

DETERMINING REASONABLE COST

Of Repair & Remediation Work

DISPUTE RESOLUTION



CONTENTS

- **1** ABSTRACT
- 2 DETERMINING REASONABLE COST OF REPAIR AND REMEDIATION WORK
- 5 CASE STUDY
- 8 REFERENCES

LIST OF FIGURES

- 2 FIGURE 1 COMMONLY USED QUANTIFICATION METHODS
- 7 FIGURE 2 MAXIMUM REASONABLE COST TO REMEDIATE SUBCONTRACTOR ORIGINAL SCOPE OF WORK



ABSTRACT

In construction defect claims, the owner's most common measure of damages is the cost to repair or replace the defective work. This paper will discuss methods of quantifying damages associated with repair and remediation work. A case study example will also be provided to demonstrate the process of determining reasonable damages and aligning those damages to multiple parties based on scope of work.



Determining Reasonable Cost of Repair and Remediation Work

When a defect is discovered in the contractor's work, there are generally two (2) ways in which the owner can recover damages: (1) cost to repair or replace the defective work, or (2) diminution in value of the project.^[1] The most common measure of damages is the cost of correcting the defects.^[2] For the purposes of this paper, the discussion will focus on determining the reasonable cost of repair or remediation work.

QUANTIFICATION METHODS

When quantifying costs for repairing or replacing defective work, four (4) methods are commonly used, as shown in Figure 1 below.



Figure 1 – Commonly Used Quantification Methods

Total Cost Method calculates the difference between the actual cost and the estimated cost of the work, assuming that the difference is the responsibility of the other party. This approach is easy to calculate and understand but is typically disfavored by U.S. courts.^[3] In order for it to be accepted, the contractor must prove: (1) that it could not prove the increased costs for which the owner was responsible; (2) the bid estimate was reasonable; (3) the actual costs were reasonable; and (4) that it was not responsible for the increased costs.^[4]

Total Cost Owed = Total Cost Incurred - Total Cost Estimated

Modified Total Cost Method is similar to the Total Cost Method, but the party quantifying damages accepts some responsibility for any bid errors and/or cost overruns.^[5] This process was developed to address some of the shortcomings with the total cost method and is still easy to calculate and understand but can be difficult to segregate costs and establish linkage between cause and effect.

Total Cost Owed = Total Cost Incurred - Total Cost Estimated-Cost Overruns

Estimated Cost Method quantifies damages based on estimated costs using reasonable assumptions.^[6] If enough items are known, estimates can be calculated with reasonable certainty using a wide variety of data. This method also identifies individual and estimated costs for isolated events. Assumptions should be carefully examined as slight differences in assumptions can produce variations in the outcome. This method often utilizes historical data from past projects and contractor quotes.

Discrete Analysis Method relies on costs for discrete events using project specific data for productivity and cost. Each cost item is analyzed to determine if there was an overrun and identify which party was responsible. This method is difficult to refute given that it is based on individual costs for discrete events and is typically favored by U.S. courts.^[7] However, it relies heavily on contemporaneous documentation and requires understanding of the reasons for cost overruns and underruns, both of which can be challenging for an owner to obtain.



There are several factors to consider when selecting one of the above methodologies to quantify damages including, but not limited, to the following:

- 1 Identify any contractual requirements for quantifying damages.
- 2 Determine if the relevant source data are available to perform a specific methodology.
- Consider the level of effort intended for the analysis and its purpose. The level of effort may depend on the size and complexity of the dispute.
- 4 Consider the forum for resolution and the intended audience.

When quantifying damages, it is essential to establish the cause-and-effect relationship (or linkage) between entitlement and damages. Damages may be of little or no value if they are not causally linked to the entitlement claimed. Therefore, proper documentation must be provided to support the reasonableness of repair or remediation costs.

COST TO REPAIR OR REMEDIATE DEFECTIVE WORK

In construction defect claims, the owner can typically recover the reasonable and necessary cost of correcting the defect and completing the project as originally specified in the contract documents.^[8] However, even if the owner can prove the necessity of the repair or remediation work, the owner's actions should be reasonable to mitigate its damages. If the owner does not take reasonable steps to mitigate its damages, it may risk losing part of its right to recover damages.^[9] In particular, the owner may not be able to recover costs that could have been avoided through more prudent conduct.^[10] In addition, the owner may not be able to recover costs for any enhancements exceeding the quality specified in the contract documents. The owner should not place itself in a better position than if the error had not occurred.^[11]

REASONABLENESS CHECKS

The following cost categories are common when tracking and/or reviewing costs related to repair or remediation work:





Below are some items to consider when determining if the costs related to repair or remediation work are reasonable:

Documentation – Proper documentation should be provided to substantiate the repair or remediation costs including, but not limited to, contracts, subcontracts, bid estimates, subcontractor quotes, change orders, payment applications, job cost reports, invoices, timesheets, payroll, and correspondence.

Procurement Process – The repair contractor bidding and selection process should be reviewed to determine if a competitive market price was secured depending on the circumstances. For example, the procurement process may be expedited if emergency conditions exist. In addition, the process may depend on whether the project is public or private. Some items to consider include the advertisement for bids or requests for qualifications, bid package submissions, bid preparation techniques, and understanding of assumptions, means, and methods.

Contract Requirements – When analyzing repair or remediation costs, a comparison between what was specified in the original contract documents and what was specified in the repair or remediation contract documents should be performed to understand the scope of work and identify potential betterment.

Unit Rates – Rates for labor, material, and equipment, as well as markups such as overhead and profit should be reviewed for reasonableness. Actual rates charged for the repair or remediation work should be compared to contract rates to ensure alignment. Depending on the type of contract, rates may vary significantly. For instance, rates for remediation work performed on a time and material basis could be higher than work performed under a lump sum contract. Labor, material, and equipment rates can also be compared to various industry publications and data sources to determine if they represent the reasonable market cost to perform the work. Some common data sources include the ENR Construction Cost Index, Turner Construction Company Cost Index, RS Means Construction Cost Data, U.S. Bureau of Labor Statistics, Davis-Bacon prevailing wage rates, and state agencies.

Quantities – Quantities should be verified and documented.

Overtime and Shift Work – Work periods should be taken into consideration. If overtime or shift work is required, higher rates and lower productivity may be expected.

Accessibility and Protection – Measures to perform work in occupied areas should be taken into consideration, which can affect productivity. Accessibility in occupied areas may require additional time for relocation of existing furniture and equipment as well as demolition and replacement of existing work. Protection in occupied areas may require additional time for setup, disassembly, and cleanup.

Repair Procedure – The type of work should be evaluated to determine if it aligns with the procedures necessary and level of effort required to perform the repairs. For example, some repairs may require full replacement, whereas other repairs may only require partial replacement.

It is important to keep in mind that even though an owner can prove the necessity of repair or remediation work, the owner must take reasonable steps to mitigate its damages. The owner should maintain a process for contractor selection and ensure that the contractor performs in accordance with the contract. Costs should be categorized, reviewed, and verified for reasonableness. The following case study walks through an example of how to determine if repair or remediation costs were reasonable.



CASE STUDY - HEALTHCARE FACITLITY FIRESTOP REMEDIATION

PROJECT OVERVIEW

The project consisted of a five-story public healthcare facility exceeding 200,000 SF that included an imaging area, educational wing, and administrative wing. The owner entered into a lump sum agreement with the contractor to construct the project in accordance with the contract drawings and specifications. The contractor was required to provide supervision, labor, equipment, tools, materials, and supplies for \$50 million. The contractor retained various subcontractors to assist with the construction, including, but not limited to, the following scopes of work: mechanical, electrical, plumbing, fire protection, fire-resistive joint systems, roofing, glazing, and drywall.



Approximately 10 years after the project was constructed, a water leak resulted in property damage and required repairs. During the repairs, the owner discovered that the firestop was not installed in accordance with the contract drawings and specifications. The owner entered into a time and materials agreement with a remediation contractor to perform the firestop remediation work, which resulted in alleged costs of \$3.5 million.

METHODOLOGY

The following methodology was employed to 1) determine if the alleged costs for the firestop remediation work were reasonable, 2) identify the maximum reasonable cost to perform the firestop remediation work, and 3) align the maximum reasonable cost to perform the firestop remediation work with the respective subcontractors based on their original scope of work.

DOCUMENT REVIEW & ANALYSIS

The original construction contract and subcontracts, including drawings, specifications, and change orders, were analyzed to identify the roles and responsibilities of each party in relation to the firestopping work. In addition, documents pertaining to the firestop remediation work were analyzed, including the inspection reports, contract, change orders, payment applications, invoices, and job cost reports.

QUANTIFICATION OF DAMAGES

Specific items were analyzed using the discrete analysis method to determine if they represented the reasonable market cost to perform the firestop remediation work.

The estimated cost method was utilized to determine the maximum reasonable cost to perform the firestop remediation work. RS Means was used to derive the unit costs. The basis of estimate was documented, including the scope of work, design and cost basis, assumptions, exclusions, contingencies, and allowances.



FINDINGS

Based on the analysis, it was determined that the alleged firestop remediation costs of \$3.5 million were not reasonable because they were overstated and unsubstantiated, as summarized below:

- + Owner did not secure a competitive market price for the firestop remediation work.
- + Remediation contractor did not invoice in accordance with its contract.
- + Remediation contractor charged additional costs that were not in accordance with its contract.
- + Remediation contractor did not charge overtime rates in accordance with its contract.
- + Remediation contractor's general conditions were excessive.
- + Remediation contractor did not apply overhead and profit in accordance with its contract.
- + Remediation contractor's payment applications were unsubstantiated.
- + Remediation contractor's tracking of actual costs contained numerous inconsistencies.

An independent estimate was performed to determine that the maximum reasonable cost to perform the firestop remediation work was \$2.8 million. Accordingly, the owner's alleged firestop remediation costs should have been at least \$700,000 less than the \$3.5 million claimed. It was also determined that approximately \$700,000 of the estimated firestop remediation costs accounted for adjustments required to keep the facility occupied and operational during the firestop remediation work. The basis of estimate consisted of the following:

Design Basis – The independent estimate was based on a firestop remediation procedure and quantities prepared by a forensic engineer that included recommendations for the repair work necessary for missing, repairable, and replaceable firestop penetrations and joints.

2 Cost Basis – RS Means was used as the source of unit prices for material and labor productivity. RS Means cost data preferences were set to repair and remodeling of facilities and commercial renovation in the project location and year.

3 Assumptions – Certain assumptions were made during the development of the estimate including adjustments for work periods, accessibility, and containment protection of occupied areas in order to keep the project in operation while the repair work was being performed.

- Exclusions The following items were excluded from the estimate:
 - + Inspection and identification of non-compliant firestop penetrations and joints.
 - + Laboratory initial identification of materials involving both preliminary field sampling and testing.

5 Contingencies – A 5% contingency was applied to account for material waste and uncertainty.

The maximum reasonable cost to perform the firestop remediation work of \$2.8 million was aligned with the respective subcontractors based on their original scope of work and the type of firestop penetration that needed to be repaired, as shown in Figure 2.



OWNER DESCRIPTION OF DAMAGE	OWNER ALLEGED DAMAGE AMOUNT	ORIGINAL PROJECT SUBCONTRACTOR	TOTAL MAXIMUM REASONABLE COST
		Drywall	\$250,000
		Fire-Resistive Joint Systems	\$1,500,000
		Glazing	\$150,000
Fire-Stop Remediation	\$3,500,000	Electrical	\$450,000
		Fire Protection	\$100,000
		Mechanical	\$350,000
Total	\$3,500,000	Total	\$2,800,000

Figure 2 – Maximum Reasonable Cost to Remediate Subcontractor Original Scope of Work

Based on the discrete analysis method, it was determined that the alleged damages of \$3.5 million were unreasonable. Several items were taken into consideration when evaluating the reasonableness of the alleged damages, including, but not limited to, supporting documentation, bidding and selection process, contractual requirements, unit rates, markups, work periods, accessibility, and protection. Using the estimated cost method proved that reasonable damages should have been no more than \$2.8 million.

The content included in this article is for informational purposes only and does not reflect the opinions or recommendations expressed by any individual unless otherwise stated.



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