

# Contracts for design services

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## Key points

- In a construction project, the design is the foundation that determines not only the construction costs, but also the entire life cycle costs including operation, maintenance and refurbishment.
- Design costs are typically no more than 1% of the life cycle costs.
- Design contracts involve different considerations to other construction contracts and subcontracts.
- Employers should ensure that the contractual arrangements for procuring the design are the most appropriate for achieving their objectives, the most important of which is to obtain a design of the required quality.

## Introduction

In the construction industry, contracts for design services are frequently viewed as another “trade” sub-contract, and are prepared accordingly. The paper notes the key aspects of design contracts that distinguish them from trade contracts. It highlights several types of inappropriate risk transfer in design contracts, and suggests that the owner’s risks can be more appropriately managed to obtain the best value from the designer’s services.

## What is design?

The delivery of significant construction projects typically requires the input of a range of general and specialist providers of goods and services. The first of these in time is that of the designer, since without a design there can be no construction, installation or operation of a project.

Design includes all plans, drawings, sketches, instructions, and descriptions that determine the way the works (or parts of it) are to be constructed. Design includes the writing or selection of specifications, as well as the production of plans and drawings and any element of choice on the part of the designer, such as requirements as to materials or working methods. Many modern construction projects typically involve a significant element of computer software, the writing of which is an important design task.

It is clear from this definition that an essential distinction between the design task and the construction task is that the former exclusively involves the produc-

tion of intellectual property (IP), whereas the latter involves the assembly of components of real property into a constructed facility on the land. In legal terms, a contract for design is a contract for services (typically considered to be professional services) whereas a contract for construction is a contract for goods and services, the services in this case being the labour applied to the goods to construct the facility, as well as the IP required for whatever design the contractor must supply.

The design of a facility involves all the large and small decisions required, inter alia, to determine its form, how its elements work individually and in combination to fulfil their functional requirements, what materials will be used in construction, how these are connected together, how the facility is to be constructed and how it should be operated. Decisions made during the design of the facility will dictate how it will need to be maintained to retain its functionality and what the operating costs will be. It is the design that ultimately determines the effective life of a facility, and the requirements for repairs, renovation or refurbishment during its life. In many, if not most construction projects, there is a well-known trade off between the capital cost of construction and the ongoing maintenance and operating costs throughout the operating life of the facility. Cheaper construction costs, achieved by the selection of less durable materials or less robust equipment during the design, often lead to significantly higher maintenance and operating costs.

## The 1:10:100 “rule”

The significance of design cost in relation to a project is succinctly encapsulated in the 1:10:100 “rule”:

Over one typical “life cycle” of a facility, for every One Dollar \$1 spent on Design, at least Ten Dollars \$10 are spent on Construction and At Least One Hundred Dollars \$100 are spent on OM&R [operation, maintenance and repairs/refurbishment].<sup>1</sup>

Thus, whilst design may represent of the order of 10% of the construction cost, it is typically less than 1% of the total life-cycle cost of a facility. Considering the importance of the design function in making the fundamental decisions that determine not only the constructed cost but also the total life cycle cost, it is clearly of the utmost importance to obtain the most appropriate design. These relative cost figures indicate that in the overall

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picture, the cost of design itself is of far less significance than the quality of the design that determines the life cycle costs of the project.

## Project risk context

The following terminology is used in this paper:

- the entity procuring a project is the owner; and
- a construction contract is between an employer and contractor.

Broadly, there are two ways in which the owner can procure the design for a project:

- directly, by the owner engaging the designer itself; or
- via the construction contractor in a design and construct contract, in which the contractor typically engages one or more consulting engineers (and in building projects, an architect) to prepare the design.

The issue of which method of procurement of design is most appropriate for a particular project is of fundamental importance to the owner. A long term owner who is going to operate a facility may be looking to procure the most appropriate design for minimising the ultimate life cycle costs and maximizing functionality. Such an owner can achieve maximum control over the design by engaging the designer directly (the “traditional” design - bid - build). A design and construct contract may be appropriate for an owner who does not have the appropriate resources to engage and manage the designer directly, or who seeks a “fast track” project execution. In such a contract, the designer’s employer (ie the contractor) controls the design, and is likely to be focused on minimising the construction costs, consistent with satisfying its contractual obligations to the ultimate client. Ensuring that due account is taken of the owner’s interests in minimising life cycle costs in a design and construct contract therefore requires very careful attention to the specification of the employer’s requirements in the contract.

For a major project that an employer has decided to procure via a design and construct contract, it will generally engage the services of a prime contractor to

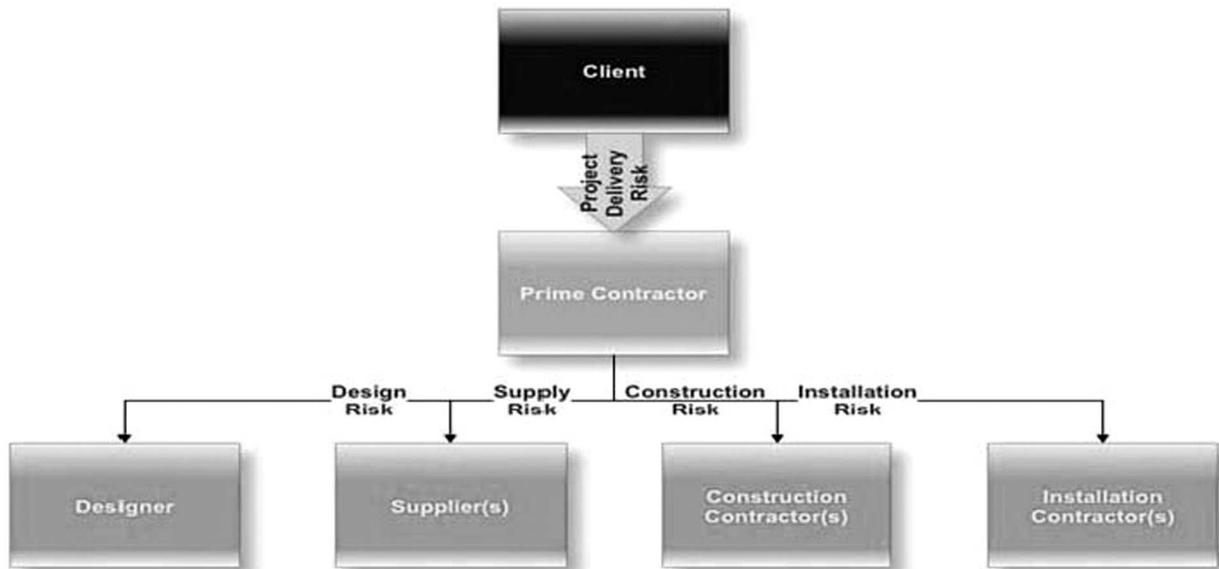
manage the delivery of the project. The employer typically does this for two reasons:

1. To acquire access to the resources (specialist and generalist) required to deliver the project. Few if any organisations employ the in-house resources as permanent staff required to deliver a major project, hence the acquisition of additional resources is typically sought from others via a contractual arrangement.
2. To transfer the delivery risk of a project to another organisation. Conceptually, to enhance the prospect of a successful project, this should be an organisation that is better equipped to manage the delivery risk.

As with employers, prime contractors typically only employ the permanent staff necessary for their core operations. As such, prime contractors also rely on a network of suppliers and subcontractors in order to deliver a major project on behalf of an employer. In Australia, even the largest construction contractors do not have in-house design resources with the range of skills needed for the final design of a major project, and almost invariably engage consulting engineers and architects for the permanent design.

In contracting other organisations to assist, prime contractors also seek access to resources and to transfer risk. As a prime contractor will typically require a number of subcontractors and suppliers to deliver a project, it is important that the prime contractor transfer appropriate types and amounts of risk to each of its subcontractors and suppliers. Again, this risk should be transferred to the organisation best able to manage it. Arguably, from an equity perspective, risk should also be transferred in proportion to the reward being derived by the organisation agreeing to take on that risk.

Figure 1 shows a model of how risk is transferred between organisations involved in a major project where a prime contractor is engaged. Even where the owner procures the project itself in a traditional “design — bid — build” contract without a prime contractor, risk is similarly transferred directly from owner to the various contractors.



One of the major functions of any contract, and a construction contract in particular, is the allocation of risk between the contracting parties. Thus, whilst the common law provides a “default” allocation of risk in a construction contract, any modification of that default position is achieved via the terms and conditions of the contract. This paper focuses on the transference of risk to design consultants and the appropriateness or otherwise of commercial terms and conditions used in effecting this transfer, together with some short comments on general contract terms that, in the authors’ view and experience, are inappropriate for contracts for the provision of design services (design contracts).

**Contract terms & conditions addressing risk transference**

Absent specific contractual provisions to the contrary, the common law will imply a term into a design contract that the design services will be provided with due skill, care and diligence. In contrast to the construction contractor, the design contractor does not implicitly warrant that the objective of the contract (ie the design) will be fit for purpose. Whilst contracting parties still sometimes rely on the common law and do not have a written design contract for small projects, major projects almost always have a written design contract, sometimes as detailed in its general conditions as the construction contract itself.

A number of model contracts and guidelines exist to inform the engagement of designers. General conditions of design contracts include the Fédération Internationale des Ingénieurs-Conseils (FIDIC) White Book (Client/

Consultant Model Services Agreement 4th ed 2006), General Conditions of Contract for Consultants AS 4122-2010 and Consult Australia Contract (March 2010). Guidelines include FIDIC Guidelines for the Selection of Consultants 2003, the FIDIC White Book Guide with other Notes on Documents for Consultancy Agreements (2nd ed 2001) and Consult Australia Guide to Contract Terms (March 2011).

Such model contracts and guidelines have typically been developed to address an appropriate balance between transfer of risk and accrual of commercial reward for the conduct of design activities. Unfortunately, such model contracts and guidelines are not widely used for the engagement of design consultants. It appears to the authors that many of the terms and conditions used to engage design consultants have been generated with the view to transferring as much risk as possible down from the prime contractor (or owner), to the designer. Often such transference of contract risk is inappropriate and counter productive.

The following are some typical examples of clauses seeking to transfer risk from the prime contractor to the designer, together with a short discussion of their likely effect.

**Responsibility for delays — liquidated damages**

It is common for a prime contractor to seek to pass down head contract risk for delays to a designer through the imposition of liquidated damages. Typically such clauses will take the form of:

In the event that the Subcontractor fails to complete the works by the due date, Liquidated Damages shall be paid to

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the Prime Contractor at the rate of X% of the value of the service order, per day of delay, up to a maximum of Y%.

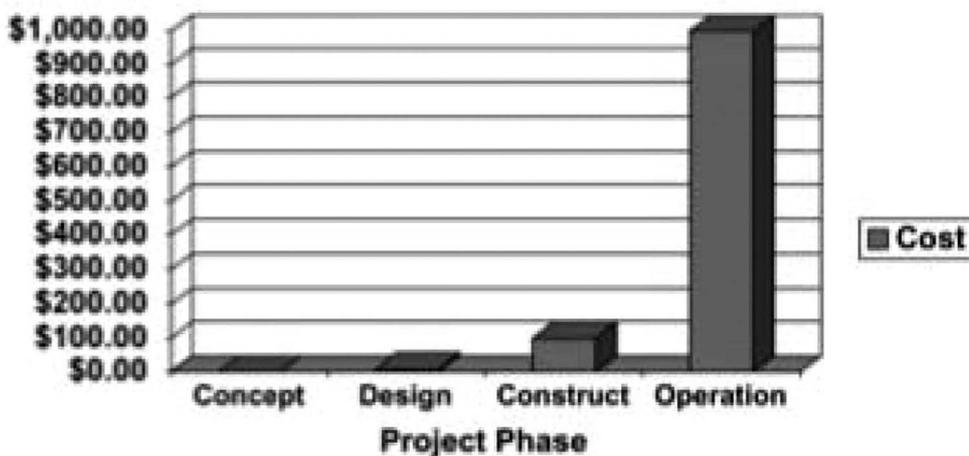
There are two major issues with the imposition of liquidated damages on design contractors, the first is a risk issue, the second a practicality.

The first issue with imposing liquidated damages on a designer is associated with the nature of design risk. As noted above, engineering design represents only a small fraction of the overall project budget, however a signifi-

cant design failure can result in very substantial rectification costs, or even result in a total loss scenario. As such, the magnitude of the design risk is proportional to the total project cost, rather than to the fees paid for the design activity.

It is well accepted that errors in design become more expensive to fix as a project progresses. Figure 2 shows this effect.

### Typical Cost of Correcting Design Flaws



The nature of design risk makes it important, from a risk reduction perspective, to get the design right: to measure twice and cut once as it is often put. Extra time spent on design to fix problems before construction reduces project risk. This is at odds with the disincentive of a liquidated damages clause. The imposition of liquidated damages clauses on a designer will focus the management of such organisations on getting the design finished by the due date at all costs. This increases the risk that there will be latent design defects that will not surface until later in the project, typically with very expensive rectification costs.

The second issue with liquidated damages clauses is a practical one. The design activity requires a significant amount of input from a range of stakeholders in order to be successful. Such input typically includes input from:

- the owner on requirements and desired outcomes;
- the fabricator on constructability in order to minimise the cost of fabrication;
- the installation contractor in order to minimise the cost of installation; and

- specialist consultants in areas such as geotechnical engineering, meteorology, oceanography, etc.

The implications of this requirement for input and review from a range of stakeholders is that it can be difficult to pin down responsibility for a design error, in particular when the error is due to input provided by a party external to the designer. Whilst the imposition of responsibility and thus liability for payment of liquidated damages may be forced on the designer via carefully worded contractual conditions, such application of liquidated damages in cases where the designer has relied on input from other parties may be inequitable.

It should also be noted that any payment of liquidated damages must come from the design contractor's own financial resources. As a contractually imposed liability, the designer's professional indemnity insurance will not respond. A demand for payment of significant liquidated damages may therefore trigger a potentially expensive and inevitably disruptive litigation or arbitration.

## Responsibility for design data

It is not uncommon for contract terms and conditions to require the designer to take responsibility for the accuracy of client supplied data. Typically such clauses take the form of:

The Service Provider agrees that it has satisfied itself as to the accuracy of any information given to it and accepts full responsibility for any use by it of such information including, without limitation, responsibility for any conclusions drawn by it from such information.

The issue with such clauses is that the development of a design requires input from a range of parties and often relies on the data supplied by such other parties that has taken considerable time and cost to assemble. Often geotechnical, meteorological or oceanographic data is supplied by the owner, and as such should be able to be relied upon by the designer. The equitable alternative would be to pay the designer to undertake its own surveys and investigations to establish the requisite input engineering data, or to properly verify the data supplied to it. This is not something that is typically allowed for in a project budget.

## Generally inappropriate contract clauses: destruction of confidential information

It is very common for design contracts to contain a clause requiring the return or destruction of confidential information (which is generally defined to include most if not all of the project related documentation) upon completion of a project. The issue with such clauses is that a designer will almost invariably be required to maintain a copy of such documentation for both quality assurance (as part of an ISO 9001 system) and insurance purposes. Accordingly, it is recommended that clauses associated with the destruction of confidential information be accompanied by a sub clause to the effect of:

Notwithstanding Clause XX, the Design Contractor may retain one copy of the Confidential Information for quality management system and insurance record purposes. The retained copy shall be subject to the confidentiality provisions of this Agreement.

## Conclusion

Design, being the provision of services and the delivery of IP, is a qualitatively different activity to construction. Although its cost is a small proportion of

the overall life cycle cost of a project (perhaps only of the order of 1%), it is of overwhelming importance in determining the construction cost as well as the operation, maintenance and refurbishment costs of the constructed facility, as well as its functionality.

Accordingly, different considerations apply to the procurement of a design contractor from a construction contractor (or subcontractor). Contractual terms should be conducive to obtaining the quality of design required by the owner as its first priority. As an intellectual exercise, the preparation of design requires adequate time, and this will in turn have a strong influence on its price. Contractual terms that provide a disincentive for a design contractor to spend appropriate time in preparing the design and checking it properly before construction starts are not in the interests of the owner in obtaining a project that fulfils its requirements.

A designer's professional indemnity insurance will not respond to the materialisation of contractually assumed risks that go beyond the common law requirement of due skill and care in preparing a design. Accordingly, compensation for breach of such contract terms, or liquidated damages for late performance, will be sourced from the designer's assets, which may be limited.



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## Footnotes

1. [http://www.barchanfoundation.com/index.php?option=com\\_content&view=article&id=47:life-cycle-methods-will-remain-after-the-gfc&catid=3:public-content&Itemid=9](http://www.barchanfoundation.com/index.php?option=com_content&view=article&id=47:life-cycle-methods-will-remain-after-the-gfc&catid=3:public-content&Itemid=9) accessed 18 November 2011.