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16. Abstract  This report presents an assessment of the accuracy of alternatives available to calculate unabsorbed overhead in construction delay claims submitted by contractors.  The report reviews the alternatives available, concludes that the Eichleay Method, used by many in submitting claims, is subject to error and proposes alternatives that overcome the criticisms associates with the standard Eichleay Method.			
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## FINAL REPORT

AN ASSESSMENT OF ALTERNATIVES TO THE EICHLEAY FORMULA  
FOR UNABSORBED OVERHEAD IN DELAY CLAIMS

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(The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the sponsoring agencies.)

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## EXECUTIVE SUMMARY

AN ASSESSMENT OF ALTERNATIVES TO THE EICBLEAY METHOD  
FOR UNABSORBED OVERHEAD IN DELAY CLAIMS

The Eichleay Method has been used extensively since 1960 in the settlement of unabsorbed overhead claims. Originally formulated by the Armed Services Board of Contract Appeals owing to the cancellation of a federal contract, this formula's uses have spilled over into many other areas. Today, the formula is used for two main reasons: First, it is easy to calculate; second, the concept of unabsorbed overhead in a delay claim is strong. The formula has two variations:

1. Variation 1

Step 1:  $\text{Contract billings} \div \text{total billings for the contract period} \times \text{total overhead for the contract period} = \text{Overhead allocable to the contract.}$

Step 2:  $\text{Allocable overhead} \div \text{days of performance} = \text{Daily contract overhead.}$

Step 3:  $\text{Amount of claim} = \text{Daily contract overhead} \times \text{number of days delay.}$

2. Variation 2

Step 1:  $\text{Original contract price} \div \text{total billings for the original contract period plus contract billings in the later period} \times \text{fixed overhead for the original contract period} = \text{Original fixed overhead allocable to the contract.}$

Step 2:  $\text{Original fixed allocable overhead} \div \text{original days of performance} = \text{Daily contract fixed overhead.}$

Step 3:  $\text{Amount of recoverable overhead} = \text{Daily contract fixed overhead} \times \text{number of days delay.}$

Even though this formula is extensively used, both variations have been criticized in several ways:

- o Contractors may be able to lessen the impact of a delay by substituting other work during the delay period or changing work schedules for the contract involved. Even though the contractor may have covered overhead expenses that otherwise would not have been absorbed, a daily rate based on the full delay is used. In essence the overhead rate used may not reflect what occurred.
- o The formula does not provide the flexibility needed to account for changes in the fixed overhead that may occur owing to contract changes (e.g., the rate cannot be increased or decreased to reflect such contract changes).

- o The formula is invalid for any claim made by a contractor who previously submitted claims on other contracts if the delay period for the prior claim overlaps the delay period on the latter claim, and the latter claim provided for overhead recovery.

Fortunately, the literature offers a reasonable alternative based on the Eichleay Method that alleviates the weaknesses of the variations presented above. This formula is as follows:

- Step 1:  $\text{The contract ratio} = \frac{\text{The contract price}}{\text{the larger of the total contract prices of all uncompleted contracts in existence at the effective date or during the period of delay.}}$
- Step 2:  $\text{Contract fixed overhead} = \text{The contract ratio} \times \text{total fixed overhead during the entire period of performance.}$
- Step 3:  $\text{Daily contract fixed overhead} = \frac{\text{The contract fixed overhead}}{\text{the number of days of actual performance.}}$
- Step 4:  $\text{Primary unabsorbed overhead} = \text{The daily contract fixed overhead} \times \text{days delay.}$
- Step 5:  $\text{Fixed ratio} = \frac{\text{Total fixed overhead during the performance period}}{\text{the total allowable overhead during performance period.}}$
- Step 6:  $\text{Absorbed fixed overhead} = \text{The total overhead included in claims related to additional work performed} \times \text{the fixed ratio.}$
- Step 7:  $\text{Reimbursable unabsorbed fixed overhead} = \text{The primary unabsorbed overhead} - \text{the absorbed fixed overhead.}$

This method requires more information than the typical Eichleay calculation of allowable overhead for claims. It does, however, offer improvements that may be of significant value to the VDOT claim process. In addition, the adoption of this alternative would require the Department to establish clear and consistent guidelines regarding information submitted by contractors in support of claims to ensure that the formula can be accurately applied.

Calculation of overhead based on the three methods is shown in Table 1.

Table 1

Original Schedule  
(000 Omitted)

	Contract A	Contract B	Contract C	Contract D	Contract E	Contract F	Contract G
Price Eff. Year	\$30,000 1/1/1	\$30,000 1/1/2	\$30,000 1/1/3	\$30,000 1/1/4	\$30,000 1/1/5	\$30,000 1/1/6	\$30,000 1/1/7
1	\$10,000						
2	\$10,000	\$10,000					
3	\$10,000	\$10,000	\$10,000				
4		\$10,000	\$10,000	\$10,000			
5			\$10,000	\$10,000	\$10,000		
6				\$10,000	\$10,000	\$10,000	
7					\$10,000	\$10,000	\$10,000
8						\$10,000	\$10,000
9							\$10,000

For year 5, Contracts C, D, and E are delayed and completed at the tailend of the original schedule so that the following becomes the schedule of actual performance.

1	\$10,000						
2	\$10,000	\$10,000					
3	\$10,000	\$10,000	\$10,000				
4		\$10,000	\$10,000	\$10,000			
5							
6			\$10,000	\$10,000	\$10,000	\$10,000	
7				\$10,000	\$10,000	\$10,000	\$10,000
8					\$10,000	\$10,000	\$10,000
9							\$10,000

Assuming \$300 fixed overhead expense per annum, the contractor may make the following claims under version 1 of the Eichleay Formula:

$$\text{Contract C: } \frac{30,000}{100,000} \times 1,200 = \frac{360 \times 365}{1,460} = \$ 90,000$$

$$\text{Contract D: } \frac{30,000}{110,000} \times 1,200 = \frac{327.272 \times 365}{1,460} = \$ 81,818$$

$$\text{Contract E: } \frac{30,000}{110,000} \times 1,200 = \frac{327.272 \times 365}{1,460} = \$ 81,818$$

$$\begin{aligned} \text{Total Recovery} &= \$253,636 \\ \text{Justified Recovery} &= \underline{300,000} \\ \text{Underrecovery} &= \$ 46,354 \end{aligned}$$

The following claims can be made under version 2 of the Eichleay Formula:

$$\text{Contract C: } \frac{30,000}{70,000} \times 900 = \frac{360 \times 365}{1,095} = \$128,571$$

$$\text{Contract D: } \frac{30,000}{80,000} \times 900 = \frac{337.5 \times 365}{1,095} = \$112,500$$

$$\text{Contract E: } \frac{30,000}{90,000} \times 900 = \frac{300 \times 365}{1,095} = \underline{\$100,000}$$

$$\begin{aligned} \text{Total} &= \$341,071 \\ \text{Justified Recovery} &= \underline{300,000} \\ \text{Overrecovery} &= \underline{\$41,071} \end{aligned}$$

Recovery under the modified formula would be as follows:

$$\text{Contract C: } \frac{30,000}{90,000} \times 1,200 = \frac{400 \times 365}{1,460} = \$100,000$$

$$\text{Contract D: } \frac{30,000}{90,000} \times 1,200 = \frac{400 \times 365}{1,460} = \$100,000$$

$$\text{Contract E: } \frac{30,000}{90,000} \times 1,200 = \frac{400 \times 365}{1,460} = \underline{\$100,000}$$

$$\begin{aligned} \text{Total Recovery} &= \$300,000 \\ \text{Justified Recovery} &= \underline{300,000} \\ \text{Over (Under) Recovery} &= \underline{\$0} \end{aligned}$$

Source: "Unabsorbed Overhead in Claims for Equitable Adjustment of Contract Prices of Defense Contracts," by Robert T. Dick, Vol. 26, The Government Accountants Journal, 1977.



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INTRODUCTION

At the request of Claude D. Garver, Jr., the Research Council has undertaken the task of finding information concerning the calculation of overhead rates. This request was generated owing to the number of claims the Attorney General's Office has handled in which contractors are seeking reimbursement for unabsorbed overhead expenses owing to contract delays or abandonment.

The purpose of this report is to give insight into overhead and to suggest a method for settlement that may be incorporated into initial contracts. This report will define overhead, exhibit methods used for calculating overhead, discuss what expenses the federal government allows and disallows in an overhead claim, discuss the Eichleay formula, and discuss an alternative to the Eichleay formula.

DEFINITIONS

The Federal Procurement Manual offers the following definition of overhead costs:

An indirect or overhead cost is one which because of its incurrence for common or joint objectives is not readily subject to treatment as a direct cost. Minor direct cost items may be considered to be indirect costs for reasons of practicality. After direct costs have been determined and directly charged to contracts or other work as appropriate, indirect costs are those remaining to be allocated to several classes(1).

Another definition of overhead is:

Expenditures for all activities which are not allocable exclusively to material, labor, or selling. Overhead costs are in addition to material, labor, and selling costs and are

considered as one group, i.e., not segregated into direct and indirect(2).

Although what constitutes overhead varies greatly, the concept of restitution for lost profit owing to delays of no fault of the contractor is usually agreed upon. Therefore, the main controversy lies in how to properly figure the amount of restitution and what documentation is necessary to substantiate the claim for restitution.

#### CLAIM PROCEDURE FOR THE VIRGINIA DEPARTMENT OF TRANSPORTATION

Sections 33.1-386 - 33.1-389 of the Code of Virginia allow for claims to be brought by contractors involved in the construction of highways against the state. These sections state that within 60 days from the time of payment of the final estimate, the contractor must submit to the Department through proper channels a written claim for the amount he deems himself entitled under the contract. This claim must state the facts upon which it is based and when the incident occurred or the beginning date of the work upon which the claim is based. Within 90 days of receipt of the claim, an investigation by the Department shall be made. The claimant shall be notified in writing by registered mail of the decision. This 90-day period may be extended by 30 days if both parties agree. If unsatisfied, the claimant has 30 days to notify the Commissioner in writing that he desires to appear before him and present additional facts and arguments in support of his claim. The Commissioner shall schedule an appearance to be held within 30 days of claimant's request. If it is mutually agreeable, the appearance may be held after 30 days but before 60 days from the claimant's written request. Within 45 days after the meeting, the Commissioner shall make an investigation of the claim and the contractor shall be notified in writing. If mutually agreeable, this period may be extended for another 30 days. The Commissioner has the authority to negotiate the claim if any part is considered valid but is subject to provisions of Section 2.1-127 of the Code of Virginia. If no decision is rendered by the Commissioner or the Department, this is to be considered a denial of the claim.

The contractor may then bring a civil action once the above process has failed to bring satisfactory results. A petition may be filed in the Circuit Court of the City of Richmond or of the county or city in which the contracted highway project is located. The trial shall be by the court without a jury, and the submission of the claim within the time and as set out above is a condition of precedent to bring an action. These procedures are established within the negotiated contract.

The Department has no written guidelines as to what information must be provided by the contractor to establish a valid claim. Currently, the forms in which the claims are presented are as varied as the information needed to substantiate them. The presentations run from formal, well written presentations with a definite bottom line to a box of receipts and log books with which the Department must try to piece together an accurate picture of what occurred and what the contractor is entitled to receive. The Department has relied on the Eichley Method to resolve the claims for

unabsorbed overhead; but this method has currently come under much criticism owing to its weaknesses.

#### ALLOWABLE AND DISALLOWABLE EXPENSES

The federal government has categories of allowable and disallowable claim expenses. Claims are not allowed for those expenses not necessary to do government work, expenses contrary to public policy, expenses unreasonable in amount, expenses that are part of the company's profit, expenses that create a double recovery of cost, expenses not allowed by statutes, expenses not allowed by a particular contract, expenses excluded by generally accepted accounting principles, and expenses not specifically covered in cost principals. There are four criteria for allowable claims: the claim must (1) be reasonable, (2) be properly allocated, (3) not be excluded in other regulations, and (4) be in accordance with generally accepted accounting principles.

#### CALCULATION OF OVERHEAD

The methods for calculating overhead are as varied as the items constituting overhead. Each method is essentially an educated guess, but some methods base the outcome on more information than others. All methods are subject to criticism for either underestimating or overestimating the actual figure, and many suit one type of business better than other types. There is also no standard method for predicting overhead. Therefore, accountants tend to use the method that is the most beneficial and safest for their company.

Total overhead cost is a combination of indirect material, indirect labor, administration expenses, and other indirect expenses. Many businesses estimate this cost so such expenses may be recouped in proportion to the size of the project involved. One method of predicting overhead is to use a standard overhead rate. This may be accomplished by dividing the total overhead by the total amount of direct labor in years past to establish an average percentage. This percentage can then be applied to the estimated cost of a project to predict the overhead involved in that particular project.

One of the most common methods for predicting overhead is to take either last year's direct costs or an estimate of this year's direct costs and pick an arbitrary percentage (usually between 5 percent and 15 percent) and multiply. The resulting number is considered the estimated overhead cost. A proportional amount of overhead to be recouped by a certain project according to the size of the project is then assigned. This method has many weaknesses but is commonly used, especially in small businesses where professional accounting services cannot be afforded or business sales are unpredictable.

## EICHLEAY METHOD

The Armed Services Board of Contract Appeals uses a variety of formulas to calculate unabsorbed overhead. These formulas include those written for Carteret and Allegheny, King and Root, Keco Industries, Shore-Calnevar, and Therm-Air Manufacturing Co. Since they were originally written for specific companies, their use has been very limited.

One of the most commonly used formulas for calculating overhead is the Eichleay formula. This formula was introduced in 1960 in a Board of Contract Appeals case to calculate home office general and administrative expenses. Since its conception, this formula has been used heavily, especially in the construction industry. In fact, its use is so generally accepted that many prime contractors and owners automatically consider this claim element in settlement negotiations and payments when dealing with subcontractors. It is this practice combined with the extensive use of this formula that has led many people to examine and criticize this use.

With the Eichleay method, only allowable and allocable expenses are included in the computation of the daily overhead rate, and fixed overhead expenses are distinguished from semi-variable and variable expenses because any determination of unabsorbed overhead costs should relate primarily to fixed overhead costs that cannot be avoided during the delay.

The Eichleay method is as follows:

- Step 1:  $\text{Contract billings (Cb)} \div \text{total billings for contract period (Tb)} \times \text{total overhead for contract period (TOH)} = \text{Overhead allocable to the contract.}$
- Step 2:  $\text{Allocable overhead} \div \text{days of performance (Dp)} = \text{Daily contract overhead.}$
- Step 3:  $\text{Daily contract overhead} \times \text{number of days delay (Dd)} = \text{Amount of claim.}$

This version of the formula has three major weaknesses:

1. The use of a daily rate in attributing overhead costs to a delay that occurred in the performance of one particular contract even if the contractor was able to mitigate the impact of the work interruption by adjusting his work schedules.
2. It provides no adjustment of the computed amount for that portion of fixed overhead costs allocable to any additional cost expended exceeding the amount originally contemplated in negotiating the original contract price. Contract changes can actually result in overabsorption of overhead.
3. The formula becomes invalid for any claim made by a contractor who had previously submitted claims on other contracts if they provided for recovery of unabsorbed overhead when any portion of the delay period for such prior claims coincide with the delay period of the claim under adjudication(3).

Another frequently used variation of the Eichleay method is as follows:

- Step 1:  $\text{Original contract price} \div \text{total billings for original contract period} + \text{contract billings in later period} \times \text{fixed overhead for original contract period} = \text{Original fixed overhead allocable to contract.}$
- Step 2:  $\text{Original fixed allocable overhead} \div \text{original days of performance} = \text{Daily contract fixed overhead}$
- Step 3:  $\text{Daily contract fixed overhead} \times \text{days delay} = \text{Amount of recoverable overhead.}$

This version of the formula has all the weaknesses of the previous one plus one more: since the conditions existing during the original contract period may not be representative of conditions in the delay period (for example, the company may have sold assets or changed assets), the contract ratio of one period should not be applied to a different period(4).

The popularity of this formula is attributable to two main factors: First, it is easy to calculate. The actual company-wide costs incurred are simply allocated to the project based on total contract revenue, and a daily overhead rate is easily computed. Second, the concept of unabsorbed overhead in a delay or suspension of work claim is strong. A company's management makes certain decisions as to what home-office overhead costs are to be incurred in the upcoming period based on field activity. This field activity absorbs an allocable share of the home-office overhead. If for some reason construction is delayed or stopped, these overhead costs are not absorbed as planned, and the contractor suffers a profit loss.

#### PROBLEMS IN DETERMINING CONSTRUCTION OVERHEAD

The construction industry has a large number of claims owing to two factors. First, the problems that may delay a project, including bad weather, unexpected conditions, and changes in materials and plans. Uncontrollable problems can delay contracts for a number of days or months. Second, bidding practices can cause the need for claims to be submitted. Many contractors bid overhead as part of a standard bid markup on estimated direct costs, others have a separate overhead rate that is applied to the total direct cost estimated on their overall overhead rate. Still other contractors bid overhead as a function of time. This variety in bidding methods makes the amount that should be recovered difficult to ascertain.

Construction overhead may be broken down into two broad categories. First, job overhead usually includes costs that may be specifically charged to a project, such as salaries for project personnel, utilities, supplies, engineering, tests, drawings, permits, rents, insurance, etc. Second, general overhead is a share of the costs incurred at the general office of the company. This includes salaries, office rent, utilities, insurance, taxes, shops and yards, and other company expenses not chargeable to a specific project.

CONSIDERATIONS FOR A FORMULA TO  
DETERMINE RESTITUTION

When considering a calculation for unabsorbed overhead, there are two factors that should be given the most consideration. The first factor, the overhead costs involved in the bid and what is intended to be recovered by profit, may be found using bid documents and extracting the overhead cost. If this is not readily discernible with any reasonable accuracy, the overhead rate may be calculated by ascertaining the company's normal handling of overhead during the time of bidding by documentation or company policy and using a weighted average of the overhead rate for the five fiscal years immediately preceding the contract start date. This rate must be adjustable to the contract and its effect on the overall performance of the company.

The second factor, the extent of the activities affected or delayed on the individual project being investigated, may be easily measured by comparing billings not made during the period of delay. This involves a comparison of billings made under the contract with billings that would have been made absent by the delay or suspension of work. This gives consideration to the delay period and the extent of activity and stresses that billings not made were not replaced during the same period by working on another project.

ONE SUGGESTED METHOD OF CALCULATION FOR RESTITUTION

An alternative formula has been suggested by Robert T. Dick, CPA, in his article "Unabsorbed Overhead in Claims for Equitable Adjustment of Contract Prices of Defense Contracts," in the Summer 1977 Government Accountants Journal. It is designed to avoid or reduce the weaknesses found in the Eichtey formula.

It is as follows:

- Step 1:  $\text{Contract ratio} = \text{Contract price} \div \text{the larger of total contract prices of all uncompleted contracts in existence at the effective date or during the period of delay.}$
- Step 2:  $\text{Contract fixed overhead} = \text{Contract ratio} \times \text{total fixed overhead during entire period of performance.}$
- Step 3:  $\text{Daily contract fixed overhead} = \text{Contract fixed overhead} \div \text{number of days of actual performance.}$
- Step 4:  $\text{Primary unabsorbed overhead} = \text{Daily contract fixed overhead} \times \text{days delayed.}$
- Step 5:  $\text{Fixed ratio} = \text{Total fixed overhead during performance period} \div \text{total allowable overhead during performance period.}$
- Step 6:  $\text{Absorbed fixed overhead} = \text{Total overhead included in claim related to additional work performed} \times \text{fixed ratio.}$

Step 7: Reimbursable unabsorbed fixed overhead = Primary unabsorbed overhead - absorbed fixed overhead.

This formula corrects or mitigates the weaknesses found in the Eichleay formula. First, if the contractor was able to lessen the impact of the work delay by substituting other work, this will be reflected in the denominator of the first step and will reduce the contract ratio. Second, if the conditions of production changed during the delay period, the second step and the resulting contract fixed overhead will reflect this. Third, multiple recovery of fixed overhead expenses related to any additional work included in the claim will be prevented in steps six and seven. Fourth, in most cases this formula eliminates multiple absorption of overhead owing to delays occurring in the performance of other contracts simultaneously, so that each claim for unabsorbed overhead can stand on its own merits(5).

Even with a standard settlement formula, allowable expense guidelines need to be clearly stated. These guidelines should thoroughly explain the expense and give examples of acceptable documentation. This guideline should also give a proper presentation of how the claim should be submitted. This would show contractors what is needed and how to properly present the information for the fastest, most accurate investigation.





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