**Section I-12**

# Design Assist

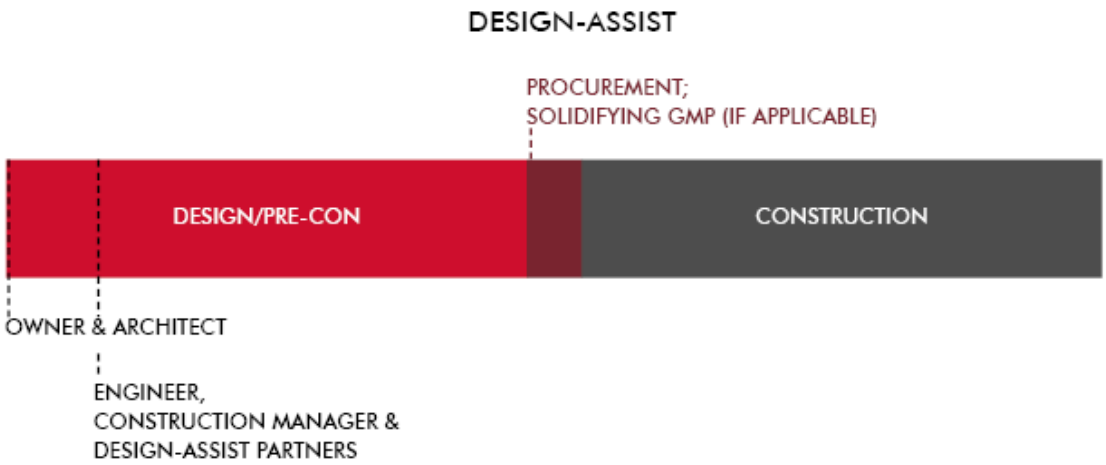
## Introduction

The construction industry has the opportunity to provide a more integrated, collaborative process between the designer and contractor. Through the Design Assist, the owner can gain the benefit of both design and construction expertise during the entire project, especially during the preconstruction phase of the project, absent in the more traditional linear methods. The Design Assist partner should become an integral active member of the design team and is the installing contractor's link into the design process. This expertise can include providing system design options, considering longevity of system components, performing cost analysis, determining means and methods, and that the proposed concepts work within the overall building type design.

## Procurement of Design Assist

Design Assist can be utilized for any construction package within the project, and cost benefit analysis should be considered for any unique projects or any special procurement requirements of the project. Design Assist partners typically are involved with building trades that are the significant contributors to costs, the greatest areas of risk, and the most complex and critical aspects of the design. Design Assist could be considered for fast track projects, complex packages or equipment, cost sensitive packages, when the specialty expertise is required for the project, in tight labor markets, or where the economic environment provides volatility. The Design Assist partner integrating with the project design team is a paramount requirement. Design assist entities can occur at any level of the contract, including manufacturers, specialty sub tiers, or vendors where value can be provided.

Design Assist can be utilized in many of the typical construction procurement methods, including CM at Risk (CMc), Design Build (DB), and Integrated Project Delivery (IPD). These deliveries provide the most flexibility for negotiating the package and avoiding a competitive bidding cycle at the construction document stage, which is not an expectation of the Design Assist process.




*Courtesy of Karpinski Engineering*

Design Assist can also bring other issues of compensation for expertise provided without guarantee of performing the work, which is discussed later in this recommendation. There is also a distinction to be made between Design Assist and Design Build. In Design Assist, the design responsibility still resides with the engineer of record. In ``Design Build", the design responsibility resides with the design builder, and would not be classified as Design Assist delivery.

Typical Design Assist packages being considered in the industry include deep foundations, earthwork and shoring, structural steel, roofing, building envelope systems, interior framing and gypsum systems,

elevators, fire protection plumbing, HVAC, and electric. It should be noted that earth shoring, fire protection, and sometimes deep foundations, can convert to a design build delivery by the specialty subcontractor.

In order to gain the most benefit from a Design Assist partner, an owner should procure the assistance of a Design Assist partner early in the design process. There are a number of options for procurement:

- Qualification based procurement: The owner/construction manager team can issue an RFP requesting qualifications from interested firms. This method allows the team to engage the Design Assist partner very early in the design of the project. Here the team picks the partner it believes will provide the most value to the project for their specialty discipline, based on criteria developed for the nature of the assignment. Cost could be controlled using an open book form of contracting with a guaranteed maximum price (GMP).

- Best Value based procurement: The owner/cm team can evaluate potential Design Assist partners further by comparing qualifications along with a fee summary and markup factors. Here the interested partner would reveal cost criteria including overhead, profit, general conditions, and other cost factors relevant to the assignment. This RFP method which describes the key criteria of the project, combines qualifications with cost elements. This method also allows for very early selection of design assist partners.

- Partial design bid procurement: The Owner/CM team can choose to partially complete the project design before selecting a Design Assist partner. In this method, there is preliminary design with a performance specification. In this method, interested Design Assist partners will use the preliminary information to prepare an initial bid for the work. This bid can be contracted as a lump sum or guaranteed maximum price (GMP) contract. Because design work must take place first, this method takes more time to make a procurement selection later in the design cycle.

Design Assist partner selection should be based on best value. Selection criteria typically includes qualifications of the subcontractor, pre-construction staff resumes, past similar experience with the type of project and with Design Assist delivery, past execution of the services, fees, and sometimes a preliminary estimate of their work.

The Owner, CM, and design team should conduct an interview of the potential Design Assist partner(s) to ensure a good fit with the other team members and for the project. At the interview, key team members of the Design Assist partner should be present to validate their qualifications, and provide clarity in the fee proposal, and if an initial package estimate was prepared.

**Procurement Timeline**

The goal of procurement through the Design Assist method is to capture the expertise of a subcontractor or supplier to improve the outcome. When determining the best time to include a Design Assist partner, the following should be considered:

- Lower First Cost: The Design Assist partner can help reduce the first cost of the project. These savings can be achieved by finding the method of construction that is most appropriate for the owner's goals. If an owner's expectations for the project is functional reliability, but design adds optional enhanced features, the final project can be financially impacted by the enhanced features resting in the final bids. No amount of bidding competition is going to get an owner the cost outcome required, with enhanced design features integral to the procurement documents.

- Efficiency in Design Documentation: Design Assist partners can help shorten the period of time it takes an owner/AE in the design phase to select the most appropriate material or system. A knowledgeable design-assist partner can often work with less formalized drawings and specifications. Any or all of these benefits will help an owner get through the design period more efficiently.

- Earlier/Better Confidence In Material/System Costs: By relying on experience and historical data of a Design Assist partner, an owner/AE can have better understanding of the true cost of a system at an earlier point in the project design. This is a benefit in many ways. First, if there is a high level of confidence in the cost of some portion of the project, the team can focus on other areas to get better scope and cost clarity where it is most needed. It will also reduce the risk of having to cut scope later through redesign efforts or value engineering (VE). It may also allow an owner to include more or better scope in the project where it would otherwise early be overly concerned of cost over runs.

It is important to note that all of these potential benefits are realized during the design phase of the project. This means that in order to maximize the benefit of a Design Assist, an owner/AE must get that partner's participation during the design phase. The earlier this can occur, the more influence they can have for a better, more predictable result.

**Fee Evaluation**

Typical fee elements to be considered during Design Assist procurement include:

- Preconstruction Fee: Fee developed by the Design Assist partner to provide services during the preconstruction phase. The preconstruction timeline should be identified and form the basis of the fee. Typical cost inclusions are staffing, documentation, and reimbursables.

- Design Assist Fee: Fee developed by the Design Assist partner to be applied to the cost of the work. This fee is normally a percentage to cover overhead and profit for the services.

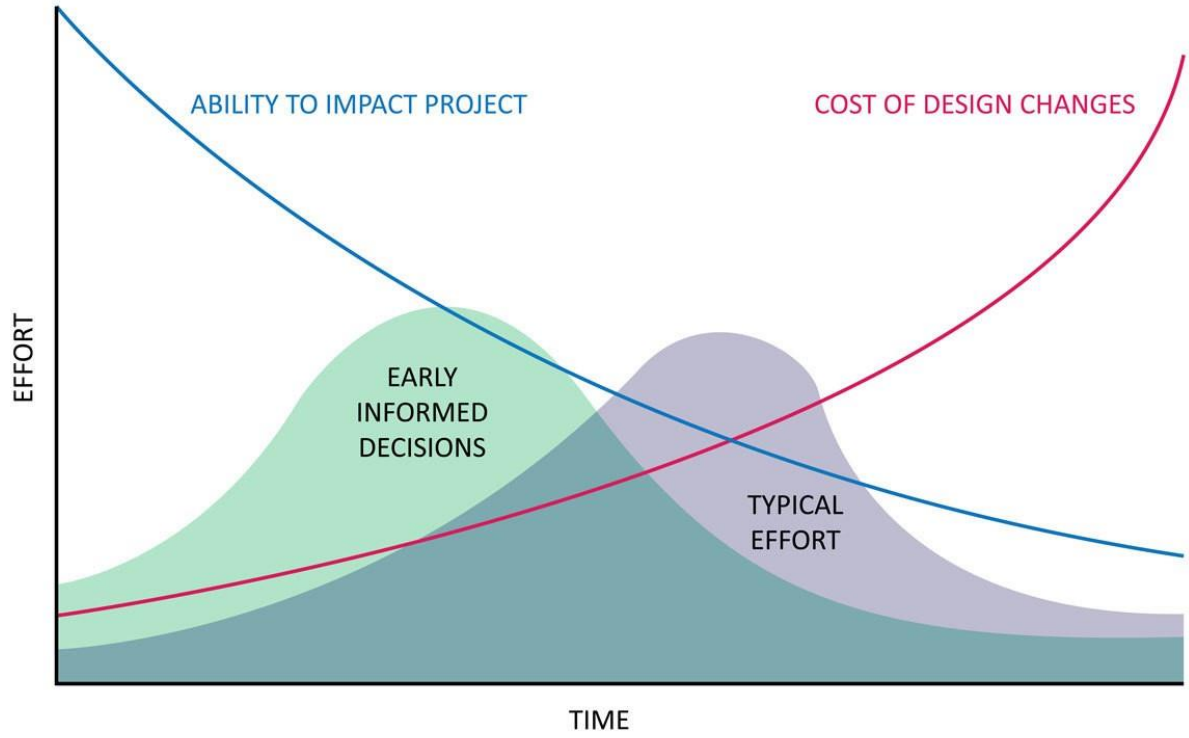
- Staff Rates: Rates provided for the Design Assist partner staffing

- Reimbursables: Costs identified as reimbursable by the Design Assist partner entity for defined costs incurred during the service period

- Shared Savings Clause: Optional clause recommended by the owner or requested from the Design Assist partner for savings achieved on the targeted cost for the package at final completion.

**Incorporating Building Information Modeling (BIM)**

A true Integrated Project Delivery is the most beneficial way of attaining certainty of outcome. Building Information Modeling (BIM) enables the project participants to work with coordinated, reliable information from the project's design through the construction and into operations. The use of BIM as an intelligent tool within the larger framework of design-assist is a value-added solution to the collaboration issues. BIM eliminates disconnected tasks and repetitive work, it reduces the workflow problems and, most importantly, it improves predictability giving clients more assurance of the product outcome.




*Courtesy of ???*

In design-assist, project participants come together as a collaborative team employing a multilevel concurrent workflow approach. Workstations can be converted to Design i-Rooms where all project team members have full access to one another, so they can work out their coordinated design solutions together. To further exploit the BIM potential, a Build i-Room can be placed in a multi-trade construction trailer. As is done on the design side, the construction detailers and sub-contractors can work side by side in one "big room" to foster a strong collaborative environment that enable them to model and coordinate their daily tasks to meet their projected schedule, thus ensuring a successful outcome.

During the development of the deliverables, an interim milestone should be established to transition responsibility for the model development from the design team to the design-assist partner. The transition can occur at any agreed time within the development of the model, however, it is important that the timing occur after all major design decisions have been made and the design intent has been clearly conveyed to the design-assist partner. As is the case with two-dimensional documents, the design team maintains responsibility for the design by sealing the documents for permit application.

Accordingly, it is also important that the design-assist partner understand the end use of the developed model. This prescription will allow the partner to begin generating system details based on their expertise and fabrication methods to produce deliverables that will be accepted for their intended use. The design-assist partner must also be capable of using the collaborative design model during the construction and be able to conform its contents to ultimately produce the project's close out documents.

**Other Considerations**

As all construction projects vary in uniqueness combined with the owner's internal requirements, the following list of additional considerations are relevant:

- Competitive procurement requirements for the project

- Insurance and liability coverage
- Payment clauses for discontinuation of the project
- Identification of the project leader
- Design responsibility
- Design Assist sub-tier selection and process
- Multiple entity team collaboration and expectations
- Agreement/contract for the Design Assist services with compensation language

## Conclusion

Determining the best contracting methods for any project is based on a number of important criteria relevant to the project. Design Assist offers owner another option to incorporate the expertise of a specialty firm early in the design to achieve predictable outcomes for the project. Procurement methods should be thought out carefully, and provide equity to all the parties involved for the assignment. Design Assist should align design intent, combined with means and methods expertise, to accurately fabricate the materials, with ultimate integration into the building components to achieve the owner expectation of functionality of the building, for their affordable cost.