

For the Client

Construction Contingency; Standard of Care vs. Cost of Design Errors and Omissions

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Visions of perfection surround expectations at the beginning stages of every construction project. Perfection is an admirable goal for each member of the project team clients and design professionals alike. But as the reality of construction unfolds, it is indeed the rare project that ends without some adjustment to the initially projected construction cost. Often, these cost changes are caused by the presence of unknown site conditions, by revisions to regulatory requirements, by client revisions to the construction program, and by other causes not directly related to the design professional's work. It is not unusual, however, for a small portion of the completed construction cost to include some amount spent for addressing design errors and omissions. This article acknowledges, and provides context for, design errors/omissions during construction and suggests approaches for effectively dealing with these challenges.

The design professional communicates requirements for construction through plans and specifications. Seldom, if ever, are these documents perfect in every respect. That reality affects the level of perfection that one might expect in the plans and specifications. In other words, what quality level might be

considered normal or acceptable (within recognized industry standards) for the work product of design professionals? In practice, this quality level is usually expressed in terms of an increased cost of construction attributable to errors and omissions in the design professional's plans and specifications.

Several studies have been made in attempts by construction industry professionals, facility clients, and academia to establish benchmarks to measure the quality of design and construction. One such study was published in 1994 by the National Research Council (NRC) This report focused on projects developed by the federal government and contracted under the traditional design-bid-build method of delivery. It suggests that construction changes due to architectural and engineering errors and omissions should not increase the cost of construction more than 5%.

Some will argue that design error and omission guidelines published by the NRC seem too liberal. Perhaps they are. But when one considers that design phase services for most private sector projects are produced on a schedule much more compressed than comparable federal projects, the tolerance range set by the NRC report may not be unrealistic. However, it certainly appears from this study that an upper limit of the tolerance range, absent strong reason to the contrary, might well be in the range of 5%.

A similar study involving industrial projects was conducted by the Construction Industry Institute (CII) in the late 1980s. This study focused specifically on industrial projects of average complexity and evaluated the impact of quality deviations on

project costs. Two of the many quality deviation categories studied were design errors and design omissions.

The CII study presented data that shows the correction of design errors and omissions might reasonably be expected to impact the cost of construction for a typical project in the range of 2% to 3%. From these studies by the National Research Council and the Construction Industry Institute, it is clear the construction process:

Does not expect or demand absolute perfection in plans and specifications; and

Does recognize that plans and specifications error rates will likely increase with schedule compression, increasing project complexity, and reduced involvement by the design professionals in construction phase services.

Approaches

The legal standard of care for professional services does not require nor expect perfection in the plans and specifications prepared by design professionals. From studies by nationally prominent bodies, one may reasonably establish design error and omission rates in the range of 2% to 3% of construction cost as a threshold level of acceptability. These figures represent an equivalent 97% to 98% level of perfection, a quality level that would be expectantly lower with above-average project complexity and accelerated delivery methods.

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The client and the professional should discuss, on a case-by-case project basis, the complexities and schedule implications that may impact the construction budget. Construction budgets should include reasonable contingency funds for correction of imperfections in the design documents as well as an allowance for other types of cost impacts common to construction. Provided the cost of correcting design errors and omissions remains within generally recognized industry standards, it seems reasonable and appropriate to treat these costs as an integral part of the client's construction budget.

When design deficiencies exceed the level consistent with a reasonable standard of care, there should be attempts to first resolve any claims for negligence in an informal manner. When restitution is negotiated, the parties should focus on those costs for which the client receives no added value and which would not have been incurred but for the design deficiency.

Footnotes: *National Research Council, Responsibilities of Architects and Engineers and Their Clients in Federal Facilities Development. National Academy Press (1994).*

Construction Industry Institute, Costs of Quality in Design and Construction, Source Document 29 (1987).

The CII study presents design error and omission costs in terms of total installed project costs. A conversion factor of 1.25 was used to convert error and omission costs from a total-installed-project-cost basis to the cost-of-construction basis.