the repair from CEMS progress payments.

In support of plaintiff's claim for defective specifications, CEMS states that when it excavated in preparation for the I-84 detour, the plaintiff found that the existing asphaltic pavement ranged from 12 to 16 inches deep over several inches of aggregate base rock. The plaintiff also states that the "[c]ontract documents and modifications are silent regarding a cross slope, crown or 'super' in the detour pavement surface." Although the cause of the failure of the asphaltic concrete may have been caused by the conditions described by the plaintiff, the defendant has offered equally plausible conditions for the failure.

Defendant contends that:

CEMS, under a defective specification theory, seeks $9,929.44 because of

> Government direction to correct soft spots in the I-84 detour. During the construction of the I-84 underpass, soft spots developed in the detour road shortly after the detour began receiving traffic. In accordance with the terms of the contract, the Government directed CEMS to correct the soft spots in the detour road. CEMS now seeks the costs associated [ ] with this corrective action.
>
> * * *
>
> CEMS does not say that it constructed the detour in accordance with the plans. Moreover, CEMS does not present any competent evidence, engineering studies, or expert testimony that the Government design was the cause of the failures in the pavement. ...
>
> The weight of the evidence establishes that it was CEMS's construction of the detour which led to the failures. According to Mr. Chew, there were at least any one of four factors which led to the failure: 1) CEMS[‘] excessive use of the water truck, 2) compaction problems in the subgrade and base course, 3) detour built at a steeper slope than the existing surface, and 4) tighter radii than the plans indicated. We know that CEMS had problems with the compaction. We know that CEMS constructed a 6 percent slope, rather than the government's 3.8 percent slope. We know also, as we proved in claim F7, CEMS built the detour with the improper radii.
>
> The contract places the burden of corrective work squarely upon CEMS. "The Contractor shall, without charge, replace or correct work found by the Government not to conform to contract requirements ... ." [Inspection of Construction Contract Clause - August 1996, FAR 52.246-12.] Additionally, the contract required CEMS to, among other things, repair roads damaged because of accommodating public traffic. Subsection 107.06 [FP-96]. There is no question that there were problems with the roadway. There is also no question that the Government told CEMS to take corrective action. The contract places upon CEMS the burden to correct, at no cost to the Government, defective work.

(Citations omitted).

In support of the defendant's position on claim F15, project engineer Chew testified at trial, as follows:

> Q. Did CEMS build the detour according to the specified approach radii?
>
> A. No, they did not.

Q. And that's depicted on Exhibit 100, page 529?

A. The survey data that I requested, yes, it shows that.

Q. Let's go back to Exhibit 100, page 545. What is depicted on Exhibit 100,, page 545?

A. That's roughly above the pedestrian underpass in the middle curve as you move around the work area. And that shows on the travel lane - it shows asphalt that has been compromised. It also shows that the base is also compromised. That's one of the repair works that had to be saw cut removed and iron plates had to be put down to protect that. You couldn't put down asphalt or redo the base, because we couldn't shut that interstate down for that duration. So, it had to be some kind of cover or plate over the repair area.

Q. Is that the situation where we talked about yesterday where ODOT [Oregon Department of Transportation] came in to repair, or is this a different situation?

A. I can't say for sure. CEMS had to repair the detour roughly every three days. There would be a breakdown in their detour. Or the plates that - the method that CEMS proposed to repair the patch work - it was a good method, it was a practical method to fix it. But just due to the vehicles traveling through there, either the - more of the detour was failing or the remedy would fail roughly every three days.

* * *

Q. You mentioned that there were failures every three days, and this was the first day. Do you have an opinion as to why the asphalt was failing?

A. Through the construction of the bike path and this detour, CEMS had a bad habit of using their water truck excessively in my opinion. That led to many areas that were too wet to properly compact. That led to some of their compaction problems - not all of it, but some of it. This area was one of them where the water truck was used a lot - more than I thought it should have been. We had compaction problems through the subgrade. We had compaction problems through the base course. From what I heard, the

detour being built at a steeper slope[13] - all these - it's hard to say if any one particular situation or method had an impact on the structure of this detour, or if it took a combination of all of these. I can't say for sure. But those are indicators that would contribute to when heavier vehicles - if it was commercial hauling, tractor trucks going through, and it's a lot of force. With those kind of problems, that's - it's likely that those failures can be contributed to those . Excuse me. One more thing. The fact that there is also tighter radiuses, that puts even more of an additional load on the road. The force is increased on the detour because of those tighter radiuses. You have on the detour because of those tighter radiuses.[14] You have four

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[13] Project engineer Chew had testified earlier in the trial that CEMS built:

> at a six - percent slope reverse super. And there was no direction to build it at that slope. That's probably one reason why the trucks had a hard time negotiating that first curve. I informed Mr. Conway to build that at three point something percent reverse super, which was the slope of the existing interstate. I was very surprised to hear that in the deposition. Up to that point, I have not aware [sic] that that was built at that slope.

[14] The FHA's construction operation engineer, Dennis Quarto, sent a September 10, 1998 letter to CEMS, which stated, in part:

> Your April 23 letter of transmittal requested approval of I-84 Stage 1 & 2 Traffic Diversion Plans. The Stage 2 plan showed a minimum radius of 200 meters for the detour alignment. The plan also showed an inside barrier to insider barrier width of 8.6 meters and 4.9 meters for the eastbound and westbound lanes, respectively. The FHWA approved the traffic diversion plan on May 14. The as-built detour layout from our survey showed alignment radii that were significantly less than the approved plan radii. The as-built alignment curves along the detour were less than 150 meters. Furthermore, the as-built detour lane widths were 5.9 meters and 5. 1 meters for the eastbound land and westbound lane, respectively.
>
> * * *
>
> Regarding the deteriorating condition of the temporary pavement on the Stage 2 detour road, it is duly noted that prior to the opening of the Stage 2 detour, the subgrade and aggregate base needed to be reworked due to poor compaction, even while the paving operation was in progress. After the temporary paving was placed, sections of the pavement immediately failed and required digouts and pavement patching. Sections of the temporary pavement were less than the specified 75 mm depth. Immediately upon opening the Stage 2 detour to traffic on July 15, the westbound lane

> situations in there that are highly questionable, and - or in error- and any combination of those, or any one of those can be the result of a detour failing.

Indeed, the plaintiff's post-trial brief quotes an ODOT Area Maintenance Engineer as stating

> that due to the out slope of the paving in this area and the (radii) at the curvature in these lanes, that the heavy trucks, when they went around that sharp curve on that side slope (were) putting all the weight of the vehicles on the outside tires of their trucks, and causing them to punch through the pavement and base rock.

The court is faced with competing explanations for the causes of the failure of the asphaltic concrete at the I-84 detour. Without a basis in the evidentiary record to determine the actual cause of the asphaltic concrete failure, the court finds that the plaintiff has failed to show by a preponderance of the evidence that the FHA is liable for the additional costs claimed by the plaintiff, and, therefore, the plaintiff's claim is denied.

I. H6 - Government Untimely Direction to Remove and Reinstall Previously Placed Concrete Barriers Along a New Alignment in the Vicinity of Station 6+258 to Station 6+819

CEMS alleges that the government is liable for additional costs for the realignment of concrete barriers in the vicinity of station 6+258 to station 6+819. The plaintiff alleges that additional costs were incurred as a result of defective construction plans and drawings, the government's refusal to provide timely and clear direction regarding the placement of the barriers, and CEMS' attempts to install the concrete barriers pursuant to FHA instruction, which subsequently were relocated at the direction of the defendant.

The record before the court shows that the placement of concrete barriers in the vicinity of station 6+258 to station 6+819 proved to be a difficult time during the construction project. The testimony and documentary record regarding this aspect of the

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> exhibited pavement distress. The pavement was repaired by CEMS the following morning. The second pavement distress was repaired by the Oregon Department of Transportation (ODOT) road hazard crew as an emergency measure during the period of lane closure attributed to the truck accident, which occurred on July 19.
>
> The FHWA considers the repair of the premature failure of the temporary pavement as a result of CEMS' poor workmanship. As such, CEMS is responsible for the cost of the pavement repair, including the cost incurred by ODOT's road hazard crew. ODOT's cost of $5000 will be deducted from your next progress payment.

bicycle path project represents an established pattern of contentious behavior between FHA employees and CEMS employees. Throughout the trial, it became evident that even the most minor construction issues often would balloon into major difficulties, resulting in verbal arguments and claim assertions which contributed to conflicting viewpoints on culpability. The placement of the concrete barriers in the vicinity of station 6+258 to station 6+819 was one such occurrence.

The defendant issued the construction plans and drawings in the initial solicitation on February 2, 1998, which did not clearly specify the placement of the concrete barriers in the vicinity of station 6+258 to station 6+819. The defendant did not provide the plaintiff with direction for the concrete barriers in this area until project engineer Chew provided drawings for their placement on August 28, 1998. The record also reveals that prior to the placement of the concrete barriers in the vicinity of station 6+258 to station 6+819, CEMS sought further direction for the placement of the barriers. The record further reveals additional requests by plaintiff for clarification from the FHA. Even project engineer Chew acknowledged at trial that the inability of the FHA to provide clear direction contributed to misalignment in the placement of the concrete barriers. The court also heard testimony from the plaintiff that as a result of the irregular layout of the existing pavement used as a reference point for the placement of the concrete barriers, as directed by the FHA, the barriers were misaligned and the plaintiff expended additional resources for their correction.

A constructive change can arise for work exceeding the scope of the contract "if the Government otherwise caused the contractor to incur additional work ... ." Miller Elevator Co. v. United States, 30 Fed. Cl. at 678. The court finds that based on the problems associated with the directives from the FHA for the placement of the concrete barriers in the vicinity of station 6+258 to station 6+819, CEMS incurred additional costs in realignment and correction of the placement of the concrete barriers. The equitable adjustment resulting from this corrective change will be addressed in the damages section below.

J. F18 - In Order to Minimize the Effect of a Seam in the Traffic's Tire Lane, the Government Directed CEMS to Saw Cut and Remove Asphaltic Concrete Previously Placed at I-84

The plaintiff asserts that "FHA directed CEMS to perform unspecified saw cutting and removal of newly placed asphaltic concrete in order to avoid the possibility of longitudinal joints, yet no longitudinal joints were ever shown to exist." Offering testimonial and documentary evidence, the plaintiff argues that the defendant has failed to offer any evidence to show that longitudinal joints were an existing problem on the project, that the FHA's direction to saw cut and remove existing pavement was unnecessary, and that CEMS is entitled to recover the costs of this additional work.

The defendant cites to a photograph in evidence to establish the existence of a

longitudinal joint in the pavement laid by CEMS.[15] According to the defendant, "[t]o state that there were no longitudinal joints is wrong. The Government required CEMS to avoid longitudinal joints in the tire tracks. CEMS has not shown that this requirement was contrary to the contract or accepted industry standards."

The record indicates that on July 13, 1998 project engineer Chew spoke to Mr. Conway because he "was concerned about having a longitudinal joint in the final I-84 asphalt." The record also indicates that on July 24, 1998, project engineer Chew worked with the CEMS survey crew to "lay out staggered joint" to avoid a "cold joint lengthwise in the wheel rut of I-84" west bound lane. Mr. Conway testified that a portion of the asphaltic concrete at the I-84 roadway was placed and accepted by the FHA, and prior to further placement of asphaltic concrete, project engineer Chew "told me that he was concerned" about longitudinal joints and directed CEMS "to saw cut the asphalt" and remove "all the asphalt that had been previously placed."

The court finds that based on the documentary evidence and the testimony of Mr. Conway, that the FHA directed CEMS to saw cut and remove asphaltic concrete previously placed at I-84. The court also finds that the plaintiff has established by a preponderance of the evidence that, although the FHA was concerned about the potential for longitudinal joints in the I-84 pavement, the FHA has not shown the existence of a longitudinal joint requiring CEMS to perform the saw cut and removal. Based on the evidence before the court, the defendant is liable for the additional work performed at the direction of the FHA for the saw cut and removal of asphaltic concrete previously placed at I-84. The amount of the equitable adjustment claimed by the plaintiff will be addressed in the damages section below.

K. F27 - Government Direction to Add a Stone Bench

CEMS and the defendant agree that CEMS was directed to construct an additional stone masonry bench. By contract modification no. 6, the FHA required the construction of an additional stone masonry bench on the north side of the pedestrian underpass. The defendant previously has paid CEMS $17,263.80 for the additional bench; CEMS originally sought $32,148.00 more, then reduced its claim to $15,626.20.

Contract modification no. 6 was issued unilaterally to add the second bench on the north side of the I-84 underpass. The bench in the original contract and this second bench were the same size and composition. CEMS based its claim on the second bench on a computation of amounts for labor and equipment used to construct both the first and the second benches. CEMS totalled the costs "actually incurred to complete the two benches (based on labor, equipment, overhead and subcontractor costs) and deduct[ed] the reasonable cost CEMS expected to pay for the two benches." Plaintiff's total pricing methodology involves repricing the first bench, although the contract price is fixed and

[15] The court has considered the photograph offered by the defendant and cannot determine whether it establishes the defendant's assertion that "[a]nytime the paver paves wider than the width of his machine, he will create longitudinal joints."

repricing inappropriate.

The bid price for the first bench was $13,200.00. Initially, defendant used this bid price for the first bench to price the unilateral modification for the second bench. Subsequently, defendant's recomputations for the amounts due CEMS for the second bench were not limited to the contractor's bid price for the first bench, but explored CEMS' actual costs for the second bench, plus overhead and profit. In the contracting officer's final decision, defendant computed the costs for the second bench, including equipment and labor, invoices for materials, rentals, subcontractor costs, overhead and profit. Defendant's detailed computation, which yielded $17,263.82, and which previously has been paid by defendant, is deemed reasonable by the court, in contrast to plaintiff's methodology described above. Plaintiff is due no additional recovery for claim F27.

L. I6 - Government Changes of Curbs, Grades, Planter, Pillars, and the Wall at the Bridge of the Gods Parking Area

The plaintiff alleges that the FHA made numerous changes and directions for the construction of the Bridge of the Gods Parking Area. According to the plaintiff, it is entitled to additional labor, equipment, overhead, and subcontractor costs for the FHA changes and directives. The plaintiff further asserts that contract modification no. 4 did not adequately compensate the plaintiff for all the changes ordered by the defendant, and that the FHA's cost estimate prepared by the FHA does not reflect the actual costs incurred by the plaintiff. The defendant asserts that the plaintiff has been adequately compensated by contract modification no. 4 and that CEMS has been unable to show that it is entitled to additional costs.

The work on the Bridge of the Gods Parking Area included fifteen parking spaces, encompassing approximately 780 square meters of asphaltic concrete pavement, the construction of a stone curb, drinking fountain, sidewalk, a stone masonry planter, ten stone masonry pillars, a stone masonry wall, and a kiosk, among other items of work.

Contract modification no. 4 was a fixed price modification, issued on October 5, 1998, that redesigned the elevation grades of the parking area due to improper design elevations in the construction plans and drawings. The revised design drawings were supplied to CEMS on June 8, 1998. In addition to the redesign of the elevation grades of the parking area at the Bridge of the Gods, contract modification no. 4 revised a number of designs for the layout of the parking area, which included: 1) changed curbs; 2) redesign of the stone masonry planter; 3) redesign of the stone masonry stone pillar grades; 4) correction of elevation errors for a wall footing; 5) exposure of a city water line; 6) extension of the sidewalk; 7) redesign of the placement of the kiosk; and 8) an additional light fixture.

Mr. Conway testified to numerous items of additional work at the Bridge of the Gods Parking Area, including: 1) additional subcontracting surveying to assist in design changes; 2) additional clearing of the area; 3) locating existing fiber optic cables; 4) excavation of waterlines; 5) execution of the design changes for drainage; 6) changes to the planters; 7) submissions of shop drawings for certain aspects of the work; 8) suspension of work associated with the stone masonry work; 9) changes to curb design; 10) changes to

sidewalk design; 11) changes to pavement grades; 12) an additional light fixture; 13) additional work due to FHA improper staking and direction; 14) changes to the kiosk positioning; 15) changes to traffic control devices; 16) improper testing of subgrade and base compaction and grade; and 17) changes in the dimensions for certain concrete work.

Contract modification no. 4 compensated CEMS in the amount of $22,606.84 for the numerous changes at the Bridge of the Gods Parking Area. The compensation for the changes was based on a detailed estimate of labor and equipment costs and included overhead and profit. The government used price quotations from CEMS' masonry subcontractor, Daniel J. Lynch Construction, to price the contract modification. Plaintiff subsequently submitted numerous Bridge of the Gods Parking Area claims to the contracting officer, who considered each claim as well as the FHA project engineer's response to each claim. The contracting officer awarded an additional $1,508.50 to CEMS. In the present action before this court, plaintiff seeks $20,970.51 for Bridge of the Gods Parking Area, allegedly uncompensated, changes.

Plaintiff, unfortunately, does not clearly distinguish the numerous claims it submitted to the contracting officer and compensation received pursuant to the contracting officer's final decision from the numerous contract modification no. 4 changes and compensation it received. Nor does plaintiff trace for the court the claims submitted to and addressed by the contracting officer from the claims it has submitted before this court. Furthermore, plaintiff's claim to the contracting officer contains general cost data, but does not tie the cost data to individual claims. In contrast, the government's computations supporting the changes pursuant to contract modification no. 4 are tied to individual changes. Plaintiff has not demonstrated a sufficient nexus between its claims before this court and the $22,606.84 it seeks. Plaintiff's witnesses, Mr. Conway and Mr. Cox, have summarily addressed Bridge of the Gods Parking Area claims, but have not provided sufficient detail to demonstrate that proper claims were previously unaddressed and uncompensated, in spite of compensation for contract modification no. 4. Based on the evidence in the record, the court finds that contract modification no. 4 reasonably compensated for the work associated with the changes ordered by the FHA at the Bridge of the Gods Parking area, and that CEMS is not entitled to an equitable adjustment for its claim.

III. Differing Site Conditions

For over half a century, the Differing Site Conditions clause has been used in government contracts and interpreted by the courts. See Olympus Corp. v. United States, 98 F.3d 1314, 1316 (Fed. Cir. 1996). The purpose of the clause has "been to shift the risk of adverse subsurface or latent physical conditions from the contractor, who normally bears such risk under a fixed-price contract, to the government." Id. While it is recognized that the Differing Site Conditions clause is a risk shifting mechanism, it does not shift all unanticipated risk in a project's site conditions to the government. See id. at 1317. The United States Court of Appeals for the Federal Circuit articulated the purpose of the Differing Site Conditions clause as follows:

[T]he government bears only those risks that encourage "more accurate

> bidding." Those risks are shifted to the government so that contractors will not add to their bids the cost of assessing whether adverse subsurface conditions exist or the cost of confronting such conditions if and when they are encountered.

Id. (citation omitted).

The contract contained the standard Differing Site Conditions clause, which defines differing site conditions and provides the procedures and requirements a contractor must follow before it is able to recover an equitable adjustment to the contract. See 48 C.F.R. § 52.236-2. The Differing Site Conditions clause provides that when a contractor encounters a differing site condition, it must promptly notify the CO in writing before the conditions are disturbed. See id. The clause also defines the two types of differing site conditions as follows:

> (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

Id. The Differing Site Condition clause also grants authority to the CO to make an equitable adjustment to the contract if the CO determines that the alleged differing site condition satisfies the definition provided in the clause. See id.; see also H.B. Mac, Inc. v. United States, 153 F.3d 1338, 1343 (Fed. Cir. 1998).

A. Type I Differing Site Condition Claim

To prevail on a claim for a Type I differing site condition, a contractor must prove by a preponderance of the evidence that the conditions encountered at the project site materially differ from those contained in the contract documents, the conditions must have been reasonably unforeseeable based on all the information available to the plaintiff at the time it submitted its bid, and the plaintiff must show that it reasonably relied upon its interpretation of the contract and contract-related documents. Finally, the plaintiff must show that, as a consequence of the difference between the expected and the encountered conditions, the plaintiff suffered damages. See H.B. Mac, Inc. v. United States, 153 F.3d at 1345; Stuyvesant Dredging Co. v. United States, 834 F.2d 1576, 1581 (Fed. Cir. 1987).

The threshold issue of whether the plaintiff is eligible for an equitable adjustment for a Type I differing site condition, depends on the conditions indicated in the contract. See Randa/Madison Joint Venture III v. Dahlberg, 239 F.3d at 1274 ("This court has previously explained that 'in order to establish entitlement to an equitable adjustment by reason of a Type I differing site condition[,] ... the contractor must prove, by a preponderance of the

evidence, that the conditions indicated in the contract differ materially from those it encounters during performance.'") (citing H.B. Mac., Inc. v. United States, 153 F.3d at 1345); P.J. Maffei Bldg. Wrecking Corp. v. United States, 732 F.2d 913, 916 (Fed. Cir. 1984) ("As a threshold matter, then, this kind [Type I] of Differing Site Conditions claim is dependent on what is 'indicated' in the contract."); Round Place, Inc. v. United States, 31 Fed. Cl. 749, 751 (1994) ("An express representation in a contract specification or drawing furnished by the government to the contractor depicting specific conditions on a site can result in Type I Differing Site Conditions, if other conditions are encountered during construction."). The United States Court of Appeals for the Federal Circuit has made it clear that "[a] contractor cannot be eligible for an equitable adjustment for changed conditions unless the contract indicated what those conditions would supposedly be." P.J. Maffei Bldg. Wrecking Corp. v. United States, 732 F.2d at 916; see also H.B. Mac, Inc. v. United States, 153 F.3d at 1345. "Determining whether a contract contained indications of a particular site condition 'is a matter of contract interpretation and thus presents a question of law... ." H.B. Mac, Inc. v. United States, 153 F.3d at 1345 (citation omitted).

B. D1 - Differing Site Condition Due to Actual Cut and Fill Volumes from Station 3+000 to Station 3+865 Not Matching Contract Specified Quantities and G1 - Lack of Excess Excavation from Between Station 5+137 and Station 5+405 for Embankment between Station 5+405 and Station 5+720 Delayed Completion of the Roadway Between Station 5+405 and Station 5+720

The plaintiff contends that claims D1 and G1 may be considered together because D1 arises from "actual cut and fill volumes from station 3+000 to 3+865 exceeding matching contract-specified quantities. Claim G1 derives from a lack of excess excavation from between 5+137 and 5+405 to use for embankment between stations 5+405 and 5+720." According to the plaintiff, between station 3+300 and station 3+865, the excavated material was expected to approximately equal the embanked material, but once the construction began, the quantities did not match. Plaintiff argues that, as a result of the over-excavated material, which differed from the construction plans and drawings, CEMS was obligated to incur additional expenses for hauling the material offsite because it was not able to use the material elsewhere on the project. CEMS claims that the excess material encountered by CEMS was a result of unforeseen conditions associated with landslides in the area from station 3+000 to station 3+865 and a centerline shift ordered by the FHA. CEMS alleges in claim G1 that it is entitled to additional costs for the lack of excavation material as a result of the FHA change in excavation slope between station 5+137 and station 5+405, and that it was damaged due to its inability to use the excavated material during subsequent embankment construction.

The defendant asserts that CEMS has been compensated for the additional excavation quantities identified in claim D1 and, that therefore, the government is not liable for additional sums. Regarding claim G1, the defendant stipulates that the FHA did change the slope of the excavation between station 5+137 and station 5+405. Defendant argues that, as a result, the contractor was not required to perform excavation and, therefore, did not suffer injury and cannot show damages associated with claim G1.

The construction plans and drawings of the bicycle path contract indicated that 1,973 cubic meters of excavation were required between station 3+000 and station 3+865 and 1,274 cubic meters of embankment at the same area. The defendant has stipulated that CEMS excavated in excess of 485 cubic meters of material, which is approximately the amount claimed by the plaintiff. The defendant, however, claims that CEMS should have been aware of the amount of excess excavation based on the construction plans and drawings. Based on the construction plans and drawings, the government estimated that 1,973 cubic meters were to be excavated between station 3+000 and station 3+865. Because the plaintiff was required to construct embankments in the amount of 1,274 cubic meters of embankment at the same area, the plaintiff should have been aware that it would have approximately 699 cubic meters of excess excavation. Based on the clear indications in the contract documents for the excavation between station 3+000 and station 3+865, the court does not find the defendant liable for the excess excavation.

Although the plaintiff asserts that its G1 claim should be considered with its D1 claim, it appears that the plaintiff is not claiming a differing site condition, but rather that the directives by the FHA caused a constructive change to the contract that increased its work. Although the plaintiff has offered evidence of the FHA direction to steepen the slope between station 5+210 and station 5+272 which required reduced excavation work, and also that CEMS was required to use excavation material from an adjacent area of the bicycle path, CEMS has not shown that the changes resulted in additional costs. Mr. Conway's daily log for June 29, 1998, noted that he informed project engineer Chew regarding the excavation quantities "near station 5+600." Mr. Thompson's daily log dated July 2, 1998, noted that there was insufficient material at approximately station 5+600, and indicated that project engineer Chew advised CEMS that embankment material could be used from an adjacent work area. CEMS has not shown by a preponderance of the evidence that the required hauling of material for embankment from an adjacent area was not offset by the savings incurred by the steeper slope directed by the FHA which resulted in less excavation work. The plaintiff's D1 and G1 claims are denied.

C. D5 - Differing Site Condition Regarding Excessively Wet Earthen Material at Approximately Station 3+690

The plaintiff claims that a Type I differing site condition was caused by excess underground seepage at the project site. The plaintiff asserts the following:

> To a reasonable Contractor, seeps differ from surface water. When the Government provides a geotechnical report, mentions external moisture as a general concern, then specifically identifies seepage only in a single, precise location, and when a site visit by CEMS confirms the location of the precisely identified seepage, a Contractor reasonably will infer that there is not pervasive seepage. Bidding with this understanding, CEMS instead encountered seepage in many other areas when excavating. This ongoing and pervasive seepage kept the subgrade wet, preventing or impairing compaction and grading.

(Citations omitted).

The court finds that CEMS encountered a Type I differing site condition on the bicycle path project. The only apparent mention of subsurface water in the defendant's Geotechnical Report no. 14-96 includes seeps "from 3+929 to 3+975 ... ." Mr. Conway testified that CEMS encountered ongoing and persuasive seepage which kept the subgrade wet, preventing or impairing compaction and grading. Moreover, the FHA status report for the bicycle path project for June, 1998 stated that during excavation, "natural springs were encountered." Inspector McNichols also noted in his daily logs that there was "extreme saturation" of the existing soils. Inspector McNichols further noted in his June 30, 1998 daily log that there was a thirty-one percent moisture content in the excavated material. Inspector McNichols noted that CEMS attempted to alleviate the moisture problems, but failed. Based on the evidence in the record, the court finds the plaintiff encountered a Type I differing site condition. The plaintiff's damages will be addressed below.

IV. A14 - Government Failure to Make Timely and Complete Payments

The plaintiff claims that throughout the duration of the work, the FHA delayed and failed to make full payment on a number of the contract bid items. According to the plaintiff, CEMS submitted fair and reasonable pay notes to the FHA.

A. Pay Item 15603E, Corrective Work by the Oregon Department of Transportation at I-84

The court has found that the defendant is not liable for alleged defective specifications claimed by the plaintiff for the correction of soft spots on the I-84 detour. Because the plaintiff has been unable to show that the defendant caused the soft spots due to defective specifications, the bicycle path contract under FP-96 subsection 156.04 made the contractor responsible for the maintenance of the roadway and detours in a safe and acceptable condition. The FP-96 states that "the condition may be corrected and the cost of the corrective action deducted from monies due the Contractor." Based on the provisions of the contract, the court does not find the plaintiff entitled to reimbursement for the charges assessed for the corrective work on the I-84 detour.

B. Pay Item 20401, Roadway Excavation

CEMS' bid on the bicycle path included Roadway Excavation under pay item 20401. CEMS' bid indicates 11,000 cubic meters, with a unit bid price of $8.00, and a total amount bid of $88,000.00. The court finds that based on the testimony and documentary evidence in the record, the plaintiff performed excess roadway excavation. The court finds that the plaintiff has been paid for 10,895 cubic meters of roadway excavation. Although the defendant has shown that the plaintiff's claimed quantity assumed that the FHA only had compensated the plaintiff for 10,401 cubic meters, the court finds that following the subtraction of 494 cubic meters[16] from the plaintiff's calculation allows for a reasonable

[16] Subtracting 10,401 cubic meters from 10,895 cubic meters yields 494 cubic meters.

quantity measurement of plaintiff's entitlement. Plaintiff is entitled to excess Roadway Excavation quantities in the amount of 2,562.5 cubic meters.[17] The defendant has offered evidence that the pay notes relied upon by the plaintiff in calculating the Roadway Excavation quantities did not substantiate the amount claimed by the plaintiff. The court finds, however, that the plaintiff has shown through documentary evidence that the quantities represent the work performed by CEMS on the bicycle path project. The court further finds that contract modification no. 1 did not release the plaintiff's claim for Roadway Excavation quantities by the clear language of the modification. The damages amount will be determined below.

C. Pay Item 20803, Structural Backfill

The FP-96 states that the CO may prescribe an appropriate method for the determination of the quantities of Structural Backfill. Specifically, FP-96 subsection 109.02(b)(1) states that for the measurement of "[c]ubic meter in place," the contractor shall "[m]easure solid volumes by a method approved by the CO ... ." Project engineer Chew determined that because CEMS did not take measurements of the cross-sections of the original ground or other comparable measurement, a reasonable method to measure backfill was to pay for the actual truck tickets delivering the quantities used for Structural Backfill. The plaintiff has admitted that "CEMS inadvertently gave FHA only a portion of the delivery tickets for structural backfill." The court finds that the plaintiff has failed to show that under the facts presented, the measurement methodology was unreasonable and that, therefore, CEMS has failed to show by a preponderance of the evidence that it is entitled to additional quantities for Structural Backfill. The defendant's position on this issue, which the court adopts, is further supported by project engineer Chew's calculation of the Structural Backfill quantities based on the contract drawings, which found that 1,778 cubic meters of Structural Backfill was required, approximating the original pay quantity of 1608.3 cubic meters based on the truck tickets and then increased by the contracting officer's final decision to a total quantity of 1,927.8 cubic meters. Plaintiff's claim for additional compensation is denied.

D. Pay Item 21101, Roadway Obliteration

Based on the court's earlier finding, the plaintiff should have been compensated for the additional Roadway Obliteration of asphaltic concrete. CEMS calculated the Roadway Obliteration quantity on the bicycle path to be 7,197.87 square meters. The court will address the payment amount in the damages section below.

E. Pay Item 30802, Roadway Aggregate Method 2

As noted above, the plaintiff has provided a tabulation of the truck tickets the plaintiff

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[17] Plaintiff's calculation subtracted 10,401.0 cubic meters from 13,457.5 cubic meters, yielding 3,056.5 cubic meters. Subtracting 494 cubic meters from 3,056.5 yields 2,562.5 cubic meters.

claims represent the Minor Crushed Aggregate used on the project. CEMS claims that the correct pay quantity for Minor Crushed Aggregate Method 2 is 8,324.2 metric tons, based on the pay notes submitted by CEMS during the course of the bicycle path project. The defendant, however, has established that the tabulation of truck tickets does not accurately reflect the Minor Crushed Aggregate used on the bicycle path. The defendant has shown that a portion of the tickets are summaries of other tickets; a portion of the tickets were not reliable to establish quantities; a number of truck tickets identified on the tabulation do not exist; certain truck tickets represent work on other portions of the bicycle path project that were not to be paid under the Minor Crushed Aggregate pay item; and a portion of the tickets represent corrective work performed by the plaintiff. The plaintiff has not rebutted the defendant's evidence. The plaintiff asserts that some of the truck tickets "were made more legible by office personnel," the plaintiff "gleaned" from its records to determine quantities, and "some of the dates of payment requests are somewhat later than the dates of placement." The court finds the plaintiff's tabulation of the truck tickets unreliable for a determination of the correct quantity of Minor Crushed Aggregate placed on the bicycle path and, therefore, the plaintiff's claim is denied.

F. Pay Item 40201, Minor Hot Asphalt Concrete

The plaintiff states in its post-trial brief that: "Per CEMS claim F15, all detour repair work is the responsibility of the Government." Because the court has found that the defendant is not liable for the I-84 detour repair work, and the plaintiff has not separated the amount of Minor Hot Asphalt Concrete used on the remainder of the bicycle path project, the court is unable to determine the amount the plaintiff may be entitled to, other than the stipulated amount of 72.2 metric tons agreed to by the defendant. The court notes that the plaintiff has identified 107.73 metric tons of asphaltic concrete placed on the project site that purportedly was generated by the defendant's own inspector during the completion of the project in the spring of 1999. The plaintiff, however, has not produced invoices that represent the work to support the amount claimed. Plaintiff is entitled to an additional amount of $4,332.00, computed at 72.2 metric tons times $60.00 per ton.

G. Pay Item 62506, Mulching, Hydraulic Method[18]

Although Mr. Conway testified that the difference between the CEMS claim for seventeen slurry units and the FHA payment for twelve slurry units was based on the Mulching, Hydraulic Method used to complete the bicycle path project, the court has reviewed the payment vouchers on the bicycle path project and determined that the plaintiff was paid the correct amount of twelve slurry units under pay item 62506. The court, therefore, denies the plaintiff's request for further payment.

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[18] Although the defendant argues that this item was not presented to the CO, because the entirety of the A-14 claim was presented to the CO, this argument of defendant's fails. Regardless, as is discussed below, plaintiff is not entitled to recovery for this pay item.

H. Pay Item 63509, Flagger

The court has found that the failure of the detour on I-84 was not the fault of the defendant. The plaintiff has claimed that it is entitled to additional flagger hours, contesting "that a detour failed due to work of CEMS ... ." The court has found that the defendant is not liable for the problems associated with the failure of the detour at I-84. Project engineer Chew testified that as a result of the failure of the detour the FHA required CEMS to provide twenty-four hour flaggers at the designated positions of the detour. The court does not find that the defendant is liable for the additional costs associated with the flaggers. The FP-96, at subsection 156.04, states that the contractor is responsible for the maintenance of the roadway and detours, and if corrective action is required, the contractor is responsible for the additional costs. Plaintiff's claim is denied.

I. Pay Item 63511, Temporary Concrete Barriers

The court has considered the pay vouchers in evidence and finds that the plaintiff has not shown it is entitled to additional payments under this item. The FP-96 states that the barriers were to be measured once, exclusive of relocation or replacement, yet CEMS stated in one pay voucher that "we used existing barriers for Temp. barriers." The plaintiff also submitted a pay voucher for concrete barriers based on the plan sheet for the I-84 detour. There is no evidence, however, that the concrete barrier measurements based on the plan sheet documents for the I-84 detour were actually placed on the project site, because they were not verified by the FHA pursuant to subsection 106.02 of the FP-96. Plaintiff's claim for additional compensation is denied.

J. Pay Item 63524, Variable Message Sign

The plaintiff has claimed that it is entitled to additional Variable Message Sign hours based on the direction of FHA personnel. The court has found that the defendant is not liable for the problems associated with the failure of the detour at I-84. The FHA did make payment for only one of the Variable Message Signs due to the FHA conclusion that CEMS caused safety problems arising from CEMS' operation of the I-84 detour. Based on the record, the court does not find that the defendant is liable for the additional costs associated with the Variable Message Signs. The FP-96, at subsection 156.04, states that the contractor is responsible for the maintenance of the roadway and detours, and if corrective action is required, the contractor is responsible for the additional costs. Plaintiff's claim for additional compensation is denied.

K. Pay Item 63559, Traffic Control Laborer

The court has considered the pay vouchers for the additional hours claimed by CEMS for Traffic Control Laborers. Based on a review of the documentation, the court does not find that the plaintiff has shown by a preponderance of the evidence that it incurred additional costs for Traffic Control Laborers. The largest block of time denied by the FHA occurred on November 25, 1998 when project engineer Chew determined that CEMS had included 452.5 hours of labor unrelated to the pay item 63559, Traffic Control Laborer, and deducted that amount from previously paid Traffic Control Laborer pay

vouchers. The plaintiff has not contested project engineer Chew's determination. Plaintiff's claim for additional compensation is denied.

L. Pay Item 63560, Traffic Safety Supervisor

Following a review of the payment vouchers in the record, the court finds that recovery should be denied for additional hours for the Traffic Safety Supervisor. The court finds that the hours claimed by the plaintiff for Traffic Safety Supervisor were performed by a non-designated Traffic and Safety Supervisor, and for hours worked by the Superintendent, who contractually could not be designated as the Traffic and Safety Supervisor. For example, CEMS has claimed Traffic Safety Supervisor hours for Mr. Cox and Mr. Conway, who both acted as Superintendents on the project. Plaintiff's claim for additional compensation is denied.

V. D8 - Government Actions and Inactions Caused CEMS to Incur Additional, Unanticipated Mobilization Costs

Plaintiff seeks $23,612.80 for unanticipated mobilization costs for the bicycle path project. Mobilization is defined broadly in the Construction Specifications Manual (FP-96) as work consisting of "moving personnel, equipment, material, and incidentals to the project and performing all work necessary before beginning work at the project site." Plaintiff, however, specifically limits claim D8 to "trucking mobilization costs."

Mr. Conway testified for the plaintiff regarding the approach CEMS was forced to take on the contract: "[W]e weren't able to work as we planned, we were constantly jumping around like, you know, a frog in a skillet trying to get the thing done in different pieces all over the place," because of all the changes on the project. FHA inspectors on the project described CEMS' approach to the work as a "hopscotch pattern" or a "checkerboard approach." As its basis for increased trucking mobilization costs, plaintiff cites government changes to the contract and differing site conditions, causing, in turn, increased vehicle mobilization.

As discussed above, the government is liable for numerous changes to the contract, as well as for differing site conditions (see claim A2, government enforcement of increased tolerances; claim A11, government direction to remove additional concrete; claim A14, additional roadway excavation (pay item 20401), obliteration (pay item 21101), and asphalt concrete (pay item 40201); claim A17, government direction to provide additional testing; claim H6, government direction to move concrete barriers; claim F18, government direction to remove previously placed concrete; and claim D5, excessively wet soil). The record reflects that on this pay item, plaintiff provided supporting cost data for its increased cost of mobilization claim, by make and model of vehicle, hourly vehicle rate, and hours and dates of usage. The plaintiff's detailed computation, which appears reasonable in amount, was not disputed by the government. The court finds that plaintiff incurred the additional trucking mobilization costs in the amount claimed as a result of government changes to the contract and differing site conditions. The damages amount will be determined below.

VI. Damages

The United States Court of Appeals for the Federal Circuit has found that "[t]o receive an equitable adjustment from the Government, a contractor must show three necessary elements -- liability, causation, and resultant injury." Servidone Constr. Corp. v. United States, 931 F.2d 860, 861 (Fed. Cir. 1991) (citing Wunderlich Contracting Co. v. United States, 173 Ct. Cl. 180, 199, 351 F.2d 956, 968 (1965)); Reflectone, Inc. v. Dalton, 60 F.3d 1572, 1582 (Fed. Cir.) (citing Servidone Constr. Corp. v. United States, 931 F.2d at 861), reh'g denied (1995); Wilner v. United States, 24 F.3d 1397, 1401 (Fed. Cir. 1994) (citing Servidone Constr. Corp. v. United States, 931 F.2d at 861). Thus, "the government contractor seeking an equitable adjustment bears the burden of proving liability, causation, and resultant injury." Ralph L. Jones Co., Inc. v. United States, 33 Fed. Cl. 327, 331 (1995) (citing Wunderlich Contracting Co. v. United States, 173 Ct. Cl. at 199, 351 F.2d at 968 and Elec. & Missile Facilities, Inc. v. United States, 189 Ct. Cl. 237, 253, 416 F.2d 1345, 1355 (1969)); see Datalect Computer Servs., Ltd. v. United States, 41 Fed. Cl. 720, 722 (1998), aff'd, 215 F.3d 1344 (Fed. Cir. 1999) (table), cert. denied, 529 U.S. 1037 (2000).

To recover under the changes clause of the contract, based on a directed or constructive change for work beyond that required by the contract, it must be clear that:

> [E]ach of the other elements of the standard "Changes" or "Extras" clause has been present – the contracting officer has the contractual authority unilaterally to alter the contractor's duties under the agreement; the contractor's performance requirements are enlarged; and the additional work is not volunteered but results from a direction of the Government's officer.

Len Co. & Assocs., 181 Ct. Cl. 29, 38, 385 F.2d 438, 443 (1967).

Similarly, the court in Sterling Millwrights, Inc. articulated the grounds for prevailing on an equitable adjustment claim pursuant to the Changes clause in a government contract as:

> A contractor may seek an equitable adjustment to compensate for increased costs of performance flowing from changes that alter the work to be performed under the contract. To prevail on its claim for equitable adjustment(s), plaintiff must demonstrate first that any increased costs arose from conditions differing materially from those indicated in the bid documents, and that such conditions were reasonably unforeseeable in the light of all the information available to the contractor. Plaintiff must also show that its contract costs actually increased, and that the cost increases were the direct and necessary result of the change.

Sterling Millwrights, Inc. v. United States, 26 Cl. Ct. 49, 72 (1992) (citations omitted); see also Sauer Inc., v. Danzig, 224 F.3d 1340, 1348 (Fed. Cir. 2000) (citing Elec. & Missile

Facilities, Inc. v. United States, 189 Ct. Cl. at 261-262, 416 F.2d at 1361; Paul Hardeman, Inc. v. United States, 186 Ct. Cl. 743, 748-52, 406 F.2d 1357, 1360-63 (1969)); Ralph L. Jones Co., Inc. v. United States, 33 Fed. Cl. at 331-32.

The courts also recognize that a contract change can and does create costs beyond those attributable to the changes themselves:

> Under the Changes clause, plaintiff can recover delay damages as compensation for extended performance due to the change. Pathman Constr. Co. v. United States, 227 Ct. Cl. 670, 673 (1981); Merritt-Chapman & Scott Corp. v. United States, 192 Ct. Cl. [848,] 851, 429 F.2d [431,] 432 [1970]; Paul Hardeman, Inc. v. United States, 186 Ct. Cl. [743,] 749-752, 406 F.2d [1357,] 1361-1363 [1969].

G.M. Shupe, Inc. v. United States, 5 Cl. Ct. 662, 699 (1984); Sauer Inc., v. Danzig, 224 F.3d at 1348-49 (citing Elec. & Missile Facilities, Inc. v. United States, 189 Ct. Cl. at 261-262, 416 F.2d at 1361).

The calculation of the equitable adjustment is based upon the difference between the reasonable cost for performing the work as changed and the reasonable cost for performing the work according to the original contract specifications. J.L. Simmons Co. v. United States, 188 Ct. Cl. 684, 704, 412 F.2d 1360, 1370 (1969) (per curiam); see also Sauer Inc. v. Danzig, 224 F.3d at 1348; Miller Elevator Co. v. United States, 30 Fed. Cl. at 701. Courts have recognized a variety of methods for proving the amount of the equitable adjustment to which the contractor is entitled. See Delco Elec. Corp. v. United States, 17 Cl. Ct. 302, 321 (1989), aff'd, 909 F.2d 1495 (Fed. Cir. 1990) (table). "A contractor must prove its costs using the best evidence available under the circumstances. The preferred method is through the submission of actual cost data." Id. (citing Cen-Vi-Ro of Texas, Inc. v. United States, 210 Ct. Cl. 684, 685, 538 F.2d 348 (1976) (table)); Propellex Corp. v. Brownlee, 342 F.3d 1335, 1338 (Fed. Cir. 2003) (quoting Dawco Constr., Inc. v. United States, 930 F.2d 872, 882 (Fed. Cir. 1991), rev'd on other grounds, Reflectone, Inc. v. Dalton, 60 F.3d 1572 (Fed. Cir. 1995)); see also Delco Elec. Corp. v. United States, 17 Cl. Ct. at 321 ("In maintaining cost data, a contractor should segregate costs associated with the change where it is feasible to do so, and especially where the contractor can anticipate submitting a large claim.").

In a number of complex contract cases, however, exact computation of damages may prove to be extremely difficult. Therefore, courts have held that, "[t]he ascertainment of damages, or of an equitable adjustment, is not an exact science, and where responsibility for damage is clear, it is not essential that the amount thereof be ascertainable with absolute exactness or mathematical precision." Elec. & Missile Facilities, Inc. v. United States, 189 Ct. Cl. 237, 257, 416 F.2d 1345, 1358 (1969) (citations omitted, emphasis in original); see also Seaboard Lumber Co. v. United States, 308 F.3d 1283, 1302 (Fed. Cir. 2002); Confederated Tribes of Warm Springs Reservation of Oregon v. United States, 248 F.3d 1365, 1372 (Fed. Cir. 2001). The plaintiff will meet its burden of proving damages if it "furnishes the court with a reasonable basis for computation, even

though the result is only approximate." Wunderlich Contracting Co. v. United States, 173 Ct. Cl. at 199, 351 F.2d at 968; see also Daly Constr., Inc. v. Garrett, 5 F.3d 520, 522 (Fed. Cir. 1993); Capital Elec. Co. v. United States, 729 F.2d 743, 746 (Fed. Cir. 1984); Addison Miller, Inc. v. United States, 108 Ct. Cl. 513, 557, 70 F. Supp. 893, 900, cert. denied, 332 U.S. 836 (1947); Datalect Computer Servs., 41 Fed. Cl. at 722; Jackson v. United States, 12 Cl. Ct. 363, 366-67 (1987).

Courts have recognized two alternative methods for calculating damages if actual costs cannot be documented. One alternative method, the "total cost" method, "derives damages as the difference between a contractor's actual costs and its original bid." Servidone Constr. Corp. v. United States, 931 F.2d at 861. Because this method provides less assurance that the plaintiff is being precisely compensated for the exact amount of damages suffered, the United States Court of Claims stated that:

> This theory has never been favored by the court and has been tolerated only when no other mode was available and when the reliability of the supporting evidence was fully substantiated. (Citations omitted.) The acceptability of the method hinges on proof that (1) the nature of the particular losses make it impossible or highly impracticable to determine them with a reasonable degree of accuracy; (2) the plaintiff's bid or estimate was realistic; (3) its actual costs were reasonable; and (4) it was not responsible for the added expenses.

Boyajian v. United States, 191 Ct. Cl. 233, 253-54, 423 F.2d 1231, 1243 (1970); see also Propellex Corp. v. Browlee, 342 F.3d at 1338 (quoting Servidone Constr. Corp. v. United States, 931 F.2d at 861).

The second alternative method, the "jury verdict" method, is "most often employed when damages cannot be ascertained by any reasonable computation from actual figures," but it "is not favored and may be used only when other, more exact, methods cannot be applied." Dawco Constr., Inc. v. United States, 930 F.2d at 880. In the underlying United States Claims Court decision in Dawco Constr., Inc. v. United States, 18 Cl. Ct. 682 (1989), the trial judge discussed the conditions under which the jury verdict might be useful, as follows: "Notwithstanding that a judge of this court is the sole trier of fact, the court has held that a jury verdict approach to the computation of damages is proper when it is not possible for the plaintiff to prove actual damages, but sufficient information exists to enable the court to arrive at a fair approximation of the damages." Id. at 698 (citations omitted). In S.W. Elec. & Mfg. Corp., the United States Court of Claims applied the jury verdict method because, "[w]hen confronted with the clear liability of defendant and the plaintiff's efforts to present all available evidence on damages, the [court] was under a heavy obligation to provide compensation. While there was 'uncertainty as to the extent of the damage, * * * there was none as to the fact of damage.' (emphasis in original)." S.W. Elec. & Mfg. Corp. v. United States, 228 Ct. Cl. 333, 351, 655 F.2d 1078, 1088 (1981) (quoting Joseph Pickard's Sons Co. v. United States, 209 Ct. Cl. 643, 650, 532 F.2d 739, 743 (1976)). However, as noted by the United States Court of Appeals for the Federal Circuit, "[i]ts [the

jury verdict method's] primary peril, as evidenced in this [Dawco] case, is the risk that unrealistic assumptions will be adopted and extrapolated, greatly multiplying an award beyond reason, and rewarding preparers of imprecise claims based on undocumented costs with unjustified windfalls." Dawco Constr., Inc. v. United States, 930 F.2d at 882. Thus, the jury verdict method is resorted to only when the plaintiff has shown: "(1) that clear proof of injury exists; (2) that there is no more reliable method for calculating damages; and (3) that the evidence is sufficient for a court to make a fair and reasonable approximation of the damages." Raytheon Co. v. White, 305 F.3d 1354, 1367 (Fed. Cir.), reh'g denied (2002); see also Dawco Constr., Inc. v. United States, 930 F.2d at 880 (citing WRB Corp. v. United States, 183 Ct. Cl. 409, 425 (1968)).

However, "'leniency as to the actual mechanics of computation does not relieve a contractor of its basic and essential burden of establishing the fundamental facts of liability, causation, and resultant injury.'" Miller Elevator Co., Inc. v. United States, 30 Fed. Cl. at 702 (quoting G.M. Shupe, Inc. v. United States, 5 Cl. Ct. at 737); see also Reflectone Inc. v. Dalton, 60 F.3d at 1382 ("To receive an equitable adjustment from the Government, a contractor must show the three necessary elements – liability, causation, and resultant injury.") (quoting Servidone Constr. Corp. v. United States, 931 F.2d at 861). For example, in a case in which there was no comparative data, no standards and no corroboration, "the mere expression of an estimate as to the amount of productivity loss by an expert witness with nothing to support it will not establish the fundamental fact of resultant injury nor provide a sufficient basis for making a reasonably correct approximation of damages." Luria Bros. & Co. v. United States, 177 Ct. Cl. 676, 696, 369 F.2d 701, 713, (1966) (citing Wunderlich Contracting Co. v. United States, 173 Ct. Cl. at 199, 351 F.2d at 968).

A. A2 - Government Enforcement of Excessively Rigid and Arbitrary Surface Tolerances for Subgrade and Aggregate Courses.

The court has found that the FHA breached its implied duty to cooperate with the plaintiff when it used improper methods for the inspection of the aggregate base course and changed the grades of the bicycle path project, which resulted in increased work on the part of the plaintiff. The plaintiff claims damages in the amount of $212,683.36. The court did not find liability on behalf of the defendant for the alleged actions regarding the subgrade, and, therefore, CEMS' damages must be reduced accordingly. Based on a reasonable calculation of damages, including a reduction of the damages amount for the subgrade, the court finds that the plaintiff is entitled to $173,547.23, which represents slightly more than 80 percent of the plaintiff's total claim on this item, and is reflective of the plaintiff's claim as to the aggregate base.[19]

[19] Plaintiff's compensation is computed by taking the plaintiff's differential due to the government for the aggregate base (0.106347), and dividing by the total differential for both aggregate base and subgrade (0.130329), yielding 81.5+ percent, then multiplying this result times the total claimed amount of $212,683.36, yielding plaintiff's compensation of $173,547.23.

B. A11 - Government Direction to Change Roadway Obliteration Work by Directing Removal of Additional Existing Pavement and C. Pay Item 21101, Roadway Obliteration

The court has found that the plaintiff is entitled to compensation for the additional Roadway Obliteration of asphaltic concrete. Based on plaintiff's exhibit 1233, CEMS calculated the Roadway Obliteration quantity on the bicycle path to be 7,052.87 square meters. Based on the bid price, CEMS is entitled to an additional amount of $42,317.22 for Pay Item 21101.

The plaintiff also has claimed damages arising out of the additional disposal costs associated with the increased amount of Roadway Obliteration. Based on the testimonial and documentary evidence presented to the court, the plaintiff is entitled to $26,436.66 as damages for claim A11.

D. A17 - Government Direction to Provide Testing in Excess of the Specifications

The court finds that the plaintiff is entitled to damages in the amount of $121.26 for the additional 6 subgrade compaction tests; $1,677.43 for the 83 additional aggregate base course tests taken by CEMS; $565.88 for the 28 additional structural backfill tests; and $2,950.66 for the 146 additional asphaltic concrete tests, for a total of $5,315.23 in damages for claim A17.

E. H6 - Government Untimely Direction to Remove and Reinstall Previously Placed Concrete Barriers Along a New Alignment in the Vicinity of Station 6+258 to Station 6+819

The court finds that based on the problems associated with the directives from the FHA for the placement of the concrete barriers in the vicinity of station 6+258 to station 6+819, CEMS incurred additional costs in realignment and correction of the placement of the concrete barriers and is entitled to $6,659.41.

F. F18 - In Order to Minimize the Effect of a Seam in the Traffic's Tire Lane, the Government Directed CEMS to Saw Cut and Remove Asphaltic Concrete Previously Placed at I-84

Based the findings of the court above, the defendant is liable for the additional work performed at the direction of the FHA for the saw cut and removal of asphaltic concrete previously placed at I-84 in the amount of $4,439.76.

G. D5 - Differing Site Condition Regarding Excessively Wet Earthen Material at Approximately Station 3+690

Based on the court's finding of a Type I differing site condition on the bicycle path project, the court awards the plaintiff $9,407.21 in damages. Although the government clearly objected to the plaintiff's claim of liability on this issue, it did not specifically refute the plaintiff's damages amount, or offer its own version of damages to be awarded in the event defendant was found liable.

H. A14 - Pay Item 20401, Roadway Excavation

The court found that the plaintiff is entitled to excess Roadway Excavation quantities in the amount of 2,562.5 cubic meters at a unit bid price of $8.00, for a damage award of $20,500.00.

I. A14 - Pay Item 40201, Minor Hot Asphalt Concrete

The court found that plaintiff is entitled to an additional amount of $4,332.00, computed at 72.2 metric tons of asphaltic concrete times $60.00 per ton.

J. D8 - Government Actions and Inactions Caused CEMS to Incur Additional, Unanticipated Mobilization Costs

Compensable changes directed by the government and compensable differing site conditions generated additional trucking mobilization expenses detailed in the parties' joint trial exhibit 11. The court finds that the plaintiff is entitled to the reasonable and supportable amounts claimed by plaintiff, $23,612.80 in damages, for additional mobilization costs.

VII. A27 - Government Suspension of Work

The suspension of work clause that was included in the contract between the parties is a standard clause in government contracts and is found at 48 C.F.R. § 52.242-14 (1997).[20] "[T]he Suspension clause contemplates equitable adjustments for unreasonable delays in the performance of the contract." Triax-Pacific v. Stone, 958 F.2d 351, 354 (Fed. Cir. 1992); see also Sergent Mech. Sys., Inc. v. United States, 34 Fed. Cl. 505, 526 (1995), appeal dismissed, 91 F.3d 165 (Fed. Cir. 1996) (table); Commercial Contractors, Inc. v. United States, 29 Fed. Cl. at 661-62; HVAC Constr. Co. v. United States, 28 Fed. Cl. 690, 693 (1993); CCM Corp. v. United States, 20 Cl. Ct. 649, 657 (1990) (citing Chaney & James Constr. Co. v. United States, 190 Ct. Cl. 699, 421 F.2d 728 (1970) and Beauchamp Constr. Co., Inc. v. United States, 14 Cl. Ct. 430, 436-37 (1988)). "Adjustments are allowed under the clause only to the extent that a delay is caused by the government's action or inaction; to the extent a delay is caused by the fault or negligence of the contractor, no adjustment is warranted." Sergent Mech. Sys., Inc. v. United States, 34 Fed. Cl. at 526.

The United States Court of Appeals for the Federal Circuit has stated a four part test to recover an equitable adjustment under the suspension of work clause:

> First, there must be a delay of unreasonable length extending the Contract completion time. Second, the delay must have been proximately caused by the VA's [government's] action or inaction. Third, the delay resulted in some

[20] The Suspension of Work clause, dated April, 1984, was designated as FAR 52.212-12 until it was redesignated as FAR 52.242-14 on September 18, 1995, with the same name, date, and language.

injury and fourth, there is no delay concurrent with the suspension that is the fault of PJD [the contractor].

P.J. Dick, Inc. v. Principi, 324 F.3d 1364, 1375 (Fed. Cir. 2003) (quoting P.J. Dick, Inc., VABCA No. 5597, 01-2 BCA ¶ 31,647 (Sept. 27, 2001), 2001 WL 1219552, 2001 LEXIS 12 at *120); see also John A. Johnson & Sons, Inc. v. United States, 180 Ct. Cl. 969, 986 (1967); River Constr. Corp. v. United States, 159 Ct. Cl. 254, 270 (1962); see also Melka Marine, Inc. v. United States, 38 Fed. Cl. 545, 546 (1997); Commercial Contractors, Inc. v. United States, 29 Fed. Cl. at 661-62; CCM Corp. v. United States, 20 Cl. Ct. at 658; "The burden of proof is upon the contractor to establish that defendant did in fact cause delay, and further that any delay adversely affected the project, entitling the plaintiff to an equitable adjustment." Commercial Contractors, Inc. v. United States, 29 Fed. Cl. at 662 (citations omitted). Thus, the plaintiff is not entitled to an award of damages unless it can prove that it suffered monetary injury as a result of a particular compensable act or omission by the defendant. CCM Corp. v. United States, 20 Cl. Ct. at 658.

The suspension of work clause does not define what constitutes a reasonable or unreasonable period of delay. DeMatteo Constr. Co. v. United States, 220 Ct. Cl. 579, 589, 600 F.2d 1384, 1390 (1979); CCM Corp. v. United States, 20 Cl. Ct. at 658. "Whether a particular delay is reasonable or not depends upon the circumstances of the particular case." Commercial Contractors, Inc. v. United States, 29 Fed. Cl. at 662 (citing Tri-Cor, Inc. v. United States, 198 Ct. Cl. 187, 221, 458 F.2d 112, 131 (1972)); see also CCM Corp. v. United States, 20 Cl. Ct. at 658 (citing Tri-Cor, Inc. v. United States, 198 Ct. Cl. at 221, 458 F.2d at 131).

The plaintiff claims delay damages arising out of CO Parsons' decision to suspend the work on the bicycle path project between November 25, 1998 to April 19, 1999, and delays and interruptions allegedly caused by the FHA throughout the project, which, according to CEMS, prevented the plaintiff from completing the project by mid-August, 1998. The plaintiff states that it submitted construction schedules that showed it would complete the project in mid-August, 1998, but due to the FHA's suspension of work and delays, it was unable to complete the project until May 6, 1999. The plaintiff further claims that prior to work beginning on the project, the FHA "recognized possible claim situations regarding time issues," and that weather conditions were adversely impacting CEMS' schedule. CEMS states that the FHA was constantly updated with revised construction schedules, which showed CEMS' critical path delay, due to "ongoing FHA changes and delays."

As noted above, the Suspension of Work clause allows an adjustment to the contract for increases in the cost of performance of the contract if the performance of all or any part of the work is suspended for an unreasonable period of time by the CO in the administration of this contract. See FAR § 52.242-14(b). It is undisputed that CO Parsons suspended the contract during the period of November 25, 1998 through April 19, 1999. Pursuant to the Suspension of Work clause, CEMS only may recover for the period of delay if the suspension of work ordered by CO Parson for the period of November 25, 1998

through April 19, 1999, was unreasonable. Therefore, of the four suspension of work factors noted in P.J. Dick, Inc. v. United States, 324 F.3d at 1375, in the case at bar, the first issue raised for the court's consideration is whether CO Parson's decision to suspend work on the project during this period was unreasonable, and, therefore, is one for which the plaintiff should be compensated.

The plaintiff alleges that CO Parsons unreasonably suspended work on the bicycle path during this period because the project was substantially complete as of October 30, 1998 and "[g]iven the minimal amount of paving left to be done and time required, it was patently unreasonable for FHA to suspend the work for almost five months."

The FP-96 defines "Substantial Completion" as that point when the project can be "safely and effectively used by the public without further delays, disruption, or other impediments." CO Parsons testified regarding his determination that the bicycle path was not substantially complete prior to the November 25, 1998:

> It was my position they [plaintiff] were short of substantial completion. Basically, there was main bike path paving to be done, some spot areas of correction of the aggregate base underneath was yet to be paved. There are a number of items listed here that were pretty minor, but the paving was, in my opinion, significant enough that until all the paving was done, that job would not be substantially complete and ready to be used by the public in the way it was intended to be.

On November 20, 1998, CO Parsons issued a letter to CEMS describing certain work that remained to be completed by the plaintiff on the bicycle path project, extended the contract completion date, and suspended the work on the project until April 19, 1999. CO Parsons also found that the suspension of work was based on "weather related conditions considered unsuitable for performance of work from November 25, 1998 through April 19, 1999 ... in the Columbia River Gorge." At trial, CO Parsons testified that the suspension of the project until April 19, 1999 was warranted due to the climactic conditions prevalent during the winter months in the Columbia River Gorge. CO Parsons explained that he did not consider the cost of the suspension period and focused on the "base rock work to be done and paving, and end of November and December, it just wasn't good weather to pave in." Based on the work completed in the spring of 1999, CEMS substantially completed the bicycle path project after completing the paving work in eleven days, and the FHA notified CEMS of final acceptance on June 11, 1999.

Based on the record before the court, the court does not find that CO Parsons' decision to suspend the work on the bicycle path project was unreasonable. CO Parsons considered the work remaining on the project and determined that the kind of work (paving) and the amount of work remaining on the project could not be completed during the months of the suspension period, although he only could have approximated the number of days necessary for completion. CO Parsons' judgment that the weather conditions prevalent during the winter months in the Columbia River Gorge would have prevented the final paving to be completed in an acceptable manner was not unreasonable. In addition,

the definition of the Substantial Completion in the FP-96 requires that the public use the bicycle path "safely and effectively ... without further delays, disruption, or other impediments." Although the remaining pavement work on the bicycle path ultimately required only eleven full days of additional work, prior to completion, the public could not have used the bicycle path "safely and effectively" without "delays, disruption, or other impediments." Moreover, the FHA contracted with CEMS for a paved bicycle path, and the court finds that substantially completion required the completion of the pavement work. The plaintiff's claim that the FHA's suspension of work on the project from November 25, 1998 through April 19, 1999, was unreasonable is denied.

The plaintiff also has claimed damages as a result of the FHA's alleged delays and interruption of work throughout the project, which prevented the plaintiff from completing the project by mid-August, 1998. A contractor seeking compensation for alleged government-caused delay must establish:

> (1) whether and to what extent any part of the contractor's work was unreasonably delayed by the [government's] failure to provide access to the [work site]; (2) whether any unreasonable delays caused by the [government] were concurrent with or separate from delays due to the subcontractor's shortage of labor or other delays chargeable to the contractor; and (3) whether the contractor is entitled to a time extension and/or a recovery of damages and if so, how much.

Blinderman Constr. Co., Inc. v. United States, 695 F.2d at 559; see also Essex Electro Eng'rs, Inc. v. Danzig, 224 F.3d 1283, 1292 (Fed. Cir. 2000); W.M. Schlosser, Inc. v. United States, 50 Fed. Cl. 147, 152 (2001); Coastal Indus., Inc. v. United States, 32 Fed. Cl. 368, 372 (1994); Commercial Contractors, Inc. v. United States, 29 Fed. Cl. at 662.

The burden of establishing these factors falls squarely upon the contractor. Essex Electro Eng'rs, Inc. v. Danzig, 224 F.3d at 1292; William F. Klingensmith, Inc. v. United States, 731 F.2d 805, 809 (Fed. Cir. 1984); Avedon Corp. v. United States, 15 Cl. Ct. 648, 653 (1988). Moreover, "[o]nly if the delay was caused solely by the government will the contractor be entitled to both an extension of time within which to perform, and recovery of excess costs associated with the delay." Weaver-Bailey Contractors, Inc. v. United States, 19 Cl. Ct. 474, 476 (1990) (emphasis in original) (citing William F. Klingensmith, Inc. v. United States, 731 F.2d at 809), recons. denied, 20 Cl. Ct. 158 (1990); G.M. Sharpe, Inc. v. United States, 5 Cl. Ct. 662, 700 (1984); see also Blinderman Constr. Co. v. United States, 695 F.2d at 559. The contractor must show that the government was the "sole proximate cause" of the delay and that no concurrent cause would have equally delayed the contract, regardless of the government's action or inaction. Merritt-Chapman & Scott Corp. v. United States, 208 Ct. Cl. 639, 650, 528 F.2d 1392, 1397-98 (1976); see also Triax-Pacific v. Stone, 958 F.2d 351, 354 (Fed. Cir. 1992); Avedon Corp. v. United States, 15 Cl. Ct. at 653, 659 (recovery denied "because concurrent delays rendered the [government-caused] delay ... irrelevant"). Moreover, "the court [will] award delay damages only for the unreasonable portion of a government-caused delay." Mega Constr. Co. v. United States, 29 Fed. Cl. 396, 425 (1993) (quoting Wilner v. United States, 26 Cl. Ct. 260,

263 (1992), rev'd on other grounds, 24 F.3d 1397 (Fed. Cir. 1994) (en banc)); see also P.R. Burke Corp. v. United States, 277 F.3d 1346, 1360 (Fed. Cir. 2002). "The court cannot rely on assertions of a contractor, not supported by critical path analysis of the project to award critical path delay costs." Mega Constr. Co. v. United States, 29 Fed. Cl. at 423.

If both parties contribute to a delay, neither can recover damages from the other, "unless there is in the proof a clear apportionment of the delay and expense attributable to each party." P.R. Burke Corp. v. United States, 277 F.3d at 1359; Essex Electro Eng'rs, Inc. v. Danzig, 224 F.3d at 1292; William F. Klingensmith, Inc. v. United States, 731 F.2d at 809 (quoting Blinderman Constr. Co. v. United States, 695 F.2d at 559).

The plaintiff has argued that the several schedules it submitted were critical path schedules. The schedules provided by the plaintiff, however, do not provide the court with the ability to determine whether the alleged delays claimed by the plaintiff were on the critical path, or, for example, whether concurrent delays associated with the problems on the I-84 detour work also contributed to the delay on the project.

The problems associated with the plaintiff's delay claim begin with the testimony at trial offered by CEMS. CEMS project superintendent Conway testified to the number of delays related to a number of the claims addressed above. Mr. Conway testified to anywhere between 629 and 731 days of delay on the bicycle path project. At trial, Mr. Conway testified that the I-84 underpass work was on the critical path, but that other unidentifiable activities also were on the critical path. The court has awarded damages for numerous items of work, but, based on the evidence in the record, has been unable to determine the degree that CEMS was delayed due to the changes ordered by the defendant. After reviewing all the evidence, the type of testimony and the evidence offered by the plaintiff, the court is unable to base an accurate award on the delay calculations made by the plaintiff deriving from the changes that occurred on the contract. The plaintiff's delay analysis has identified delay from August 15, 1998 through May 22, 1999, but has not shown that the days of delay asserted under the specific claims were based on much more than Mr. Conway's own estimates and speculation provided at trial. Nor could Mr. Conway explain how he derived those continuously changing days of delay, or why it took him until the day of trial to determine the number of delay days. For example, Mr. Conway testified regarding one aspect of the delay claim as follows: "I haven't had a chance to review all the documents on this particular one, but I wrote a number down here of 10 to 14 days." Based on a review of the record, the court finds that CEMS has not carried its burden of establishing compensable delays. Therefore, the plaintiff is not entitled to recover liquidated damages withheld by the defendant.

CONCLUSION

The court has carefully reviewed the numerous bicycle path contract claims, and, for the foregoing reasons, **AWARDS** the plaintiff a total of $316,567.52, plus interest from December 21, 1998, the date the parties have stipulated that the plaintiff's claim was received by the contracting officer, pursuant to the Contract Disputes Act, 41 U.S.C. § 611

(2000). The total amount awarded plaintiff consists of the following individual claims: Claim A2 - Government Enforcement of Excessively Rigid and Arbitrary Surface Tolerances for Subgrade and Aggregate Courses, $173,547.23; Claim A11 - Government Direction to Change Roadway Obliteration Work by Directing Removal of Additional Existing Pavement, $26,436.66 and Claim A14 - Pay Item 21101 Roadway Obliteration, $42,317.22; Claim A17 - Government Direction to Provide Testing in Excess of the Specifications, $5,315.23; Claim H6 - Government Untimely Direction to Remove and Reinstall Previously Placed Concrete Barriers Along a New Alignment in the Vicinity of Station 6+258 to Station 6+819, $6,659.41; Claim F18 - In Order to Minimize the Effect of a Seam in the Traffic's Tire Lane, the Government Directed CEMS to Saw Cut and Remove Asphaltic Concrete Previously Placed at I-84, $4,439.76; Claim D5 - Differing Site Condition Regarding Excessively Wet Earthen Material at Approximately Station 3+690, $9,407.21; Claim A14 - Pay Item 20401 Roadway Excavation, $20,500.00; Claim A14 - Pay Item 40201 Minor Hot Asphalt Concrete, $4,332.00; and D8 - Government Actions and Inactions Caused CEMS to Incur Additional, Unanticipated Mobilization Costs, $23,612.80. The clerk's office shall enter **JUDGMENT** for the plaintiff in the amount of $316,567.52, plus interest, pursuant to the Contract Disputes Act.

IT IS SO ORDERED.

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MARIAN BLANK HORN
Judge