

## **Four Common Construction Project Delivery Methods**

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Selecting a construction project delivery method is one of the most important decisions that an owner makes when contemplating a new building or renovation project. This decision should be made early in the design phase of the project since it impacts not only how the contractual relationship between the owner and contractor will be structured, but also the scope of design services required for the project and thus the relationship between the owner and the architect. Four of the most common construction project delivery methods are discussed and compared below: Negotiated, design-bid-build, construction management, and design-build. A summary of the characteristics of these four project delivery methods is given in figure-1 below.

### **I. Negotiated Agreements: Time & Material, or Cost + Fee**

In negotiated agreements a single general contractor (and sometimes a team of multiple contractors) is selected and brought into the project early in the design process to work in conjunction with the design team (the architect and its engineering and other specialty consultants) to effectively integrate the design service with construction pre-planning. The effect of this collaboration can be to reduce design service fees since the contractor(s) can interpret much of the particulars of the design based upon verbal communications and understanding, and some decisions can be made by the owner, designers, or contractor while the project is under construction. A concomitant effect is that construction cost can be quite fluid. Time-and-material contracts, or cost plus a fee, usually with an estimated total cost, are common with negotiated agreements. In some cases an upper limit or "not-to exceed" price is established between the owner and the contractor. In either case, the total cost of the project is not firmly established at the start of construction. Small projects and renovations of older buildings often benefit from using a negotiated delivery method due to the higher proportional cost of complete design and documentation services that would be required to successfully establish the scope of work and then bid them. In some cases, an owner has established a good trust relationship with a particular contractor, or an owner wants to have the flexibility to make construction design and detail decisions as the work is progressing. In these cases the negotiated delivery method can also be used effectively, especially when undertaken with an "open-book" policy between owner and contractor in which costs are monitored and verified throughout the construction phase. Negotiated work can also be a time-saver for those project which must be completed as quickly as possible since the design phase can more easily overlap into the construction phase with many of the details of construction (e.g., finishes, casework, lighting) being resolved as the project is being built.

### **II. Design-Bid-Build: General Contractor**

Where the intention is to bid the work of construction to multiple prospective contractors, the emphasis in the design phase is to define and specify as completely as possible the scope of the proposed construction work so that all bidders are clear on its requirements and, as a result, all bids received will reflect the same end product. This method of project delivery has traditionally been known as "design-bid-build." Initial

design fees for projects using this method will be generally higher than those for negotiated work since more design and documentation efforts are required prior to bidding. As a balancing effect, however, the bid prices received are a) fixed, based on a complete set of bidding documents, and b) as low as possible due to the competitive nature of the bidding process. All except the most minor and insignificant of design decisions have been made and are reflected in the bidding documents (drawings and specifications), including general requirements and conditions of the contract. Bids received from prospective contractors represent delivery of a complete building project, in a specified amount of time, and for a stated total cost. For new commercial construction work, the traditional design-bid-build approach has many advantages. A project that is well-designed, detailed, and specified prior to establishment of a construction contract gives the owner the greatest probability that the initial bid price will be very close to the actual construction cost at project completion. In the process of competitive bidding, two important indications are revealed. One is that the completeness and clarity of the scope of construction work is reflected in bid results that fall within a reasonable price range. In other words, when the bids are close, we can assume that a specific scope of work was effectively communicated in the bidding documents and that each contractor has submitted a bid representing essentially the same end product. The other information that can be gleaned from construction bid results is the amount of savings the owner will realize by selecting and entering into a formal construction contract with the lowest qualified bidder. In many cases the cost difference between highest and lowest bidders is greater than the design fee paid to produce the complete and accurate set of bidding documents necessary to properly bid the project. This cost difference does not necessarily equate to savings over a negotiated contract, but it is indicative of the range of possible construction prices for the intended work, and the relative value of a complete set of bidding documents used in a competitive bidding process.

### **III. Construction Management/Agency (CMA)**

Project delivery using a construction manager acting in an administrative and advisory role on behalf of the owner is very similar to the traditional design-bid-build method. The difference is in the early design-phase involvement of the construction manager, whose pre-construction services usually include construction cost estimation, constructability feedback, and some form of value engineering. Also characteristic of projects involving a construction manager, whose role as an advisor to the owner parallels and complements that of the architect, is that the bidding process and construction contract administration can be precisely tailored to the needs of the individual project. A good construction manager's organization of the overall project into scopes of work for specific trades, administration of the bidding process, and follow-through during construction can equate to savings to the owner in excess of the construction manager's fee. Since the construction manager in an "agency" role acts as an advisor or consultant to the owner, usually for a stated, fixed service fee, an open-book method of accounting can be used to assist the owner in making subcontractor selections and other cost-related decisions during the construction phase. The construction manager's responsibilities during the construction phase include many of the contract administration duties assigned to the architect under traditional design-bid-build approaches using a general contractor, so some of the construction manager's service fees are offset by a reduction in the architect's fee for construction phase services. Scheduling of construction work can also benefit from the involvement of a construction manager, as early construction planning can allow for an early start of site and building foundation work. One common misconception about the construction management delivery method is that it is effective only on large commercial projects. In reality, a construction manager can provide value to an owner on almost

any size or type of project, but especially on those with complicated existing conditions, construction sequencing/scheduling, or coordination requirements.

#### **IV. Design-Build**

The design-build delivery method can also be effective for certain types of projects, but involves a number of unique caveats as well. Design-build projects typically involve the establishment of a construction price prior to a detailed or documented understanding of the scope of work. Many owners who sign design-build contracts do so without the benefit of an independent architect or construction manager to advise them through the process, and consequently, the owner must accept a fixed price without the benefit of a clear and documented understanding of the details of the final building product. Design-build projects, like negotiated ones, can save on time because construction can begin with minimal design documentation. The difference between them lies in the fact that the finer details of the design-builder's fixed price are usually not shared with the owner, whereas an "open-book" accounting approach is often taken in a negotiated construction agreement or one involving a construction manager. The combination of a nebulous scope of work and closed book accounting is a major advantage to the contractor and disadvantage to the owner. Anyone can agree on a fixed construction cost if they have the ability to adjust the scope, quality, and detail to fit that budget. The resulting tendency is for quality and detail to suffer in order to preserve the contractor's profit without increasing the construction cost paid by the owner. This is often not a major problem for relatively simple buildings like industrial or utility structures which can be easily described in terms of square footage and structural type, but it can be a serious drawback for an owner whose building needs include more detailed functional and aesthetic requirements.

Needless to say in an industry as complex as construction, there are variations of all project delivery methods discussed above as well as methods that were not mentioned. Some elements of one method can successfully cross over into another. But by and large, and perhaps in somewhat simplified terms, it has been the aim of this paper to describe the typical characteristics of the most common construction delivery methods. Since every project is different, the most advantageous approach can usually be identified by discussing and weighing all options early on in the planning phase of a project.

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CONSTRUCTION PROJECT DELIVERY METHODS: A COMPARISON		
DELIVERY METHOD	ADVANTAGES	DISADVANTAGES
NEGOTIATED (T&M, COST-PLUS, OR NOT-TO-EXCEED)	<ul style="list-style-type: none"> <li>• OPEN-BOOK ACCOUNTING, WITH COST SAVINGS ACCRUING TO THE OWNER</li> <li>• CONTRACTOR CAN GET INVOLVED EARLY IN THE DESIGN PHASE</li> <li>• CAN COMMENCE CONSTRUCTION QUICKLY</li> <li>• RELATIVELY EASY TO MAKE CHANGES DURING CONSTRUCTION</li> <li>• WORKS WELL WHERE A HIGH LEVEL OF TRUST EXISTS BETWEEN OWNER AND CONTRACTOR</li> </ul>	<ul style="list-style-type: none"> <li>• CAN BE DIFFICULT TO DEFINE WHAT "COST" IS AND WHAT IS TO BE REIMBURSED</li> <li>• CAN BE MORE EXPENSIVE SINCE LITTLE COMPETITION EXISTS</li> <li>• TOTAL PROJECT COST IS TYPICALLY NOT ESTABLISHED PRIOR TO COMMENCEMENT</li> <li>• CONTRACTOR HAS LITTLE INCENTIVE TO MAXIMIZE EFFICIENCY</li> </ul>
DESIGN-BID-BUILD (GENERAL CONTRACTOR)	<ul style="list-style-type: none"> <li>• COMPETITIVE AND FIXED-PRICE</li> <li>• A WELL-KNOWN, "TRADITIONAL" METHOD OF PROJECT DELIVERY</li> <li>• MOST GENERAL CONTRACTORS SELF-PERFORM SOME OF THE WORK</li> <li>• GENERAL CONTRACTOR MANAGES ALL SUBCONTRACTORS AND SUPPLIERS</li> <li>• CHECKS AND BALANCES BETWEEN OWNER, CONTRACTOR, AND DESIGN TEAM</li> </ul>	<ul style="list-style-type: none"> <li>• REQUIRES A COMPLETE AND THOROUGH SET OF CONSTRUCTION DOCUMENTS PRIOR TO BIDDING</li> <li>• CHANGES MADE DURING THE CONSTRUCTION PHASE CAN BE COSTLY</li> <li>• MORE TIME IS REQUIRED BEFORE CONSTRUCTION CAN BEGIN</li> <li>• CLOSED-BOOK ACCOUNTING, AND CONTRACTOR SELECTS SUBCONTRACTORS</li> <li>• COST SAVINGS ACCRUE TO THE CONTRACTOR</li> </ul>
DESIGN-BID-BUILD (CONSTRUCTION MANAGER-AGENCY)	<ul style="list-style-type: none"> <li>• COMPETITIVE AND FIXED-PRICE</li> <li>• COST-SAVINGS ACCRUE TO THE OWNER</li> <li>• PARTIALLY OPEN-BOOK ACCOUNTING</li> <li>• CAN COMMENCE CONSTRUCTION QUICKLY</li> <li>• CM INVOLVEMENT IN THE DESIGN PHASE HELPS CONTROL CONSTRUCTION COST</li> <li>• NON-ADVERSARIAL RELATIONSHIP BETWEEN OWNER, ARCHITECT AND CONSTRUCTION MANAGER</li> </ul>	<ul style="list-style-type: none"> <li>• CONSTRUCTION MANAGER TYPICALLY DOES NOT SELF-PERFORM WORK</li> <li>• REQUIRES A COMPLETE AND THOROUGH SET OF CONSTRUCTION DOCUMENTS, INCLUDING SCOPES OF WORK, PRIOR TO BIDDING</li> <li>• REQUIRES OWNER'S COMMITMENT TO CM PRIOR TO CONSTRUCTION START</li> <li>• ADDS AN ADDITIONAL CONTRACTUAL LEVEL AND MULTIPLE SOURCES OF CONTRACT RESPONSIBILITY</li> </ul>
DESIGN-BUILD	<ul style="list-style-type: none"> <li>• FAST DELIVERY METHOD</li> <li>• CAN BE TURN-KEY, SINGLE-SOURCE CONTRACT WITH THE OWNER</li> <li>• CAN COMMENCE CONSTRUCTION QUICKLY</li> <li>• CAN BE MOST EFFICIENT WITH SIMPLE BUILDING TYPES (INDUSTRIAL, AGRICULTURAL, ETC.)</li> </ul>	<ul style="list-style-type: none"> <li>• PRICE IS FIXED BUT SCOPE AND QUALITY ARE VARIABLE</li> <li>• COST SAVINGS ACCRUE TO THE CONTRACTOR</li> <li>• DIFFICULT TO DEFINE DETAILED SCOPE OF WORK PRIOR TO CONTRACT</li> <li>• NOT AS EFFECTIVE FOR COMPLICATED PROJECTS OR RENOVATIONS</li> <li>• LACKS CHECKS AND BALANCES PRESENT WITH SEPARATE CONTRACTOR AND DESIGN TEAM</li> </ul>

figure-1