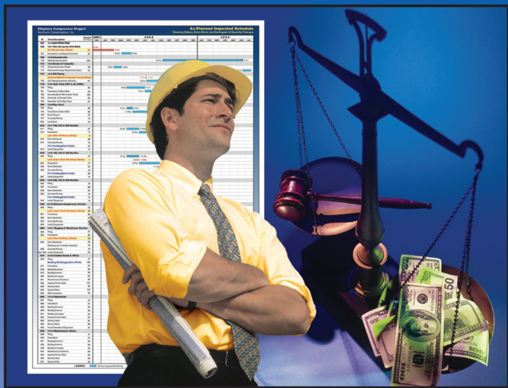

# Construction Claims for Variation in Quantity

**Richard J. Long, P.E., P.Eng.**



LONG INTERNATIONAL

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# Construction Claims for Variation in Quantity

## 1. INTRODUCTION

A component of a construction claim often relates to the cost, quantity, and quality of the materials that the contractor installed on a project. The contractor frequently purchases these materials and agrees to install the quantities of materials on a unit price basis, *i.e.*, a unit price that includes both the cost of the materials and the cost to install them. The parties may contemplate some minor variations in such quantities from the contract estimate, especially if the engineering documents are not issued "Approved for Construction (AFC)." Even when AFC drawings are issued prior to establishing the contract price, changes may occur which may cause deviations from the approved design which could significantly increase or decrease the required quantities to be installed and the contractor's costs.

Unit price contracts are often used to shorten the overall duration of a project because a detailed design from which final quantity takeoffs can be performed is not necessary to enable a contractor and owner to agree on a contract to perform the construction work. Thus, field construction work can start earlier than would otherwise be required in a traditional engineering, procurement, construction (EPC) contract or design-build contract, where a more precise measure of quantities is necessary to obtain a lump-sum or fixed-price bid from a contractor.

Under a unit price contract, a contractor typically buys material, adds a mark-up for overhead and profit, and agrees to perform the work for this unit price. Of prime importance to the contractor is whether its unit prices are sufficient to cover its overhead and other costs if the number of units significantly changes from the estimated quantities used to prepare its bid. If the owner's estimated quantities are higher than the quantities that are actually required, the contractor may have a claim for unrecovered overhead costs and profit.

An owner, often in an effort to realize cost savings as a result of value engineering, may change the design, reduce the quantities specification, and request a credit from the contractor. However, the contractor might not pass on the full savings it achieved from the owner's change, potentially causing a dispute with the owner who is expecting a larger credit.

Contractors also take risks with unit price contracts. The contractor may tactically apply its overhead and profit percentages in an unbalanced manner to items for which it expects large quantity increases as the design matures, thus receiving an additional layer of profit. As stated by one court:

> *Such a bid, it is explained, is one in which the contractor allocates a disproportionate share of indirect costs and anticipated profit to the unit prices bid for those items on which he anticipates an overrun; the object being to reap over generous profits should the anticipated overruns materialize.*[1]

[1] *Victory Construction Co. v. United States*, 510 F.2d 1387 (Ct. Cl. 1975).

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Such practices could backfire if the quantities of "over-priced" items do not materially increase or, even worse, decrease as a result of value engineering, thus reducing the contractor's recovery of overhead and profit.

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## 2. VARIATION IN QUANTITY CLAUSES

The purpose of *Variation in Quantity* or similar clauses is to equitably assign the risk of increases or decreases in estimated quantities that result from information or conditions not reasonably apparent to the parties when they enter into the contract. Thus, large quantity variations may require some adjustment to unit prices in contracts to prevent large windfalls or harmful losses.

A *Changes, Variation in Quantities, or Variation in Estimated Quantity* clause is used by the Government and similar clauses are used by owners on private projects to avoid disputes when the actual quantity varies from the estimated quantity because of imprecise estimates. For example, the AIA 201 General Conditions of the Contract for Construction (2007), under *Construction Change Directives*, states:

> *7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.*

U.S. Government Federal Acquisition Regulations (FAR) contain the following provisions:

> *11.701 Supply contracts.*
>
> *(a) A fixed-price supply contract may authorize Government acceptance of a variation in the quantity of items called for if the variation is caused by conditions of loading, shipping, or packing, or by allowances in manufacturing processes. Any permissible variation shall be stated as a percentage and it may be an increase, a decrease, or a combination of both; however, contracts for subsistence items may use other applicable terms of variation in quantity.*
>
> *(b) There should be no standard or usual variation percentage. The overrun or underrun permitted in each contract should be based upon the normal commercial practices of a particular industry for a particular item, and the permitted percentage should be no larger than is necessary to afford a contractor reasonable protection. The permissible variation shall not exceed plus or minus 10 percent unless a different limitation is established in agency regulations. Consideration shall be given to the quantity to which the percentage variation applies. For example, when delivery will be made to multiple destinations and it is desired that the quantity*

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*variation apply to the item quantity for each destination, this requirement must be stated in the contract.*

*(c) Contractors are responsible for delivery of the specified quantity of items in a fixed-price contract, within allowable variations, if any. If a contractor delivers a quantity of items in excess of the contract requirements plus any allowable variation in quantity, particularly small dollar value overshipments, it results in unnecessary administrative costs to the Government in determining disposition of the excess quantity. Accordingly, the contract may include the clause at 52.211-17, Delivery of Excess Quantities, to provide that—*

*(1) Excess quantities of items totaling up to $250 in value may be retained without compensating the contractor; and*
*(2) Excess quantities of items totaling over $250 in value may, at the Government's option, be either returned at the contractor's expense or retained and paid for at the contract unit price.*

*11.702 Construction contracts.*

*Construction contracts may authorize a variation in estimated quantities of unit-priced items. When the variation between the estimated quantity and the actual quantity of a unit-priced item is more than plus or minus 15 percent, an equitable adjustment in the contract price shall be made upon the demand of either the Government or the contractor. The contractor may request an extension of time if the quantity variation is such as to cause an increase in the time necessary for completion. The contracting officer must receive the request in writing within 10 days from the beginning of the period of delay. However, the contracting officer may extend this time limit before the date of final settlement of the contract. The contracting officer shall ascertain the facts and make any adjustment for extending the completion date that the findings justify.*

Also, the *Variation in Estimated Quantity (VEQ)* clause, FAR 52.211-18, provides that:

*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 the 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.*

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An example of a Unit Rate Contract clause which identifies the contractor's entitlement to additional time and cost relative to changes in quantities follows:

> *Within 60 days of Contract Award, Contractor shall make an independent estimate of the quantities it anticipates will be required to complete the Work and shall develop and provide to the Owner an initial material takeoff estimate listing all such quantities. If the quantities in the Contractor's initial material takeoff estimate are greater than the estimated quantities provided by the Owner in the Unit Rate Schedule (such increase to be determined at the craft level and not at the individual commodity or single line item level, as provided in paragraph 5.3.6 below) by 25% or more and such increase will cause critical path delay to the Scheduled Mechanical Completion Date, Contractor shall so notify the Owner before the expiration of such 60 day period and, upon demonstrating to the Owner's reasonable satisfaction the legitimacy of the quantity increase and the impact on the critical path schedule, the parties will negotiate an appropriate adjustment to the Scheduled Mechanical Completion Date.*
>
> *Failure of the Contractor to provide notice to the Owner of the quantity increase and the anticipated impact on the critical path schedule within the period stated herein shall constitute a waiver of Contractor's right to a time extension due to quantity increases, unless such quantity growth is caused by a subsequent Owner-directed change.*
>
> *At the time engineering is sufficiently complete to enable Contractor to make a reasonably accurate determination of the quantities it anticipates will be required to complete the Work, but in no event later than issuance of Approved For Construction Drawings, Contractor shall make such determination and shall develop and provide to the Owner a definitive material takeoff listing all such quantities. If the Contractor's definitive material takeoff quantities are greater or lesser than the estimated quantity provided by the Owner in the Unit Rate Schedule (such increase or decrease to be determined at the craft level and not at the individual commodity or single line item level, as provided in paragraph 5.3.6 below) by 25 % or more, the unit prices of the affected commodities shall be subject to increase or decrease through negotiation on an equitable basis, taking into account such factors as the bid unit rate, distribution of rates and bid balance, and the scope of the work as affected by the changed quantities. If Contractor intends to seek renegotiation of unit prices pursuant to this clause, Contractor must notify Owner of the quantity changes and the anticipated impact on Contractor's cost of performance before the issuance of Approved For Construction Drawings. Failure to provide such notice within the period stated herein shall constitute a waiver of Contractor's right to an adjustment in the unit*

*prices. If Owner intends to seek renegotiation of unit prices pursuant to this clause, it must do so prior to Final Payment.*

*The determination of whether there has been a 25% variation in estimated quantities shall be made at the craft level (i.e., civil, structural, mechanical, piping, electrical, instrumentation, painting, insulation) as identified on the Unit Rate Schedule, and not at the individual commodity or single line item level, and shall be based on a comparison of:*

*(a) the sum of the monetary value of the estimated quantities (as provided by the Owner in the Unit Rate Schedule) of all commodities or single line items within each craft times the unit rates bid by the Contractor for each commodity within such craft, with*

*(b) the sum of the monetary value of the Contractor's definitive material takeoff quantities within such craft (in the case of a request for unit price adjustment per paragraph 5.3.5 above) or the Contractor's initial material takeoff estimate quantities within such craft (in the case of a request for schedule adjustment per paragraph 5.3.4 above) times the unit rates bid by the Contractor for each commodity or single line item within such craft.*

The FIDIC General Conditions contains a *Variations Exceeding 15 percent clause* 52.3. This provision potentially provides a contract adjustment (increase or decrease) if the cost of variations exceeds 15 percent of the original contract price.

*If, on the issue of the Taking-Over Certificate for the whole of the Works, it is found that as a result of: (a) all varied work valued under Sub-Clauses 52.1 and 52.2, and (b) all adjustments upon measurement of the estimated quantities set out in the Bill of Quantities, excluding Provisional Sums, dayworks and adjustments of price made under Clause 70, but not from any other cause, there have been additions to or deductions from the Contract Price which taken together are in excess of 15 per cent of the "Effective Contract Price" (which for the purposes of this Sub-Clause shall mean the Contract Price, excluding Provisional Sums and allowance for dayworks, if any) then and in such event (subject to any action already taken under any other Sub-Clause of this Clause), after due consultation by the Engineer with the Employer and the Contractor, there shall be added to or deducted from the Contract Price such further sum as may be agreed between the Contractor and the Engineer or, failing agreement, determined by the Engineer having regard to the Contractor's Site and general overhead costs of the Contract. The Engineer shall notify the Contractor of any determination made under this Sub-Clause, with a copy to the Employer. Such sum shall be based*

> *only on the amount by which such additions or deductions shall be in excess of 15 per cent of the Effective Contract Price.*[2]

Thus, Government and many private contracts include a provision that, after a given percentage of variation, for example 15 or 25 percent, there can be an adjustment to the unit price. Absent such a clause, a dispute may occur regarding the limitation on variations when the actual quantities significantly differ from the estimated quantities. Such disputes exist both with respect to variations simply in quantities of work that are paid pursuant to a schedule of unit prices and with respect to variations that are additional works. These clauses are generally enforceable and are included in contracts to avoid disputes. However, even with such clause, disputes have incurred as to the interpretation of the clause.

On the other hand, many contracts are silent with respect to a limitation in quantities before an adjustment is required. In such contracts, an owner will typically argue, when the variation relates to the quantities of work as they were shown in the tendering documents, that because the quantities were represented to be only approximate, there is no entitlement for a contractor to claim if the final quantities vary from that approximation.

From the contractor's viewpoint, if the bill of quantities were not "approximate," then, being unable to properly estimate the work as was actually required, he may well have suffered damage. The contractor will, therefore, seek compensation, his entitlement based on the owner's misrepresentation as to the quantities and contending they were not "approximate."

An analysis of the quantity of materials can also identify other reasons for the contractor's cost overruns, such as materials that were never delivered, misplaced, or appear to be excessive, or unexplained quantities. Delivery tickets and shipping records provide the primary means for checking questionable material quantities. The form of these records varies by trade and can be either very formal or very informal. After the installed quantity data are summarized, the actual quantities used can be compared with take-offs from the as-built construction drawings to ascertain the differences.

The *Variation in Estimated Quantity* or similar clause is not intended to 'control' overruns. The technical specifications, in combination with the drawings, generally describe what work is payable. The construction drawings should indicate a "pay line" for rock or earth to be excavated so that the contractor cannot over-excavate and expect payment for additional quantities. If the contractor is performing work within the pay lines established in the specifications and/or drawings, the owner will have to pay for the extra excavated quantities.

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2 FIDIC Conditions of Contract for Works of Civil Engineering Construction, Part I General Conditions, 1992.

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## 3. LEGAL UNDERPINNINGS

In this section, the following cases are discussed as examples of decisions regarding the interpretation of "*Variation in Quantity*" or similar clauses:

- *Victory Construction Co. v. United States*, regarding the use of agreed unit prices vs. actual costs when quantities exceeded the actual limit specified in the contract;
- *Bean Dredging Corp;* in which the *Victory* findings were overturned;
- *Burnett Construction Co. v. United States;* which found that equity should be the guiding principle when interpreting the "*VEQ*" clause;
- *Foley Co. v. United States;* which reaffirmed *Victory*, holding that without a showing that there are cost differentials between the estimated quantity and the overrun or underrun quantities due solely to the volume deviation, no adjustment to the contract price may be made;
- *Womack v. United States, Clark Bros. Contractors v. State,* and other cases regarding the contractor's reliance on an erroneous owner estimate of quantities; and
- *Brinks/Hermes Joint Venture v. State Dept.*, where the court found that quantity variation clauses also apply to hours worked.

### *3.1 VICTORY CONSTRUCTION CO. V. UNITED STATES*

A 1975 Court of Claims[3] held that the party seeking an adjustment under the *"VEQ"* clause must show that there are cost differentials between the estimated quantity and the overrun or underrun quantities, and that the adjustment *"will be confined in amount to such cost differentials as are directly attributable to a volume deviation greater than 15 percent from stated contract quantities."*[4] *Victory* held that, absent *"exceptional circumstances,"* agreed contract unit prices should not be displaced by a complete repricing based on actual costs plus a reasonable profit:

> *…it is simply not reasonably possible to conclude, as did the Board, that the implementary quantity variance clause of the subject contract "… contemplate[s] a complete repricing of those contract items which vary from the estimated quantities by more than 15%." Where, as here, the contract language (construed in harmony with the seminal ASPR) undertakes to specify the mode of adjustment,*

3 *Victory Construction Co. v. United States*, 510 F.2d 1379 (Ct. Cl. 1975).
4 *Id*. at 1386.

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> *its command must be followed. In this case, however, the Court found that the Government had failed to prove that there was any material cost differential (included contingencies) between the contract unit price and the actual unit cost for either the adjustable or nonadjustable units.*[5]

Thus, the court awarded the contractor its claimed costs on behalf of its subcontractor:

> *To secure a reduction in contract unit price for those quantities in excess of 115 percent of estimate, the Government was required in this instance to demonstrate by a preponderance of the evidence that the reduction sought represented a "decrease in costs due solely to the variation above 115% ... of the estimated quantity". To say nothing of a preponderance, the present record contains no evidence whatever indicating the realization of cost economies attributable to excess volume. Plaintiff is therefore entitled to recover on behalf of its Subcontractor…*

### *3.2 BEAN DREDGING CORP*

The 1989 Eng BCA *"Bean Dredging"* decision[6] briefly overturned the *Victory Principle,* where the *Victory* Board found that that overruns beyond 115 percent of the estimated quantity should be re-priced, based on actual costs of the overrun quantity. The *Victory* decision represented that the work was performed under a "cost plus percentage of cost" contract. The *Bean Dredging* case involved a contract for maintenance dredging on the Mississippi River Gulf Outlet channel. The contract contained an estimated quantity of material required to be dredged. During performance, the contractor removed substantial additional quantities to reach the prescribed channel depth and filed a claim for an equitable adjustment for the cost of dredging the additional materials. The primary issue before the Board involved interpretation of Special Clause -21 entitled *"Variations in Estimated Quantities Dredging,"* which stated:

> *Where the quantity of a pay item in this contract is an estimated quantity and where the actual quantity of material within the required dredging prism, including the associated side slopes, varies more than fifteen percent (15%) above or below the stated estimated quantity within the required dredging prism, an equitable adjustment in the contract unit price will be made upon demand of either party. The equitable adjustment will be based upon any increase or decrease in costs due solely to the variations above one-hundred fifteen percent (115%) or below eighty-five (85%) of the estimated quantity within the required dredging prism. No consideration for an adjustment in contract unit price will be*

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5 *Id.*
6 See *Bean Dredging Corp*., ENG BCA 5507, 89-3 BCA ¶ 22,034.

> *given for any variation in quantities of material excavated below the required prism and outside the associated slope lines.*

The question is whether the phrase *"…increase or decrease in costs due solely to the variations"* means a difference in actual costs of over-run versus the contract unit price, as contended by the contractor, or a difference in actual costs of overrun versus actual cost of original quantity as contended by the Government. In the alternative, the contractor contended that it was entitled to an equitable adjustment under the *"Differing Site Conditions"* clause GP-44 when the cost of dredging the overrun material greatly exceeds the contract unit price. The Contracting Officer's Final Decision denied the contractor's certified claim on the grounds that it had not demonstrated a cost difference or increase between the actual unit cost of dredging the overrun quantities (above 115 percent of the estimated quantities) and the actual unit cost of dredging 115 percent of the required prism quantity.

The *Bean Dredging* Board concluded that the *"difference between costs allocable to the dredging of the adjustable units and the contract unit price is the proper measure of the equitable adjustment under the contract's Variations clause. In view of this result, it is unnecessary to address Appellant's alternative argument that it is entitled to relief for an alleged differing site condition."*

### *3.3 BURNETT CONSTRUCTION CO. V. UNITED STATES*

A 1992 Claims Court following *Bean Dredging* held that a contractor was entitled to an upward equitable adjustment for a quantity overrun although the overrun did not increase unit costs.[7] The overriding principle, in deciding just how the respective clauses should apply in a given situation, is that the contract should be construed equitably. The *Burnett* court said:

> *In situations in which the variation clause is activated, however, normal principles of pricing equitable adjustments such as are utilized under other standard government contract clauses, should apply.*[8]

This means simply that an equitable adjustment under the *"VEQ"* clause should be decided in the same manner as an equitable adjustment under a standard clause such as the *"Differing Site Conditions"* clause. Thus, the availability of an equitable adjustment should not depend upon the choice of contract clauses.

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7 *Burnett Construction Co. v. United States*, 26 Cl.Ct. 296 (1992).
8 *Id.* at 308.

### *3.4 FOLEY CO. V. UNITED STATES*

A 1993 court held that the *Variation in Estimated Quantity* clause requires that any contract price adjustment must be based only upon changes in costs that were caused solely by the change in quantity:

> *Contractor sought recovery of full price under government contract for removal and disposal of sludge in hazardous waste lagoons, and government counterclaimed, seeking equitable adjustment under Variation in Estimated Quantity (VEQ) clause. The Claims Court, James T. Turner, J., 26 Cl.Ct. 936, entered summary judgment for contractor. Government appealed. The Court of Appeals for the Federal Circuit, Clevenger, Circuit Judge, held that government was not entitled to equitable adjustment, in absence of proof that contractor experienced cost savings due solely to sludge removed in excess of quantity estimated in contract.*[9]

*Foley* explained that *Victory* rejected repricing under the *"VEQ"* clause based only on the fact of an overrun or an underrun, and noted that *Bean Dredging* had not correctly applied the clear language of the *"VEQ"* clause. Furthermore, the *Foley* court expressly noted that its decision in *Burnett* was inconsistent with *Victory*, and therefore should not be followed. Therefore, the *Foley* court reaffirmed *Victory*, holding that without a showing that there are cost differentials between the estimated quantity and the overrun or underrun quantities due solely to the volume deviation, no adjustment to the contract price may be made.

Equity means keeping both parties whole. It does not require payment of an excessive profit nor that the contractor incur an unforeseen loss. There should be no penalty, nor windfall, to the contractor or to the agency. Thus, the concurring opinion in *Foley* says:

> *The parties did not bargain for, nor does an equitable adjustment permit, a windfall such as can occur under Victory or the majority's independent interpretation of the clause.*[10]

*Foley* does not require that all equitable adjustments for variations in quantity occur under the *"VEQ"* clause. The *"Differing Site Conditions"* clause (and, in certain situations, the *"Changes"* clause) can also apply and, in cases of large unforeseen overruns or underruns, may govern. All of the provisions of every contract must be construed in an equitable manner. (See Section 4 below.)

Thus, absent proof of an increase or decrease in unit costs due solely to the change in quantity, the owner and contractor must adhere to the contract unit prices unless they can provide proof

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9 *Foley Co. v. United States*, 11 F.3d 1032 (Fed. Cir. 1993).

10 *Id.* at 1036.

that the increase or decrease in unit price was solely due to the quantity variation. Absent such proof, the contractor could sustain significant losses if its unit prices did not cover its costs, or the contractor could obtain a large profit if it "loaded" the unit prices in its favor. The owner may be able to reduce such windfalls to the contractor by issuing a deductive change order or a partial termination of the contract to reduce the quantity. However, the contractor may not be able to limit its loss unless the variation can be covered under the *Changes* or *Differing Site Conditions* clauses of the contract.

### *3.5 QUANTITY VARIATION CLAUSES MAY NOT APPLY IN CASES WHERE AN INCORRECT BID WAS CAUSED BY THE GOVERNMENT OR OWNER*

Quantity variation clauses may not be applicable when the cause of the quantity variation is an incorrect bid estimate resulting from the active misrepresentation, deliberate wrong, gross or inexcusable error, or the negligence of the Government or owner.[11]

An estimate of quantities of material typically is critical to a contractor' bid preparation. Moreover, a contractor has a right to rely on the government's or owner's quantity estimate in preparing its bid. As a 1979 Board noted:

> *The fact that after the mistake was called to the government's attention it was decided not to issue an addendum or to cancel the IFB… does not persuade us that the estimated quantities were established with the exercise of due care.*[12]

In *Clark Brothers Contractors*,[13] the highway contractor relied upon the quantity estimates for borrow that were provided by the State. The actual quantities were 18 percent less than the State's estimate. The contractor claimed it was entitled to additional compensation for recovery of its fixed costs and overhead because of the actual quantities were lower than were estimated. Pertinent contract provisions allowed deviations of up to 25 percent in estimated quantities, that payment would only be for units of work performed, and that the borrow was to be provided by the contractor. The district court denied the contractor's claim based on such exculpatory contract language. However, the Montana Supreme Court ruled that the contractor had justifiably relied on the State's quantities to its peril. Thus, the Montana Supreme Court determined the exculpatory language in the contract may not bar the claims asserted by the contractor and remanded the case for a new trial.

Similarly, the contractor may not be able to recover under the *Variation in Quantity* clause due to its bid error.

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11 See, *e.g.*, *Maya Transit Company*, ASBCA No. 20186, 75-2 BCA 11,552 (1975); *Womack v. United States*, 389 F.2d 793 (Ct. Cl. 1968); *Chemical Technology. Inc. v. United States*, 227 Ct.Cl. 120, 645 F.2d 934 (1981); *John Murphy Construction Co*., AGBCA 418, 79-1 BCA 13,836(1979).

12 *John Murphy Construction Co.*, AGBCA 418, 79-1 BCA 13,836 (1979).

13 See *Clark Bros. Contractors v. State*, 710 P.2d 41 (Mont. 1985).

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## *3.6 QUANTITIES MAY ALSO APPLY TO HOURS*

A contract for providing guard services included a *"Variation in Quantity"* clause that entitled the contractor to an adjustment if services varied by more than 25 percent of estimated hours. During the base year, the services were only three percent of the estimated hours where there was a 9 percent markup for overhead and other indirect cost. The contractor submitted a request for additional compensation to recover its increase in costs resulting from the large shortfall in hours worked. The Government rejected the claim, contending that (1) there was no guarantee of any hours in the contract, and (2) the contractor would receive a windfall for work it did not have to perform. The Board agreed that the contract did not guarantee any hours but sided with the contractor for additional compensation explaining that when the Government failed to offer the minimum amount of hours expected, the fixed indirect costs originally allocated to the hours the Government failed to order were incurred nonetheless but not compensated for. It stated the *"Variation in Quantity"* clause provided for an adjustment in the hourly rate in situations where the stated range of estimated hours was exceeded or not met so as to cause the contractor to reap a windfall or incur a loss.[14]

[14] See *Brinks/Hermes Joint Venture V State Dept.*, CBCA, No. 1188.

## 4. DIFFERING SITE CONDITIONS CLAUSE AS A REMEDY

A *Variation in Estimated Quantity* clause may not be enforced where the increase or decrease in quantity is covered under either the *"Differing Site Conditions"* clause, and the amount of the variation is significant.

For example, a 1998 case Armed Services Board of Contract Appeals case dealt with the question of whether the *"Variation in Estimated Quantity"* clause or the *"Differing Site Conditions"* clause applied when the final quantity varied substantially from the estimated quantity set forth in the contract.[15]

Met-Pro Corporation bid and was awarded a Corps of Engineers contract to remove a fuel tank farm, excavate and dispose petroleum contaminated soil, and excavate and remove hazardous, contaminated soil from the former Greenville Air Force Base in Mississippi. The Government solicitation initially estimated total contaminated soil removal at 1,500 cubic yards, but this amount was eventually reduced to 400 cubic yards twelve days prior to bid opening. The solicitation contained a geotechnical soils report which indicated there were no contaminated soils requiring removal. The contractor's bid contained a $40 per cubic yard unit price for contaminated soil excavation and disposal.

Despite the Corps estimate of 400 cubic yards of contaminated soil, the contractor was actually required to remove 3,832 cubic yards of contaminated soil. The contractor's actual cost for the work was $101 per cubic yard, which was much higher than its bid price. The contractor submitted a claim under the *"Differing Site Conditions"* clause for the additional cost associated with the excavation, disposal, and backfill necessary for the actual quantity of contaminated soil. The Corps rejected the claim, asserting that the contractor's bid unit price should govern its compensation.

The *"VEQ"* clause stated:

> *If the quantity of a unit-priced item 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.*

Thus, the *"VEQ"* clause allows an adjustment of unit prices for quantities that vary from the estimate by more than 15 percent, but only to the extent that the quantity variation caused an increase in the actual performance cost per unit. However, the *"Differing Site Conditions"* clause allows for a price adjustment based upon the actual contractor's cost of performance due to the differing site condition.

[15] See *Met-Pro Corp.*, ASBCA No. 49694, 98-2 BCA p. 29,766.

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The Board determined that the contractor's actual cost of excavating the contaminated soil greatly differed from the $40 per cubic yard bid price, and that the *"unforeseen need to purchase and transport clean backfill from offsite borrow areas"* was the major reason for the contractor's increased costs. Thus, the Board determined that the contractor's claim would be premised on the *"Differing Site Conditions"* clause, but the contractor still had to prove that a differing site condition existed, which it did. The Board found the following:

- The contractor had reasonably relied upon the Government's soil testing report and *"expected a very small amount of petroleum contaminated soils, and it did not expect bidders to make independent geotechnical studies at the site*;*"*

- *"The 3,832.5 CY of petroleum contaminated soil Met-Pro encountered and removed at the contract site differed materially from the 400 CY represented in contract*;*"* and

- *"Neither party knew of, or reasonably could have foreseen, a substantial quantity of subsurface petroleum contaminated soil requiring removal under applicable state regulations."*

Thus, the Board concluded that the contractor's additional cost was a direct result of the excessive quantities of contaminated soil encountered.

This principle was also at work in a 1954 case in which the court addresses a quantity variation clause, as follows:

> *The additions and deductions' clause was "clearly applicable only to those inadvertent errors or differences between careful and precise specifications and performance that will inevitably creep in where contracts involve vast amounts of labor and materials. It does not apply to a change of a substantial nature." Blair v. United States, 8th Cir., 1945, 147 F.2d 840, 847, modified 150 F.2d 676. Plaintiff is here attempting to deduct a sum determined by the unit prices of the "additions and deductions" clause from the lump sum price when 52/60ths of the entire work originally planned for the "By-pass and Effluent Channel" has been canceled. But this type of clause "…is limited in its meaning and effect, by reason, and by the object of the contract, to such modifications of the contemplated work as do not radically change its nature and its cost. …" Salt Lake City v. Smith, 8 Cir., 1900, 104 F. 457, 465. It is designed to "cover a variation, not a transformation." Montrose Contracting Co. v. County of Westchester, 2 Cir., 1936, 80 F.2d 841, 843, certiorari denied, 1936, 298 U.S. 662, 56 S.Ct. 746, 80 L.Ed. 1387.*[16]

[16] *F.H. McGraw & Co. v. New England Foundation Co*., 210 F.2d 62, 66 (1st. Cir. 1954).

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The *Foley* decision provides no guidance here because the Foley court was solely addressing the *"VEQ"* clause, rather than weighing the applicability of that clause against the *"Differing Site Conditions"* or *"Changes"* clauses. However, the court expressly noted that its decision was carefully limited:

> *We conclude that this court lacks jurisdiction to address the Government's defenses and counterclaims based on the Changes clause and the Differing Site Conditions clause because they were not the subject of a decision by the contracting officer.*[17]

Thus, the *Foley* court did not determine whether the *"Differing Site Conditions"* clause or the *"Changes"* clause prevailed over the *"VEQ"* clause as the appropriate pricing mechanism, or how the contract as a whole should be construed.

In *United Contractors v. United States*, the court held:

> *…clauses of this type do not control when the cost of doing the extra work greatly differs from the stated unit-price because of factors not foreseen by either party. In that event, the Changed Conditions clause comes into play and overrides the Special Condition.*[18]

Other courts have adopted this rule. For example, a 1975 North Carolina court stated the following:

> *There is no obligation to proceed under sec. 4.3B [quantities clause]. That section decides how a contractor may be compensated; it does not dictate how he must be compensated. Although sec. 4.3B is designed to smooth over problems arising when overruns or underruns occur, it does not, by virtue of that fact, indicate that recovery is not available under sec. 4.3A [differing site condition] when the cost of doing unforeseen added work greatly differs from the stated unit price.*[19]

Similarly, in, another Corps of Engineers Board in 1975 said:

> *A material variation, not reasonably foreseeable, between the quantity of work set forth in the contract and that actually done is a differing site condition within the purview of the Differing Site Conditions clause. Schutt Construction Co. v. United States, 173 Ct. Cl. 836 (1965). Neither the Variation in Estimated Quantities*

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17 *Foley Co. v. United States*, 11F.3d 1032, (Fed. Cir. 1993) at 939.
18 *United Contractors v. United States*, 368 F.2d 585, 601 (Ct.Cl. 1966).
19 *Ray D. Lowder, Inc. v. N.C. State Hwy Comm'n*, 217 S.E.2d 622, 642 (N.C. App. 1975).

> *clause nor the Measurements and Payment clause has any effect on this legal principle when, as in the present case, the cost of doing the work differs significantly from the unit price in the contract.*[20]

The Board ruled that the *"Differing Site Conditions"* clause, rather than the *"VEQ"* clause, applied due to the fact that the overall nature and condition of the soils differed materially from the representations in the contract. The Board relied on a prior decision in *United Contractors v. United States*.

The Board's decision identifies two conditions where the *"Differing Site Conditions"* clause will override the *"VEQ"* clause: 1) where the actual quantities clearly exceed the contemplation of the parties; and 2) when the "cost of doing the extra work greatly differs from the stated unit-price because of factors not foreseen by either party." Therefore, if either the amount of additional quantity or the cost greatly exceeds that which was contemplated at the time of contracting, the *"Differing Site Conditions"* clause may provide relief.

The *"Differing Site Conditions"* clause has also been held to prevail over the use of the *"VEQ"* clause when:

- When the owner's or Government's estimate is found to be prepared negligently;[21] and

- If the owner or Government fails to disclose "superior knowledge" which results in a quantity overrun.[22]

As previously discussed, the *"VEQ"* clause does not always operate to a contractor's detriment. In many cases, the Government has attempted to avoid its application to ensure that the contractor did not profit from "economies of scale" or the perceived savings associated with excess volume.[23] Unlike the *Met-Pro* case, the Government may assert that the unit price exceeds the contractor's actual cost of the extra work required by the quantity overrun.

Thus, contractors must maintain records of all costs associated with the changed or extra work. An upward cost adjustment under either clause is not assured. The advantage of recovery under the *"Differing Site Conditions"* clause provides an advantage to the contractor in that it may not be limited to the unit price but rather can recover its actual costs plus a reasonable overhead and profit, which could be higher.

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20 *Continental Drilling Co*., ENG BCA No. 3455, 75-2 BCA ¶ 11,541.

21 See *Womack v. United States*, 389 F.2d 793 (Ct. Cl. 1968).

22 See *Chemical Technology, Inc. v. United States*, 645 F.2d 934, 948 Ct. Cl. 1981).

23 See, *e.g.*, *Foley Co. v. United States*, 11 F.3d 1032 (Fed. Cir. 1993) aff'g, 26 Cl.Ct. 936 (1992) and *Clement-Mtarri Co.*, ASBCA No. 38170, 92-3 BCA p. 25,192.

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## 5. CHANGES CLAUSE AS A REMEDY

The *Changes* clause could also apply where additional work is ordered. It would appear that some reasonable amount of additional work could be ordered under the *Changes* clause in such a case, but major additions or deletions of work would be outside the scope of the contract. For example, in one case, the Court of Claims held that an order almost doubling the amount of materials in an embankment was outside the scope of the contract.[24] Here, it is a question of degree.

In *Morrison-Knudsen Co. v. United States*,[25] the court held that *"a standard article, incorporated in the agreement, cannot lightly be read out of it, or deprived of most of its normal substance"* by using special clauses addressing variation in quantities. The court considered whether a significant overrun was to be adjusted under the *"VEQ"* clause, or as a contract change. Traditionally courts have held that standard mandatory clauses, such as the *"Changes"* or *"Differing Site Conditions"* clauses, rather than quantity variation clauses, control in two situations: (1) where there is a large variation in quantity; or (2) where there is a large difference in the cost of performing the overrun or underrun. Courts generally limit the application of quantity variation clauses to "reasonable" quantity variations, pricing large or abnormal variations resulting from differing subsurface conditions under the standard *"Differing Site Conditions"* or *"Changes"* clauses. In this case, the court found that the *"Changes"* clause applied.

Increases or decreases in the quantity of *major* items under the contract are generally considered to be *outside* of the scope of the contract. For example, in one case, the Court of Claims held that the deletion of one building in a 17-building complex was not permissible under the *Changes* clause.[26]

This rule is not necessarily followed when *minor* items under the contract are involved. In that case, a change in quantity may be of such small significance in relation to the entire job that it would be held to be within the scope of the contract.[27] For example, changes in the number of spare parts, technical manuals, or other subsidiary items have frequently been made under the *Changes* clause. However, the significant determining fact is the amount of change.

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[24] *Saddler v. United States*, 287 F.2d 411, 413, 414-415 (Ct. Cl. 1961).
[25] *Morrison-Knudsen Co. v. United States*, 397 F.2d 826, 842 (Ct. Cl. 1968).
[26] *General Contracting & Const. Co. v. United States*, 84 Ct. Cl. 570 (1937).
[27] *Symbolic Displays, Inc.*, Comp. Gen. Dec. B-182847, 75-1 CPD ¶ 278.

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## 6. NOTICE REQUIREMENTS

The *"Variation in Quantity"* or similar clause may not say anything about the contractor having to notify the Government or owner in advance if actual quantities are going to exceed estimated quantities. Contracts usually require the contractor to report actual quantities when requesting payment.

The only notice requirement typically imposed by typical variation in quantity clauses is related to requests for a time extension. Typically, the contractor must request a time extension in writing and within a contractually stated number of days after the beginning of the delay or within such longer time as granted by the contracting officer or owner's representative. The contractor does not have to notify the Government or owner in advance of the beginning of the delay.

This is not to say that a competent, responsible contractor should not notify the Government or owner when it becomes aware of a problem. Thus, typical variation in quantity clauses do not impose such an obligation as a condition precedent to entitlement and do not relieve the Government or owner of any obligation to compensate a contractor in the absence of advance notification.

Owners should have on-site construction managers or inspectors and require them to prepare daily progress or inspection reports. Those managers or inspectors should make observations and report trends that indicate that there will be significant variations in quantities. If an owner does not have enough staff of its own for this purpose, then it should hire a construction management contractor.

Owners can also write clauses for their contracts that require contractors to notify its representative if they anticipate significant variations in quantities. But such clauses will work only to the extent that a contractor knows or has reason to know of such variations in advance. Also, see FAR 52.243-5, Changes and Changed Conditions, which requires the contractor to notify the Government of *"subsurface or latent physical conditions differing materially from those indicated in this contract or unknown unusual physical conditions at the site... ."*

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## 7. GUIDELINES

In summary, the primary guidelines regarding variation in quantity claims include the following:

- *Variation in Quantity* or similar clauses equitably assign the risk of increases or decreases in estimated quantities that result from information or conditions not reasonably apparent to the parties when they enter into the contract. Thus, large quantity variations may require some adjustment to unit prices in contracts to prevent large windfalls or harmful losses.

- Government and many private contracts include a provision that, after a given percentage of variation, for example 15 or 25 percent, there can be an adjustment to the unit price. Absent such a clause, a dispute may occur regarding the limitation on variations when the actual quantities significantly differ from the estimated quantities. Such disputes exist both with respect to variations simply in quantities of work that are paid pursuant to a schedule of unit prices and with respect to variations that are additional works. These clauses are generally enforceable and are included in contracts to avoid disputes.

- The *Variation in Estimated Quantity* or similar clause is not intended to 'control' overruns. The technical specifications, in combination with the drawings, generally describe what work is payable. The construction drawings should indicate a "pay line" for rock or earth to be excavated so that the contractor cannot over-excavate and expect payment for additional quantities. If the contractor is performing work within the pay lines established in the specifications and/or drawings, the owner will have to pay for the extra excavated quantities.

- An adjustment most likely will be confined in amount to such cost differentials as are directly attributable to a volume deviation greater than the contractually-stated variation percent limitation. Absent exceptional circumstances, agreed contract unit prices most likely will not be displaced by a complete repricing based on actual costs plus a reasonable profit.

- When various contractual clauses are available, an equitable adjustment should not depend upon the choice of contract clauses. Equitable adjustments for variations in quantity may occur under the *"VEQ"* clause. The *"Differing Site Conditions"* clause (and, in certain situations, the *"Changes"* clause) can also apply and, in cases of large unforeseen overruns or underruns, may govern. Thus, an equitable adjustment under the *"VEQ"* clause should be decided in the same manner as an equitable adjustment under a standard clause such as the *"Differing Site Conditions"* clause.

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- Two conditions where the *"Differing Site Conditions"* clause will override the *"VEQ"* clause: 1) where the actual quantities clearly exceed the contemplation of the parties; and 2) when the "cost of doing the extra work greatly differs from the stated unit-price because of factors not foreseen by either party." Therefore, if either the amount of additional quantity or the cost greatly exceeds that which was contemplated at the time of contracting, the *"Differing Site Conditions"* clause may provide relief.

- The *"Differing Site Conditions"* clause may also prevail over the use of the *"VEQ"* clause when:

  7.1 When the owner's or Government's estimate is found to be prepared negligently; and

  7.2 If the owner or Government fails to disclose "superior knowledge" which results in a quantity overrun.

- Contractors must maintain records of all costs associated with the changed or extra work. An upward cost adjustment under either clause is not assured. The advantage of recovery under the *"Differing Site Conditions"* clause provides an advantage to the contractor in that it may not be limited to the unit price but rather can recover its actual costs plus a reasonable overhead and profit, which could be higher.

- The *Changes* clause could also apply where additional work is ordered, but major additions or deletions of work would be outside the scope of the contract.

- Variation in quantity clauses usually do not say anything about the contractor having to notify the Government or owner in advance if actual quantities are going to exceed estimated quantities. The only notice requirement typically imposed by typical variation in quantity clauses is related to requests for a time extension. However, responsible contractors should not notify the Government or owner when it becomes aware of a quantity problem.

- Owners should have on-site construction managers or inspectors and require them to prepare daily progress or inspection reports. Those managers or inspectors should make observations and report trends that indicate that there will be significant variations in quantities. If an owner does not have enough staff of its own for this purpose, then it should hire a construction management contractor.

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## About the Author

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