
**TOTAL COST AND MODIFIED TOTAL COST
CLAIMS IN THE UNITED STATES**

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I. INTRODUCTION

Any discussion of United States contract law has to start with the disclaimer that there is no law of the United States. There is United States federal government contract law and there is the contract law of each of the fifty states (plus various territories and protectorates, e.g., Guam) and in some states, a meaningful difference between the law applicable to contracts with public entities and the law applicable to private entities. Thus, the first question in any contract dispute, is what law applies. In construction contracts, this is usually settled by the choice-of-law provision in the contract or if there is no such provision by applying the law of the jurisdiction where the project is being constructed.

It is, however, possible to make generalizations. There is a substantial body of construction contract law based on U.S. Government contracts. This law has been developed by the U.S. Court of Federal Claims and the Civilian and Armed Services Boards of Contract Appeals (Boards) and their predecessors. This body of law is often applied by other Courts to construction disputes, public or private. Also, among the states there is a great deal of similarity. This is especially true of the law related to total cost and modified total cost claims.

II. GENERAL RULE OF DAMAGES IN CONTRACT CASES

The purpose of contract damages is to place the aggrieved party in the same financial position in which it would have been had the contract been fully performed. The American Law Institute Restatement (Second) of Contracts 2d, § 344 (1981) (“Restatement”). Generally, this requires recovery of both the losses incurred by the contractor and the gains prevented as a result of the breach. *Perfecting Serv. Co. v. Product Dev. and Sales Co.*, 131 S.E.2d 9 (N.C. 1963). However, under the seminal case of *Hadley v. Baxendale* (1854) 96 Rev. Rep. 742, the recovery is limited only to those damages which are a foreseeable result of the breach at the time of contracting. The Restatement, § 351, classifies foreseeability of damages as follows:

(2) Loss may be foreseeable as a probable result of a breach because it follows from the breach

(a) in the ordinary course of events, or

(b) as a result of special circumstances, beyond the ordinary course of events, that the party in breach had reason to know.

On the other hand, damages for negligence include compensation for all injuries proximately caused by the negligent acts without regard to whether the amount or extent of damages were contemplated or foreseen. As a result of the decision in *Hadley*, and its expression in the Restatement, recoverable damages have been separated into two distinct

categories: (1) “general” damages, or those which “naturally arise from the breach,” and (2) “consequential” damages, or those which may not naturally flow from the breach but may reasonably have been “in the contemplation of the parties” at the time of contracting.

In *Roanoke Hosp. Ass’n v. Doyle & Russell, Inc.*, 214 S.E.2d 155, 160 (Va. 1975), the court discussed this distinction as follows:

There are two broad categories of damages *ex contractu*: direct (or general) damages and consequential (or special) damages. Direct damages are those which arise “naturally” or “ordinarily” from a breach of contract; they are damages which, in the ordinary course of human experience, can be expected to result from a breach. Consequential damages are those which arise from the intervention of “special circumstances” not ordinarily predictable. If damages are determined to be direct, they are compensable. If damages are determined to be consequential, they are compensable only if it is determined that the special circumstances were within the “contemplation” of both contracting parties. Whether damages are direct or consequential is a question of law. Whether special circumstances were within the contemplation of the parties is a question of fact (citations omitted).

The distinction, as set forth in *Roanoke Hosp. Ass’n*, has been applied by the courts in virtually all jurisdictions. See, e.g., *Burnett & Doty Dev. Co. v. C. S. Phillips*,

148 Cal. Rptr. 569 (Cal. Ct. App. 1978); *Pipkin v. Thomas & Hill, Inc.*, 236 S.E.2d 725, 733 (N.C. Ct. App. 1977), aff'd in part, rev'd in part, 258 S.E.2d 778 (N.C. 1979); *Arctic Contractors, Inc. v. State*, 564 P.2d 30 (Alaska 1977); *State Highway Dep't v. Knox-Rivers Constr. Co.*, 160 S.E.2d 641 (Ga. Ct. App. 1968).

As a result of the foreseeability of damages rule, the contractor indeed runs the risk of less than full compensation for its damages. The general damages which naturally arise from the breach and which any contractor would be expected to incur as a result of breaches of similar contracts may not fully compensate the contractor for its damages.

Furthermore, consequential damages are recoverable only if those damages were contemplated by the parties at the time of contracting. While the contractor may incur consequential damages as the result of a breach, the absence of such contemplation, i.e., foreseeability, may preclude recovery of those damages. Examples of consequential damages which may not be recoverable are lost future work, certain lost profits, diminution in the value of business and certain interest costs.

In *Rocky Mountain Constr. Co. v. United States*, 218 Ct. Cl. 665 (1978), the contractor sought lost profits as a result of its inability to bid on and possibly obtain other contracts. The court denied the consequential damages, stating:

The lost profits relate not to the particular contract involved, but to other contracts Kenney had not yet entered into but which he anticipated receiving. Such consequential damages are not recoverable because they

‘would not have been reasonably foreseeable by the defendant at the time when the breaches of contract . . . were committed.’

Rocky Mountain Constr. Co., 218 Ct. Cl. at 666. But see *Alpine Indus., Inc. v. Gohl*, 637 P.2d 998 (Wash. Ct. App. 1981), which upheld a jury’s award of lost profits to an owner for a contractor’s delayed completion of a manufacturing plant, and *Ralph D. Nelson Co., Inc. v. Beil*, 671 P.2d 85 (Okla. Ct. App. 1983), where an owner recovered lost rent from delayed completion of an office building (even though rent was only postponed). In *Northern Helex Co. v. United States*, 524 F.2d 707 (Ct. Cl. 1975), cert. denied, 429 U.S. 866 (1976), the court denied the contractor’s claim for lost profits even though the contractor relied on the proceeds of that contract in its decision to construct a new integrated plant which also would be used for other, unrelated contracts. In so ruling, the court stated:

The Government could not possibly have foreseen these activities nor assumed any liability with reference thereto, because, among other reasons, even now the facts regarding them are unknown to the Government. There is no evidence whatever that the parties contemplated at the time the contract was signed that the Government assumed any liability or responsibility for the alleged integrated operations, nor that the Government would be liable for the cost of plaintiff’s performance in case the contract was terminated.

Northern Helex Co., 524 F.2d at 714.

In *Roanoke Hosp. Ass’n*, 214 S.E.2d 155, the contractor inexcusably delayed the construction of a hospital. The owner sought to recover its damages for this delay which partially consisted of a claim for interest costs. The interest cost claim consisted of

additional interest paid by the owner on the construction loan as a result of the extended performance period, additional interest paid as a result of an increase in interest rates, and the loss of interest which the owner could have made through the investment of its funds which were tied up in the project for the extended period. The court allowed recovery of the extended financing costs but denied recovery of damages due to the increase in interest rates. *Roanoke Hosp. Ass'n*, 214 S.E.2d at 161.

An excellent discussion of the appropriateness of a consequential damage award in breach of construction contracts is found in *Salem Eng'g and Constr. Corp. v. Londonderry Sch. Dist.*, 445 A.2d 1091 (N.H. 1982). There, a contractor's claim for deterioration of business as a direct result of unreasonably withheld contract retention was denied. The court seemed to rely on the fact that the size of the disputed retention was insignificant (\$179,000) when compared with the contract amount (\$2,500,000). Hence, the damages caused by the delay in payment were not reasonably foreseeable. The burden of proof is, of course, on the claiming party to prove the elements of foreseeability as well as the reasonable certainty of the loss. *Fields Eng'g & Equip., Inc. v. Cargill, Inc.*, 651 F.2d 589 (8th Cir. 1981).

As the above cases demonstrate, contractors may indeed incur damages on a project but not recover them because of this general rule of damages. To enhance the possibility of recovery, at the time of contracting the contractor should expressly inform the owner of any peculiar circumstances which may exist and of the damages which would result from those circumstances in the event of a breach. Otherwise, the contractor

may not be made whole even if it should prove that it incurred the damages. In complex construction litigation, both breach of contract and negligence theories are often asserted to avoid the result of this rule. Courts generally look to the “dominant” or “essential” cause of action in determining which measure of recovery to apply. A negligent breach of contract theory is generally not recognized. *Zontelli & Sons, Inc. v. City of Nashwauk*, 353 N.W.2d 600 (Minn. Ct. App. 1984), rev’d on other grounds, 373 N.W.2d 744 (Minn. 1985).

III. BURDEN OF PROOF

In an action for damages, the contractor bears the burden of proving both the existence and the amount of the damages incurred. *United States v. J.H. Copeland & Sons*, 568 F.2d 1159 (5th Cir. 1978), cert. denied, 436 U.S. 957 (1978). Where the existence of damages is clearly established, a contractor’s inability to prove the precise amount of those damages does not preclude recovery. This concept is particularly applicable to major construction disputes involving such elements as substantial labor inefficiency claims. *Aetna Cas. & Sur. Co. v. Doleac Elec. Co., Inc.*, 471 So. 2d 325 (Miss. 1985); *John W. Johnson, Inc. v. J. A. Jones Constr. Co.*, 369 F. Supp. 484 (E.D. Va. 1973). The general rule is that the injured party must establish the extent of its damages with “reasonable certainty.” *Lincor Contractors, Ltd. v. Hyskell*, 692 P.2d 903 (Wash. Ct. App. 1984); *Tutor-Saliba-Parini*, PSBCA No. 1201, 87-2 BCA ¶ 19,775 (1987). As the Supreme Court of Washington aptly described in one construction case:

The difficulty of calculating damages should not be confused with the proof of damage as a necessary element of the plaintiff's case. Once the fact of damage has been established by a preponderance, the plaintiff is obligated to produce the best evidence available which will afford the jury (or judge) a reasonable basis for estimating the dollar amount of his loss.

Seattle Western Indus., Inc. v. David A. Mowat Co., 750 P.2d 245, 249 (Wash. 1988).

However, the contractor should calculate the amount of damages incurred with the highest degree of certainty possible. The preferred method of calculation links actual costs to breach. See, *Miller Elevator Co., v. U.S.*, 30 Fed Cl. 662 (1999).

IV. TOTAL COST AND MODIFIED TOTAL COST METHODS

A. Total Cost Method

As set forth above, a contractor's inability to calculate precisely its damages based on actual historical costs will not necessarily prevent a recovery. Where actions by the owner clearly cause damages to the contractor, but the amount of those damages is impossible precisely to define, the courts accurately award damages calculated by the total cost method. Under this method, damages are calculated by subtracting the original estimated cost for performing the entire project (the bid) from the total actual cost of the performance.

Under the total cost method, no attempt is made to distinguish between the various factors causing damage. Rather, the difference between the actual cost and the estimated cost for the entire project is assumed to be the result of a combination of factors all caused by the other party. It is important to note that by use of the total cost method, it is assumed that the original estimate of work as well as the actual costs are reasonable.

Precisely because of these assumptions, total cost claims are generally not favored by courts and boards and are applied only as a method of last resort. *Servidone Constr. Corp. v. United States*, 19 Cl. Ct. 346 (1990), aff'd, 931 F.2d 860, 861 (Fed. Cir. 1991). The courts' disdain for this method of calculating damages was succinctly stated by the Court of Federal Claims in *WRB Corp. v. United States*, 183 Ct. Cl. 409, 426 (1968):

. . . (total cost) 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.

Thus, the courts limit the use of the total cost method to when the following four elements are present:

1. Absolutely no alternative method of calculating damages exists;
2. The original bid was reasonable;
3. The actual costs incurred were reasonable; and
4. The contractor was not responsible for the extra costs incurred.

Wilbur Smith and Assoc., ASBCA No. 35301, 89-3 BCA ¶ 22,025 at 110,783 (1989).

The contractor bears an extremely stringent burden of proof in satisfying the above four requirements. A contract must show the impracticality of proving losses and

lack of responsibility for additional cost. See, *Neal & Co. v. U.S.*, 36 Fed. Cl. 600 (1996). The method is disfavored because it assumes that all costs were reasonable and the contractor was not responsible for any increased costs. Total cost claims will be rejected if it is possible to estimate separately or segregate actual costs due to the breach. See, *M.A. Mortenson Co.*, ASBCA 49917, 97-1 BCA 28886. Hence, the contractor cannot simply show that the final cost exceeded the original estimate. The contractor must produce evidence that it acted reasonably both before and after the award of the contract, and that the extra costs were the result of the owner's rather than its own actions. Even when the contractor produces such evidence, however, the courts commonly use the total cost method merely as a starting point from which it adjusts the damage award downward. See *Bechtel Nat'l, Inc.*, NASA BCA No. 1186-7, 90-1 BCA ¶ 22,549 (1989), where the board, under a "jury verdict" approach, awarded the contractor ten percent of its damages computed by the total cost method. The downward adjustments by the court generally reflect the degree of culpability which the court attributes to the owner and the persuasiveness of the contractor's proof of reasonable performance.

The court will use any other method to calculate damages before it will accept a total cost approach. In *Skip Kirchdorfer, Inc. v. United States*, 14 Cl. Ct. 594, 606 (1988), the court declined to use the total cost method, unusually advocated by the defendant in this case, where the plaintiff could show a direct correlation between its bid price and the number of service calls it relied upon in making its bid. Damages were thus calculated based on the increased number of calls plaintiff was required to make over the

erroneous amount it was told to bid on, as opposed to recovering only for its excess out-of-pocket cost over bid price. The court noted that, although plaintiff's claim was based on expert analysis, the analysis was produced from records of its actual contract performance which constituted reasonable proof of cost. *Skip Kirchdorfer, Inc.*, 14 Cl. Ct. at 607. The total cost method was thus rejected since it is "tolerated only when no other mode of recovery (is) available." *Skip Kirchdorfer, Inc.*, 14 Cl. Ct. at 605.

In *Batteast Constr. Co., Inc.*, ASBCA Nos. 35818, 36609, 92-1 BCA ¶ 24,697 (1991), the board ruled that the total cost method was not the proper basis for pricing a labor cost adjustment on a masonry contract because the contractor could not provide any proof that the additional cost could not have otherwise been calculated with any reasonable accuracy. See also *Dawco Constr., Inc.*, ASBCA No. 42120, 92-2 BCA ¶ 24,915 (1992).

Where there is no way to estimate the damages which result from the owner's actions, the court will accept the total cost approach. Courts have applied this method when the impacted work is so interwoven with other unaffected work that isolating the cost of the impacted work was not possible or where there are so many delays, changes or breaches that the particular damages of each cannot be traced. In re *Meyertech Corp.*, 831 F.2d 410 (3d Cir. 1987); *J.D. Hedin Constr. Co. v. United States*, 347 F.2d 235 (Ct. Cl. 1965).

However, a contractor's simple failure to produce or to maintain adequate records will not persuade the court to apply the total cost method. See *Schuster Eng'g, Inc.*, ASBCA Nos. 28760, et al., 87-3 BCA ¶ 20,105 (1987). As the Court of Federal Claims concluded in *Boyajian*, 423 F.2d at 1242:

Nor does the mere fact that plaintiff's books and records do not, in segregated form, show the amounts of the increased costs attributable to the breaches give it automatic license to use the "total cost" method. Contractors rarely keep their books in such fashion. Such failure, however, normally does not prevent the submission of reasonably satisfactory proof of increased costs incurred during certain contract periods or flowing from certain events based, for instance, on acceptable cost allocation principles or on expert testimony (citations omitted).

Similarly, in another case, the contractor requested recovery of its inefficiency costs be calculated using the total cost method. The board concluded that the "subjective determination" of the project foreman that he was unable to maintain such records was insufficient evidence that it was impractical for the contractor to develop methods to document its actual labor costs. *Fletcher & Sons, Inc.*, VABCA No. 3248, 92-1 BCA ¶ 24,729 at 123,408 (1992).

In *Propellex Corp. v. Brownlee*, 342 F.3d 1335, 1342 (Fed. Cir. 2003), the Court held that the simple lack of records does not justify the use of the total cost method. The contractor must show that it could not track the claimed costs as they were being incurred. Its failure to do what it could have done prevents application of the method. Similarly, in *Jackson Constr. Co., Inc. v. United States*, 62 Fed. Cl. 84, 104 (Fed. Cl. 2004) the court found, "no effort to identify the impacts or to quantify the losses...even

though [the Contractor] utilized a sophisticated computerized cost accounting system to manage the contract”, leading the court to disallow use of the total cost method.

In *Youngdale & Sons Constr. Co., Inc. v. United States*, 27 Fed. Cl. 516, 542 (1993), the United States Court of Federal Claims determined that the total cost method was not appropriate because the plaintiff’s record keeping, although not precise, contained a reasonable approximation of the additional costs attributable to the changes caused by the owner. Thus, the records were sufficient to calculate damages. In this instance, the plaintiff had become aware of the presence of excessive ground water at the inception of the project. In response, the plaintiff noted the occurrences on a daily basis as well as maintained frequent communication with the defendant. After unsuccessfully requesting price and time adjustments from the defendant, the plaintiff filed suit requesting damages calculated by the total cost method. The court stated that, when a party has its own records and access to bid proposals, it has a high burden to establish that those records should not be used to estimate actual costs. *Youngdale*, 27 Fed. Cl. at 540. In other words, the plaintiff must establish that the records are inaccurate or should not be relied upon because of a specific reason. Otherwise, the plaintiff has not satisfied its burden, and the court must apply the actual ascertainable losses. Thus, since the additional unanticipated costs could have been separated from the original bid estimate and the records, the plaintiff was entitled to relief solely under the actual cost method.

Likewise, in *Miller Elevator Co., Inc. v. United States*, 30 Fed. Cl. 662 (1994), the court declined to use the total cost method because damages could be accurately approximated by using actual cost data. *Miller* involved an elevator maintenance services contract at a federal office building. Subsequent renovation of the building by another contractor resulted in a substantial increase in the maintenance efforts required by the plaintiff. The plaintiff sought application of the total cost method and introduced a damage calculation based on total labor hours versus the estimated labor hours. When the “computation of damages relies on estimates involving actual costs, actual costs and not total costs control.” *Miller*, 30 Fed. Cl. at 706. Accordingly, the court found that there was sufficient documentation of actual costs upon which the plaintiff could have based its damages calculation and, therefore, rejected the use of the total cost method.

The United States Court of Federal Claims deviated from its strict application of the rule in *American Line Builders, Inc. v. United States*, 26 Cl. Ct. 1155, 1182 (1992). The court applied the total cost method for all claims in which the court found liability or the defendant conceded liability due to the difficulty in applying a different method. *American* involved a contract for replacing 180 miles of electrical transmission lines. At issue was whether the plaintiff was entitled to additional compensation for work which was performed pursuant to amendments and delays in contract work schedules issued by the government. The presentations of facts and issues during the trial and in the post-trial filings were less than clear. Consequently, the case resulted in a lengthy trial with complex issues which created volumes of documentary evidence and trial testimony.

The California Court of Appeals stated in *Huber, Hunt & Nichols, Inc. v. Moore*, 136 Cal. Rptr. 603, 622 (Cal. Ct. App. 1977):

We are not prepared to embrace that concept [that the contractor's accounting practices should control principles of law], particularly when it is obvious that Contractor could have maintained a proper accounting system to establish its alleged damage proximately caused by Architects' alleged negligence, if it had desired to do so. Apparently it simply did not desire to do so.

Hence, it not only must be impossible to calculate the damages from the contractor's records as actually kept, it must also appear to the court that it was impractical for the contractor to have kept those records more accurately.

In *Appeal of Clark Constr. Group, Inc.*, VABCA No. 5674, 00-1 BCA 30870, the Board rejected the total cost approach which the subcontractor had used to price its pass-through inefficiency claim. Instead, the Board used productivity factors, published by the MCAA as a source for estimated percentage of loss of efficiency. The Board arrived at 10% and 5% inefficiency factors for the "Dilution of Supervision" and "Site Access" claims.

When using the total cost method, the contractor also must attempt to demonstrate that the bid was prepared in a reasonable manner and that the bid was reasonable in relation to other bids on the project. In *McDevitt & St. Co. v. Dep't of Gen. Servs.*, 377 So. 2d 191 (Fla. Dist. Ct. App. 1979), the court held that the total cost method may be proper where the contractor presents "testimony of individuals who prepared appellant's

bid concerning their experience and their methods . . .” That decision is in accord with the Court of Federal Claims decision in *J.D. Hedin Constr. Co.*, 347 F.2d 235, in which the court looked to the qualifications of the person that prepared the estimate and the closeness of that estimate to the other bids submitted on the project in determining the reasonableness of the original estimate.

In *Pebble Bldg. Co. v. G. J. Hopkins, Inc.*, 288 S.E.2d 437 (Va. 1982), the court awarded damages to an electrical contractor on the total cost basis upon a showing that the original estimate was prepared from an industry estimating manual. In *Seattle Western Indus., Inc.*, 750 P.2d 245, the requirement of reasonableness, both for the original bid and for actual cost, was satisfied by a comparison of profit, manhours, and experience gained on the phase of the project which gave rise to the damages, with those of a later phase of the same project which was virtually identical.

However, in *Aoki Corp.*, ENG BCA No. PCC-62, 91-2 BCA ¶ 23,848 at 119,521 (1991), the board found that the contractor’s bid estimate to perform excavation work was, based on the factual record, “overly optimistic” rather than realistic, and refused to accept the total cost methodology employed by the contractor in its claim for equitable adjustment.

In *O.K. Johnson Elec. Co., Inc.*, VABCA No. 3464, 94-1 BCA ¶ 26,505 at 131,944-45 (1993), although the board acknowledged that the contractor’s bid appeared

reasonable, it ruled that the component of the bid relating to the contractor's claim was not reasonable, thus precluding the contractor from using the total cost method.

In *Southern Comfort Builders, Inc. v. United States*, 67 Fed. Cl. 124, 150 (Fed. Cl. 2005), the total cost method was disallowed because the contractor "underestimated its costs" and presented "little or no evidence...to demonstrate that [the contractors] costs were reasonable".

The courts are not inclined to grant a contractor free license on a project merely because the owner acted improperly or modified the contract. Rather, the contractor must make some showing that the project was performed in as efficient and frugal a manner as possible despite the actions of the owner. Testimony concerning the manner of performance and the effort to reduce the impact of the owner's action may satisfy this requirement. Additional evidence concerning the contractor's success on other similar projects also may be beneficial. *J.D. Hedin Constr. Co.*, 347 F.2d 235; *Seattle Western Indus., Inc.*, 750 P.2d 245.

When actual cost data is not available, the courts have allowed the use of estimates of costs provided that the proponent bears the burden of demonstrating the basis for and accuracy of the estimates. *Delco Electronics Corp. v. United States*, 17 Cl. Ct. 302, 321 (1989), aff'd, 909 F.2d 1495 (Fed. Cir. 1990).

The courts will not compensate a contractor for its own inefficiencies or improper performance simply because the owner may have impacted some other, possibly unrelated, aspect of the project. For example, in *McMillin Bros. Constructors, Inc.*, EBCA No. 328-10-84, 91-1 BCA ¶ 23,351 at 117,102 (1990), the board rejected a contractor's use of the total cost method in its cumulative impact claim because it held that to do so might have transformed the construction contract into a de facto cost reimbursement contract, thereby relieving the contractor of additional costs for which it was responsible.

In *Fanning, Phillips & Molnar*, VABCA Nos. 3856, 3964, 96-1 BCA ¶ 28,214 (1996), the board declined to accept the total cost method when the contractor presented weekly and daily reports of hours its employees expended on the project but failed to distinguish between hours spent on the original design work and any rework caused by the change in the scope of work. The board stated:

. . . we are being asked to accept on blind faith the proposition that the Appellant's work force was 100% efficient. . . It presumes too much.

* * *

. . . [the Appellant] made no attempt to credibly explain its costs or to account for any of its own inefficiencies. Without some serious attempt by the Appellant to explain these costs and to subject its employees who incurred such costs to reasonable examination at the Hearing, the Board declines to accept the total cost approach . . .

96-1 BCA at 140,835-36.

Consequently, the contractor should attempt to demonstrate that the additional cost of performance was indeed the result of the modification, delay or breach and not of its own inefficiency.

Some state courts have allowed recovery under the total cost method. In *State Highway Comm'n v. Brasel & Sims Constr. Co., Inc.*, 688 P.2d 871 (Wyo. 1984), the Wyoming State Supreme Court upheld a two million dollar differing site conditions award based on a pure total cost calculation of damages. See also *Prichard Bros., Inc. v. Grady Co.*, 436 N.W.2d 460 (Minn. Ct. App. 1989), where the Court of Appeals of Minnesota affirmed a construction manager's total cost award arising out of a negligence action against an architect/engineer.

Decisions issued by the federal courts suggest a judicial willingness to award on a simple total cost basis where the bid was authenticated and the cause of action pervaded the contractor's entire performance. *Chicago College of Osteopathic Medicine v. George A. Fuller Co.*, 776 F.2d 198 (7th Cir. 1985); *Paul N. Howard Co. v. Puerto Rico Aqueduct Sewer Auth.*, 744 F.2d 880 (1st Cir. 1984), cert. denied, 469 U.S. 1191 (1985).

New York courts seem to be particularly amenable to the total cost method. See, e.g., *Thalle Constr. Co. v. Whiting-Turner Contracting Co.*, 39 F.3d 412 (3d Cir. 1994), *In re Gll Industries, Inc.*, 464 B.R. 557, 571 (Bankr. E.D.N.Y. 2011). This is particularly important to international projects which often apply the law of New York state.

Likewise, juries and arbitration panels, regardless of the jurisdiction, demonstrate less reluctance to apply total cost recovery, *Tapelo Redevelopment Agency v. Gray Corp., Inc.*, 970 So.2d 495, 517 (Miss 2007) (jury). *Nebraska Pub. Power Dist. v. Austin Power, Inc.*, 773 F.2d 960 (8th Cir. 1985) (jury); *Scherbenske Excavating, Inc. v. North Dakota State Highway Dept.*, 365 N.W.2d 485 (N.D. 1985).

B. Modified Total Cost

The modified total cost approach represents a more acceptable method of calculating contractor damages. Under this approach, the original bid estimate and the actual cost of performance are adjusted by the contractor to eliminate any inaccuracies in the original bid and any actual costs which were not the responsibility of the owner. This refinement of the original estimate and the actual costs generally involves the segregation of the work activities which are impacted by the claim from those which are unaffected. As the board of contract appeals stated in *J&T Constr. Co., Inc.*, DOT CAB No. 73-4, 75-2 BCA ¶ 11,398 at 54,270 (1975), wherein the contractor calculated damages based on the difference between the estimated and actual costs of performing only those work activities impacted by a differing site condition:

Appellant's theory, in this case, however, is something much different than the pure "total cost" and "total time" theories which seek to measure the amount of an equitable adjustment on the basis of the difference between a contractor's total bid price and the actual costs of performing the entire contract. *Boyajian v. United States*, [14 CCF ¶ 83,467], Ct. Cl. 233 (1970). Appellant's cost analysis here (Schedule I) focuses its claim for increased costs for the differing site conditions exclusively upon the excavation and haul items . . .

In *Sherman R. Smoot Co. v. Department of Administrative Services*, 2000 WL 64310 (Ohio App. 2000), the court noted that a contractor's failure to review a soils report indicating unstable soil did not ban the cost of recovery of extra forms for footings where the drawings indicated that the subsurface conditions would permit the use of trench footings and the government warranted the adequacy of its design.

In addition to separating the impacted work activities from the unaffected activities, the contractor may refine the modified total cost calculation further by engaging an independent, expert estimator to re-estimate the cost of performing the impacted work activities. This re-estimate must be based on the original specifications without regard to the actual jobsite events. Ideally, the expert should not have access to the contractor's bid or estimates. The damages may then be calculated by subtracting this independently estimated cost of performing the impacted activities from the actual cost of performing those activities. Use of this independent estimate adds credibility to the claim by eliminating the possibility of a windfall to a contractor who submitted an unreasonably low original estimate. In any event, the failure to prove the reasonableness of the original or revised estimate will be the death knell to a "modified total cost approach." *Servidone Constr. Corp.*, ENG BCA No. 4736, 88-1 BCA ¶ 20,390 (1987).

The damage calculation may be refined still further by reducing the actual costs of performing the impacted work activities by any amounts attributable to the contractor's own inefficiency or to non-claimed modifications. The independently estimated cost for performing the activities may then be subtracted from the adjusted actual costs of those

activities to obtain a truer calculation of damages resulting from the owner's actions. This method of calculation eliminates many of the inaccuracies and "windfalls" which may be present in a pure total cost calculation. Use of expert testimony affirming the quality of the contractor's performance on the job should enhance the court's acceptance of the damages calculated in this manner.

The United States District Court in Pennsylvania accepted the use of the modified total cost approach where the contractor deducted from the total actual manhours those manhours spent for other claim items and such activities as drawing revisions and field authorizations. *E.C. Ernst, Inc. v. Koppers Co., Inc.*, 520 F. Supp. 830 (W.D. Pa. 1981), on remand from 626 F.2d 324 (3d Cir. Pa. 1980). The Court of Appeals, in remanding the case, stated:

Moreover, evidence of damages may consist of probabilities and inferences. We believe that a method that permits subtraction of contract cost from actual cost satisfies those standards. The objections normally made to the approach, such as that the bid may not be a reasonable estimate, can be adequately handled by making them a question of fact in each case.

626 F.2d 324 at 327-28.

In *J&T Constr. Co., Inc.*, 75-2 BCA at 54,270, the board applied the modified total cost method, stating:

In our view, this approach provides a reasonably accurate method for establishing the difference between what it actually cost to perform these

items and what they would have cost had appellant not encountered the changed conditions.

Likewise, in *Sovereign Constr. Co., Ltd.*, ASBCA No. 17792, 75-1 BCA ¶ 11,251 at 53,606 (1975), the board concluded:

In this appeal we are unaware of any better method by which the appellant could establish additional costs attributable to inefficiency than by establishing what the work reasonably should have cost and what the work did in fact cost. Of course, the actual costs are subject to reduction if they include elements for which the Government is not responsible. Such elements could include inadequate supervision, incompetent personnel, nonavailability of materials, and other similar factors. However, other than the appellant's three months delay attributable to blasting, rock bolting and similar problems, there has been no showing that elements of this type were present during the construction at West Point.

However, in another case, the board held that the contractor's attempt to use the modified total cost method in its computation of additional costs due to schedule acceleration had no basis in law or fact because (1) it did not satisfactorily establish its method of calculation, (2) it did not show that its estimate of the labor required to perform the work was realistic, and (3) it did not show that it was not responsible for added expense, even after the "modification" to its total cost claim. *McMillin Bros. Constructors, Inc.*, 91-1 BCA at 117,106.

The United States Court of Federal Claims has, of its own volition, considered a contractor's claim for equitable adjustment under the total cost method and awarded damages based on a modified total cost methodology of its own making. *Servidone Constr. Corp.*, 19 Cl. Ct. 346. In this case, the claimant had been awarded a contract for

the construction of an embankment, spillway, outlet works, and roads for an earthen dam project. The contractor's claim for equitable adjustment was based on problems it encountered due to differing site conditions, and the quantum of the claim was based on a total cost method of recovery. Employing the four-part test, the Claims Court found that each requirement for using the total cost method was satisfied except the contractor's "reasonableness of bid or estimate," finding that to be far too low. This problem notwithstanding, the court substituted the "reasonable" bid amount of another bidder which had responded to the IFB for that of the plaintiff's unreasonably low bid, and awarded the contractor an equitable adjustment based on this modified total cost method of the court's own creation. *Servidone Constr. Corp.*, 19 Cl. Ct. at 384-85. See also *Wolff & Munier, Inc. v. Whiting-Turner Contracting Co.*, 946 F.2d 1003, 1010 (2d Cir. 1991) (where the court held that the subcontractor claimant's total delay damages were the difference between the subcontract price to do the mechanical work and the subcontractor's actual total job costs, including overhead and profit.)

V. LOSS OF LABOR PRODUCTIVITY DAMAGES

The single largest element of many claims for which total cost or modified total cost damages are sought is loss of labor productivity (efficiency). These are accepted methods of proving these damages which if available, would prevent application of the total cost or modified total cost applicable. These are briefly discussed below.

While there is no set method for calculating loss of labor productivity, courts are suspicious of methods of proof which do not compare the contractor's normal labor

productivity to actual productivity resulting from the claim event. *Fermont Div., Dynamics Corp. of America*, ASBCA No. 15806, 75-1 BCA ¶ 11,139 (1975).

Consequently, the following analyses have evolved to provide such a comparison.

A. Comparison of Similar Work Activities in the Same Project (Measured Mile)

This analysis compares similar activities on the same project on an impacted and non-impacted basis. Apart from the use of actual cost records specifically recording lost time attributable to a disruption event, a project based measured mile analysis constitutes the most accepted calculation of lost productivity (also discussed later in Chapter VII.C.9). Swartzkopf, W. (1995), *Calculating Lost Labor Productivity in Construction Claims*, Wiley, New York. Relatedly, learning curve and/or experience curve theory demonstrates that production rates for construction crews will increase over time as the same task is repeated. Therefore, if the non-impacted work activities used for a project's baseline are doing the early stages of the work, consideration should be given to the effect the lack of "learning or experience" curve had on base-line assessments. The application of learning or experience curves to evaluate productivity rates has long been recognized by the courts as well as the federal government. See *Harrison Western/Franki Denys*, ENGBCA No. 5577, 90-3 BCA ¶ 22,991 (1990); *Sierracin/Sylmar*, ASBCA No. 27531, 85-1 BCA ¶ 17,875 (1985). To the extent that a measured mile analysis incorporates a non-impacted baseline from the beginning of the project, experience curves should be used to calculate the degree to which the production during the baseline period was understated. Conversely, if the non-impacted period used

in the measured mile analysis occurs late in the job, experience curves should be used to calculate the degree to which the production during the baseline was overstated.

In *Bell BCI Co. v. United States*, 81 Fed. Cl. 617 (2008), Bell BCI Company sought recovery of its damages attributable to over 200 modifications in the construction of a laboratory building at the National Institutes of Health. The major cause of the modifications was National Institutes of Health's decision to add an extra floor to the building during construction. The addition delayed the completion of the project and increased the contract price. Despite the multitude of changes and extra work orders, The National Institute of Health continued to deny Bell and its subcontractor's acceleration and inefficiency costs. In its claim before the court, Bell asserted, among others, a claim on behalf of one of its sheet metal subcontractors on the project, Stromberg Metal Works, Inc.

Stromberg suffered significant inefficiencies due to National Institute of Health's major revisions to the project. After the changes multiplied, Stromberg often had to demolish work previously completed and reinstall new duct work with different requirements. Further, Stromberg often performed work in tight working conditions and had to share space with other contractors. Stromberg's claim for additional costs relied upon the measured mile approach. It analyzed its labor inefficiency by comparing its production rate early in the project to its production rate after the National Institute of Health issued many of its changes. For the latter period, Stromberg's production rate was approximately half of its production rate in the former period. Using the difference in

rates, Stromberg determined that it expended 18,377 additional hours to perform the work. This figure of extra labor hours was then multiplied by the labor wage rate to calculate the total additional costs of National Institute of Health's change orders.

The court approved of Stromberg's measured mile analysis and awarded the total amount of its additional labor costs. The court stated, "Stromberg's 'measured mile' approach for measuring productivity is an accepted method to prove a cumulative impact claim."

A result similar to Bell BCI Co. occurred in *James Corp. v. N. Allegheny School Dist.*, 938 A.2d 474 (Pa. Commw. Ct. 2007), where the court accepted the contractor's calculation of using the measured mile approach. James Corporation's claims arose out of a contract with the North Allegheny School District for renovations to a school. James sought acceleration damages for completing the project on time despite several delays later found to be caused by the North Allegheny School District. To quantify its damages, James Corp. used measured mile analysis to prove the inefficiency costs incurred as a result of its acceleration effort. The trial court found that James was entitled to recovery and approved of its measured mile calculation of damages, thus entering judgment in James' favor.

The Allegheny School District appealed, contending, among other grounds, that the trial court erred in finding the measured mile approach an acceptable measure of damages. The School District challenged the measured mile analysis as too imprecise

under the theory that the calculation was an estimate based upon flawed assumptions. The appellate court rejected the School District's arguments, explaining that "when a contractor alleges a loss of productivity, the measured mile approach is the preferred method of computing damages." It found the analysis performed by James' expert to be a reasonable basis upon which damages could be calculated, and affirmed the trial court's decision.

The measured mile was also accepted in *Lee Masonry, Inc. v. City of Franklin*, M200802844COAR3CV, 2010 WL 1713137 (Tenn. Ct. App. Apr. 28, 2010), where the Court found the "impacted" versus "unimpacted" comparison appropriate. It was similarly accepted, with court-applied adjustments, in *Contract Mgmt., Inc. v. Babcock & Wilson Technical Services Y-12, LLC*, 3:10-CV-110, 2013 WL 74619 (E.D. Tenn. Jan. 4, 2013).

B. Comparison to Similar Contracts

In many situations, however, there may not be a "normal" productivity period for the work activity. For example, the defendant's actions may have impacted the contractor from the start of work, thereby precluding any "normal" or base comparison period within the contract. In such situations, a contractor has no alternative but to calculate the additional labor hours by estimating what the work productivity rate would have been and comparing it to the actual rate. However, it is not enough simply to estimate the expected productivity rate. This rate must be supported by evidence other than mere observation and experience. For example, a contractor may produce evidence

of productivity for similar work on other contracts. Obviously, the greater the similarity between work activities and contracts, the more persuasive this evidence will be. In *Robert McMullan & Sons, Inc.*, 76-2 BCA ¶ 12,072, the board was persuaded with an expert's bid estimate of hours required based on the actual experience of another painting contractor on the project. The testimony of the second contractor supported the reasonableness of the estimates.

If a contractor does not offer evidence of productivity on similar contracts, courts have made such a comparison on the basis of their own experience. In one such case, the Court of Federal Claims refused to accept an expert's efficiency loss estimates:

Notwithstanding the fact that Crawford's estimates regarding the other three periods are unrebutted, we cannot ignore the fact that the percentages testified to were merely estimates based upon his observation and experience. Furthermore, his estimates are much higher than those testified to in other cases in which the conditions were not materially different from those present here. Taking these things into consideration and in view of the fact that no comparative data, no standards, and no corroboration support his testimony, we are constrained to reduce his estimates based on the record as a whole and the court's knowledge and experience in such cases. . .

Luria Bros. & Co., 369 F.2d at 714. Although the Court of Federal Claims and its successor courts have, over the years, developed an expertise in construction contract disputes, the likelihood of this happening in state or federal district courts is remote. It is much more likely to be applied in an arbitration with a Tribunal of experienced construction arbitrators.

C. Project Productivity Studies

Evidence of productivity studies made during the performance of the contract by the contractor's staff or an outside firm can be helpful in showing the disparities in efficiency during various portions of the work and can be a persuasive supplement to expert testimony.

D. Industry Standards and Manuals

The introduction of industry standards and estimating rates will rarely be totally convincing evidence of the loss of productivity because such averages do not relate to the particular conditions found in a contract. For example, in *McGee Landscaping, Inc.*, AGBCA No. 91-72-1, 93-3 BCA ¶ 25,946 at 129,051 (1993), although the board recognized that the contractor suffered some lost productivity due to winter work, it did not accept the contractor's use of the Caterpillar Performance Handbook to determine equipment production rates under normal conditions. Rather, the board stated that, in order for performance handbooks to be appropriate in determining lost productivity, the contractor should have presented specific evidence on how the statistics and figures related to the project. The board agreed that, "without more, the use of 'factors extracted from textual material applicable to general situations are too vague and disconnected' from specific situations to permit exact determination of increased costs." 93-3 BCA at 129,051.

Furthermore, industry manuals can be attacked as self-serving publications designed to bolster contractor claims. Taken with other substantial and credible evidence, however, manual estimates may corroborate expert testimony concerning efficiency losses.

Of course, estimating guides can also be introduced to rebut a contractor's claim. In *The Arthur Painting Co.*, 76-1 BCA ¶ 11,894, the board rejected the "norm" relied upon by the contractor and adopted the rate indicated in the estimating guide published by the Painting & Decorating Contractors of America. Likewise, in *Pebble Bldg. Co.*, 288 S.E.2d 437, the Virginia Supreme Court accepted the NECA manual of labor units as a reasonable estimate of labor and used it as the base line from which it awarded total cost damages. In *Ace Constructors, Inc. v. United States*, 70 Fed. Cl. 253, 283 (Fed. Cl. 2006) aff'd, 499 F.3d 1357 (Fed. Cir. 2007), the Court accepted the "Business Roundtable Report on Reduced Productivity" as "both credible and relevant" in awarding loss of productivity damages.

E. Estimated Labor Costs

A careful and detailed explanation of a contractor's estimated labor costs may convince a court to award the difference between the estimate and the actual increased costs as compensation for loss of productivity. In *Paccon, Inc.*, 65-2 BCA ¶ 4996, the contractor's chief engineer offered detailed schedules of estimates, over 100 pages of work sheets and lengthy testimony concerning its computations. The board accepted its figures:

Appellant's method of computing the increased labor costs was explained in elaborate detail at the hearing, and we are of the opinion that the method used was sound and proper for the intended purpose. The estimates were prepared with care by a competent engineer having adequate knowledge of the facts and circumstances. They are uncontroverted by any other estimates, and the Government has not shown any error in the estimates, except the misplaced decimal point which has been corrected. The Government has not advanced any reason we deem valid for questioning the reasonable accuracy of appellant's computation of the increased labor costs caused by the suspensions of work.

Paccon, Inc., 65-2 BCA at 23,576. See also *Stephenson Assocs., Inc.*, GSBCA Nos. 6573, 6815, 86-3 BCA ¶ 19,071 (1986).

In *Batteast Constr. Co., Inc.*, 92-1 BCA ¶ 24,697, the board relied on an estimate of the contractor's former project superintendent. It found that the proper measure of the labor productivity loss caused by the government's modification to the contract was the change in the average daily output of the contractor's workers, and provided for an equitable adjustment corresponding to this increase in labor costs. *Batteast Constr. Co., Inc.*, 92-1 BCA at 123,215.

In *DuBaldo Elec., LLC v. Montagno Const., Inc.*, 119 Conn. App. 423, 446, 988 A.2d 351, 366 (2010), the Court awarded 20% loss of production damages based on the testimony of credible, non-expert witnesses.

F. Expert Analysis

Many determinations of reduced efficiency costs are based on the credible testimony of expert witnesses:

It is a rare case where loss of productivity can be proven by books and records; almost always it has to be proven by the opinions of expert witnesses. However, 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., 369 F.2d at 713; *Aetna Casualty & Sur. Co. v. Doleac Elec. Co., Inc.*, 471 So. 2d 325 (Miss. 1985). The Boards attach similar weight to expert analysis. *Paccon, Inc.*, 65-2 BCA ¶ 4996. See also *J.D. Hedin Constr. Co.*, 347 F.2d 235. See also *Aetna Casualty and Sur. Co. v. George Hyman Constr. Co.*, 1998 U.S. Dist. LEXIS 22627, at *262, (E.D.Pa. May 15, 1998) where the Court stated: “[i]t is a rare case where loss productivity can be proven by work and records; almost always it has to be proven by the opinion of expert witnesses”.