

Chapter 1

THE CONSTRUCTION PROCESS AND PARTIES

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§ 1.6 SUMMARY**§ 1.1 • INTRODUCTION**

Design and construction play a vital role in the national economy, including the development of residential housing, office, commercial and retail buildings, as well as industrial plants, and the replacement, maintenance, and restoration of the nation's infrastructure and other public facilities. Modern demands of time and technology constantly compete with finances and tradition in determining the methods by which projects will be conceived, financed, designed, and constructed. These same competing factors likewise dictate the professional skills that will be brought to bear in the process.

As early as the late 1960's, participants in the design and construction professions began to recognize the limitations presented by the traditional design-bid-build method of project delivery. Commencing in the 1970's and continuing in earnest throughout the 1990's, efforts to devise alternative forms of project delivery advanced. The purpose of these efforts was to assist owners in achieving quality construction projects that met the proverbial goal of "on-time and in-budget." This search for improved and superior methods of project delivery often appeared to stall as parties struggled with developing and evaluating delivery criteria other than or in addition to price.

As with virtually all business, the construction economy is driven by an effort to balance risk and reward. Thus, project delivery methods, whether the traditional design-bid-build or an alternative method must inevitably address the appropriate allocation of the risks that are inherent in the design, construction and ownership roles. In addition to the owner's risk, which is often overlooked or under evaluated, the participants in the process typically include a design entity with responsibility for the design and a contractor who is responsible for placing the construction. There is no project delivery panacea available which for all projects can successfully balance the risks and rewards of the project participants. Instead, each project must be individually analyzed and the potential delivery options identified and selected based on the project's unique needs and requirements.

The fundamental risk associated with design, construction, and ownership cannot be eliminated. It can, however, be managed, directed, and controlled. The nature and extent of the risk associated with the design and construction process is not substantially affected by the method of

project delivery. However, the *allocation* of that risk may vary substantially. Each delivery option affords a differing allocation of risks.

In order to maximize the prospects for a successful project, the level and extent of risk assumed by the participants, including the owner, should be proportional to the ability of each party to control and manage that risk. The reward expected by each party, whether in the form of short-term compensation (in the case of the designers and constructors) or long-term return (in the case of the owners and investors) should be appropriate to the risk accepted. The goal of every method of project delivery is to achieve that elusive balance of time, quality, and budget that is the hallmark of every successful project. As the saying goes: “Good, fast, and cheap. Pick any two.”

§ 1.2 • TRADITIONAL PROJECT DELIVERY

An alternate method of project delivery can be broadly defined as any method or process of procuring design and construction services in a manner or through a procurement system that departs from the traditional design-bid-build model. Accordingly, successfully defining an “alternate” method,¹ requires that we first define the traditional design-bid-build method of delivery. Departures from the base line of the design-bid-build model then represent “alternate” methods of delivery.

At least in modern times, the traditional model is referred to as the design-bid-build method. However, if one ventures back in history to the early development of man’s built environment, one will discover that a form of design-build in which the “master builder” both designed and was responsible for construction actually preceded the now traditional design-bid-build model.²

The traditional design-bid-build method of project delivery is very much linear in form; progressing in logical sequence from one activity to the next. It frequently commences with the initial contract between the owner and architect. The architect’s design services proceed through the various design phases leading to the preparation of “for construction” plans and specifications. The owner, most usually with the architect’s assistance, then embarks upon the bid phase. In most cases, the construction contract is then awarded to the lowest bidder. Subsequently, throughout the construction process, the architect serves as the owner’s representative in dealing with the contractor.

§ 1.2.1—Phases Of A Traditional Design-Bid-Build Project Development

The phases of a traditional design-bid-build project can be identified as follows:

Pre-design

The project scope and the owner’s program and quality expectations are established by the owner either in-house or through outside consultants. A budget and required completion date are also determined. An architect may be retained for these programming/pre-design services.

Design

At the outset of the design phase the owner selects and retains the architect for development of the design and preparation of construction documents. The phases are typically, in this order, (1) Schematic Design Phase;³ (2) Design Development Phase;⁴ and (3) Construction Documents Phase.⁵

Bidding and Award

When design documents are complete, they are used as the bid documents. A contractor is selected based on an evaluation of cost and qualifications. The 1997 American Institute of Architects' (AIA) Document B141, subparagraph 2.4.2 requires the architect to "assist" the owner in the bidding process. The contract may be awarded based solely on sealed bids or on negotiated proposals. Private sector owners sometimes reserve the right to enter into negotiations with the three lowest bidders to determine a final price and award the contract. Where a bidder selected by the owner for performance of the work refuses to sign a contract for that work, the bidder may be liable for completion of the work including any increase in the cost of performance by an alternate contractor.⁶

Construction

The owner contracts for construction with the general contractor and the project is built.

Occupancy

After the construction of the entire project has been completed and the architect has certified "Substantial" and then "Final" completion, the contractor turns over the project and leaves the site to allow for move-in (installation of owner-furnished equipment and furnishings) and occupancy. On occasion, the owner may retain the contractor for "move-in" assistance or may secure that assistance through others, sometimes called "commissioning" agents.

§ 1.3 • DESIGN-BUILD AS AN "ALTERNATE" METHOD OF PROJECT DELIVERY

§ 1.3.1—Growth Of Design-Build

Whether design-build will emerge as the dominant means of project delivery as many have predicted remains to be seen. Irrespective of further growth, it is already a method of project delivery of significant proportion in private sector projects and is likely to experience continued growth in the public sector, competitive bidding laws notwithstanding. The State of Colorado has forayed into design-build by statutorily authorizing the Colorado Division of Transportation (CDOT) to employ design-build methodologies on state highway projects.⁷

The federal government turned heavily to design-build and fast-track methodologies in the wake of the September 11, 2001, World Trade Center and Pentagon disasters. Wedges two through five of the Pentagon are to be rebuilt using a design-build method of project delivery.⁸

In October 2004, the AIA hosted the Fifth International Conference on Design Justice to explore the use of “alternate” methods of achieving excellence in the design and construction of justice and detention facilities.⁹

So, exactly what characteristics identify design-build as a method of delivering the ultimate objective of the entire process — a completed, functioning project be it a residence, office, manufacturing facility, school, or highway? Before further exploring the answer, it is perhaps useful to explore the additional concept of “fast-track.”

§ 1.3.2—Fast-Track Defined And Distinguished

Unfortunately, certain commentators and courts have imprecisely and incorrectly used the terms “fast-track” and “design-build” as if they were synonymous. The terms are in no way interchangeable. In fact, fast-tracking of a project is merely a variation of other methods of project delivery and is not, in and of itself, a discrete method of delivering a completed project.

Either a traditional design-bid-build project or a design-build project may, albeit with certain modifications, be designed and constructed on a fast-track basis. The sole objective of a fast-track approach is to save time and therefore save money. The defining characteristic intended to accomplish this savings is the overlapping of the commencement of construction with the completion of design. This overlap may be modest (for example excavation commences after the foundation is designed but while other portions of the design are still in progress) or it may be significant as where construction of a portion of the project commences while *that portion* of the design remains under development.¹⁰

Irrespective of the underlying method of project delivery, application of fast-track methods can provide economies of time and money. It also can be hazardous and risky. An owner considering a fast-track approach must be aware that costly changes to already-constructed project components may be required in the event the finalization of the design requires changes to in-place construction. Inflation, interest rates, competitive pressures, or other factors must sufficiently justify the expected reduction in overall project duration to off-set the risk of increased direct costs that inevitably result from field changes when construction commences before design is concluded. As one contractor phrased it, “It is difficult to know what to build when the pencils haven’t stopped drawing.”¹¹

None of the standard form contracts (including those published by the AGC, AIA, EJCDC¹², etc.) address the contractual provisions necessary to adapt a project to a fast-track approach. Accordingly, it is necessary for the parties embarking upon a project with overlapping design and construction phases to carefully define their intentions.

Areas that should receive specific contract drafting attention include definition of the portions of the project targeted for overlap, the approximate level of design completion required for each phase before construction of that portion of the project commences, an appropriate construction contingency to absorb the costs associated with inevitable changes, and, perhaps most impor-

tantly from the standpoint of the contractor and architect, a provision whereby the owner recognizes and agrees to accept the risk associated with proceeding with construction in advance of a completed design.

Having debunked the all too-common misconception that fast-track is a separate, stand-alone method of project delivery, it remains to better define the most common “alternate” method of project delivery — design-build.

§ 1.3.3—Design-Build Defined

A good working definition of design-build is a method of project delivery wherein a single entity provides or is responsible for all services, labor, and material necessary to design and construct a facility or structure based on programmatic definition provided by the owner.

§ 1.3.4—Objective And Philosophy Of Design-Build

The philosophy of design-build project delivery is to simplify the construction process by establishing a single source of responsibility and accountability residing in one entity — an objective that is easy to state if not to achieve. Proper execution of design-build creates a unified system for delivery of both design and construction services.

The owner enters into one contract and that single contracting entity assumes sole contractual responsibility for both design and construction. This single source of responsibility is intended to enhance coordination of design and construction, improve communication, avoid finger-pointing and in so doing, deliver a project more smoothly, more rapidly and at a lower overall cost.

Can design-build really accomplish these lofty goals? It depends. To begin answering the question, one can start by considering some of the variations in the design-build model.

§ 1.3.5—Variations On The Design-Build Model

Constructor-Led

In what appears to be the most common model, the design-build entity is a construction contractor that provides construction services but subcontracts with a design professional for the necessary design services. Reasons the constructor-led or constructor prime model is the most common structure include:

- Contractors are more accustomed than are architects and engineers to the high levels of risk associated with the sole source of responsibility that is inherent in the design-build model.
- Contractors more commonly have the necessary financial capital.
- Contractors have the required bonding capacity.

Designer-Led

For the reasons discussed above, it is less common to see a model where the designer is prime and secures the required construction expertise and services through contracts with a gener-

al contractor. Many architectural and engineering firms have attempted to establish separate design-build firms with mixed success. This not infrequent lack of success can often be traced to the differing mind-set inherent in the professional practice of architecture and engineering as compared to the philosophy of most constructors.

Pure Design-Build Entity

Pure design-build entities generally exist only in highly specialized and technically demanding project environments. They specialize in design-build projects and commonly have in-house design personnel with the appropriate design licenses. Projects accomplished by such firms are sometimes known as “EPC Contracts” (Engineer, Procure, Construct). This model is most common in power plants and large specialized manufacturing and processing projects.

Design-Build Joint Venture

Contractors and designers on occasion establish joint ventures to pursue and execute design-build projects. The joint venture is a separate legal entity. Accordingly, there is no actual subcontracting required to accomplish the required tasks, although each of the joint venture firms may have contracts with the joint venture entity. It is not uncommon for certain contractors and designers to form “strategic alliances” to identify and jointly contract for design-build projects.

§ 1.3.6—Understanding The Risk Of Design-Build

It has already been noted that risk cannot be eliminated; it can however be managed, directed, controlled and allocated. The design-build entity assumes the risk of both design and construction. This does not mean there is more risk or less risk — it simply means those same risks have been allocated, and hopefully controlled, in a defined manner.

One of the most predominant driving forces behind design-build is the owner’s desire to have a single source of responsibility. Thus, owners may find the design-build model attractive because it allows them to fully shift the risks to the design-builder — the only entity with whom they have contracted.

One ramification of the design-build model that may not be immediately apparent is the elimination of the Spearin Doctrine: the rule of law stating that the owner warrants to the contractor the sufficiency of the plans.¹³ In the design-build scenario, the owner avoids the risks associated with the Spearin warranty. The constructor is, at least contractually, also the designer. With the owner-architect agreement for design removed from the process and the constructor and designer having full responsibility, the underlying premise of the Spearin Doctrine is eliminated. Of course, the construction partner will continue to look to the design partner for appropriate design execution.

Since the design-builder is responsible for both design and construction, there should be less reason for delays and costly extras. In the abstract, however, the coordination, communication, and early design-phase constructibility evaluation that can occur during the design phase of traditionally designed and constructed projects can accomplish the same objective. Thus, a traditional design-bid-build project can be structured to provide at least this perceived advantage of the

design-build model. Of course, the parties must recognize the potential of such activities and assign appropriate contractual duties.

§ 1.3.7—What Projects Are Good Design-Build Candidates?

Certainly design-build is not a panacea and should not be the method of choice for all projects. While design-build has been employed on a wide variety of projects, these projects can generally be divided into three risk categories: low-risk projects, moderate-risk projects, and high-risk projects.

Low-Risk Projects

Projects with clearly defined and repetitive design and construction requirements can generally be placed in the low risk category. Fast food franchise restaurants, projects with repetitive designs such as Wal-Mart stores and similar projects are good examples. The risk generally is low and predictability is high. The project is well-defined in advance and little additional owner input is required during design and construction.

Moderate-Risk Projects

A possible example of the moderate-risk class of project is a highway bridge project. More design input is required than for the first, low risk category, but the risk is largely quantifiable.

High-Risk Projects

These projects are highly complex, have demanding schedules and require specific results or performance requirements. Examples include utility plants and petrochemical plants.

§ 1.3.8—Owner's Responsibilities On A Design-Build Project

First and most importantly, the owner is responsible for providing full information about the project. The owner must have a clear statement of his/her needs and requirements. If the owner does not yet have this, he/she may need to consider a bridging contract to develop the program before proceeding with design build proposals. These project definition tasks are services that in the traditional design-bid-build model the architect normally accomplishes in a pre-design or programming phase.¹⁴

On occasion, owners have attempted to address the need for development of a project program through a concept known as bridging. The owner hires a consultant to assist in developing the design to a minimal level before turning it over to the design-build entity for completion of the design. The initial architect is referred to as the "bridging architect." The entity that completes the design is the architect of record and assumes liability for the design.

Because one of the objectives of design-build is to reduce the overall duration of the project from commencement of design to occupancy, the owner must be prepared to promptly review design and construction issues and timely provide required approvals, decisions, and information. Again, these are services that the architect may have complete or shared responsibility for in a more traditional method of project delivery.

Finally, the owner must be prepared and capable of promoting clear communication among the parties. No longer is the architect an intermediary between the owner and the constructor.

While the owner may have input into the selection of the designer, the architect will have a different role to fulfill than that assigned in the traditional model where she is under contract with the owner. Now, under contract with the constructor, the architect is no longer the owner's eyes and ears on the project during construction but instead owes allegiance to the constructor.

Owners that can provide these elements of project definition, design review and approval, and construction contract administration tend to make good owner candidates for design-build projects. When it becomes necessary to procure these services from outside sources, some of the benefits of design-build project delivery become diluted. Owners who do not possess these capabilities and are unwilling to either recognize their limitations or procure the services from others are poor design-build project candidates.

§ 1.3.9—Duties Of The Design-Build Entity

The design-build entity is responsible for cooperating with and assisting the owner in finalizing the scope, the cost of construction and the work schedule. The design-builder must procure the design and construction of the work in accordance with the owner's requirements and the contract documents.

As the single entity contractually linked to the owner, the design-builder must represent the owner in the total design and construction process. The core responsibilities of the design-builder promote the underlying philosophy of design-build, which is to create a single point of accountability, simplify and improve communication, and enhance coordination of the design and construction activities.

§ 1.3.10—Benefits Of Design-Build

Single Source of Responsibility

The responsibility for both design and construction rests with one entity eliminating the finger pointing often associated with the traditional model. It is immaterial to the owner's right to recover for improperly functioning project components whether the defect is a result of deficient design or defective construction.

Minimal Conflicts and Fewer Claims

Because the responsibility for both design and construction rests with one entity, there are fewer conflicts, misunderstandings and, accordingly, fewer claims. Irrespective of whether the design-build model is constructor-led, designer-led, or assigned to a specialized entity, the design-build model contemplates that close coordination between the design side and the construction side will be an on-going process. Accordingly, the incidence of constructability questions, RFIs (Requests for Information), Change Orders, and similar project disruptions should be minimized.

No Budget Creep and Fewer Change Orders

Because the designer and constructor work together from project inception, there should be fewer changes and associated budget creep. Adjustments to quality and scope that can devastate an owner's budget should be identified far earlier in the process than is the case under a traditional design-bid-build model.

Cost Savings, Value Engineering, Constructibility, And Speed

Because the contractor is on-board during the design phase, it is able to address constructibility issues and value engineering from the project inception. This effort should avoid disputes with respect to design details the contractor deems unconstructable or difficult and unnecessarily costly to construct. It also should avoid the separate value engineering¹⁵ and cost-cutting sessions that so often follow the completion of design when the contractor's first estimates and prices start coming in, and the owner realizes there truly is not enough money.

§ 1.3.11—Disadvantages Of Design-Build**Early Owner Project Definition is Required**

The owner must define the project in advance of preparing the design-build proposal. If the owner does not have the in-house capacity to define the project parameters the cost of accomplishing this task through a consultant may erode the cost savings that prompted the selection of the design-build model initially. Only with an experienced owner can this disadvantage be mitigated.

The Designer's Independence is Eroded

With the advantages of a sole source of responsibility comes the disadvantage to the owner of losing the architect's independence and contractual neutrality. Where the architect in the traditional model provides a level of protection to the owner during the construction process, in the design-build model, the architect's allegiance is to her design-build partner.

Potential For Quality Compromises

The design-build contractor is price motivated and may be tempted to make unacceptable compromises with respect to quality versus cost. For example, a design-build contractor may be inclined to select a mechanical system with the lowest initial cost but the highest life-cycle cost. In the traditional design-bid-build model, the architect and mechanical consultant are expected to aid the owner in achieving an appropriate balance between short-term and long-term costs.

Design-Build Contract Resources

The design-build model of project delivery has led to the development of standard form design-build contracts by a variety of professional societies. A partial listing of these contracts includes:

- 1) AIA Document A191 Standard Form of Agreement Between Owner and Design Builder;

- 2) EJCDC No. 1910-40, Standard General Conditions of the Contract Between Owner and Design Builder;
- 3) The AGC family of Design Build documents provides the following menu from which to select:
 - AGC 400, Preliminary Design-Build Agreement Between Owner and Contractor;
 - AGC 410, Standard Form of Design-Build Agreement and General Conditions Between Owner and Contractor (Where the basis of payment is the Actual Cost Plus a Fee with a Guaranteed Maximum Price);
 - AGC 415, Standard Form of Design-Build Agreement and General Conditions Between Owner and Contractor (Where the basis of payment is a lump sum);
 - AGC 420, Standard Form of Agreement Between Contractor and Architect/Engineer for Design-Build Projects;
 - AGC 440, Change Order/Contractor Fee Adjustment;
 - AGC 450, Standard Form of Agreement Between Design-Build Contractor and Subcontractor; and
 - AGC 460, Standard Form of Agreement Between Design-Build Contractor and Design Contractor and Design-Build Subcontractor (Where the subcontractor provides a Guaranteed Maximum Price).
- 4) The Design Build Institute of America (DBIA) also has a suite of design-build contract forms including:
 - DBIA Document No. 520, Standard Form of Preliminary Agreement Between Owner and Design-Builder;
 - DBIA Document No. 525, Standard Form of Agreement Between Owner and Design-Builder — Lump Sum;
 - DBIA Documents No. 530, Standard Form of Agreement Between Owner and Design-Builder — Cost Plus Fee with an Option for a Guaranteed Maximum Price;
 - DBIA Document No. 530 C, Standard Form of General Conditions of Contract Between Owner and Design-Builder; and
 - DBIA Document No. 540, Standard Form of Agreement Between Design-Builder and Designer.

These and other design-build contracts should be carefully reviewed and judiciously utilized. Excessive reliance on any standard form contract can lead to overlooking of the risks specific to a particular project. It is also important to understand the basic design-build philosophy of the industry organizations that promote their own contract forms. For example, the AIA design-build contracts anticipate that the architect will be selected in the manner preferred by the AIA, that is, through quality based negotiations. The parties will then execute an initial phase one contract (AIA Document A191 (Phase I)) for the completion of preliminary designs. If the Phase I proposal is deemed acceptable the parties then execute Document A191 (Phase II) for completion of final design documents and construction. Many have found this two-part system cumbersome. On the other hand, if the notion of staged relationship appeals to the owner, the AIA contract forms may be preferable to the EJCDC contracts that contemplate a competitive selection process with the owner-design-builder relationship fully defined on a lump-sum or cost plus basis at the outset.

None of this should be read to infer that the standard form design-build contracts are defective or of no value. It should however, be read to state that to an extent that is even greater than in the traditional design-bid-build model, care must be taken to select the most appropriate standard forms; that is the ones that best define the intended project relationships. Attempts to cut and paste standard form contracts so as to convert traditional contracts to design-build contracts are virtually guaranteed to fail absent extraordinary care and skill on the part of the drafter.

§ 1.4 • CONSTRUCTION MANAGEMENT

§ 1.4.1—Definition Of A Construction Manager

Much as with the fast tracking of a project, the utilization of a Construction Manager (CM) does not create a mode of project delivery that is a separately definable model. Rather, the CM role can be included as an additional set of responsibilities imported into virtually any other method of project delivery.

Properly selected and utilized on a design-build project, a CM can compensate for many of the disadvantages inherent in design-build by providing to the owner an entity whose contractual allegiance is to the owner. Whether a CM fulfills this role better or worse than an architect in the traditional model is the subject of on-going discussion. The CM's role is limited only by the owner's needs and the CM's qualifications. Otherwise stated, a construction manager's duties are solely defined by the contract. To paraphrase Justice Stewart's famous quote on the issue of pornography: "I may not be able to define construction management but I know it when I see it."¹⁶

§ 1.4.2—The Need For A Common Vocabulary

There is no accepted industry definition of the CM role or the duties and responsibilities inherent in the construction management process. One commentator has offered the observation that this lack of a standard vocabulary serves to impede advancements in alternate project delivery methods.

The lack of a common vocabulary continues to keep real industry-wide process advancements from taking place. . . . One example is the lack of consensus on the definition of CM at-risk, also known as CM/GC, CMc, GC/CM, etc. A large number of private owners are using CM at-risk without calling it that. How are we going to start cataloguing lessons learned that can be developed into industry-wide best practices if we don't even know what process we're talking about?

If we stay on our current course without common terminology, we are not going to capture lessons learned, develop industry best practices or learn from each other's mistakes. We are going to keep doing what we have always done—making the same mistakes over and over again.¹⁷

The AIA and the AGC appear to agree.

At present there are not industry wide accepted definitions of project delivery methods and many groups, organizations and individuals have developed their own. In so doing they have often used different characteristics to define the delivery methods. The result has been a multiplicity of definitions, none of which is either entirely right or entirely wrong.¹⁸

§ 1.4.3—Role Of A CM

The CM may have involvement in virtually all phases of the design and construction of a project. This involvement may include:

- 1) Design input;
- 2) Value engineering;
- 3) Constructibility review;
- 4) Cost estimating and budgeting;
- 5) Scheduling;
- 6) Bidding and/or negotiation assistance;
- 7) Construction oversight;
- 8) Change order review;
- 9) Review of pay applications;
- 10) Punch-list preparation; and
- 11) Project close out.

The CM's scope of involvement in the listed activities may be sole, primary, secondary, advisory, or merely that of a reviewer. Only reference to the specific contract can adequately define the CM's role on any individual project. Despite the disparate nature of CM responsibilities, two primary categories of CM roles have developed. These categories are generally referred to as follows: (1) CM as Agent/Advisor¹⁹ and (2) CM at Risk (sometimes called "CM as Constructor").

§ 1.4.4—CM As Advisor Or Agent

The CM as Advisor or Agent can, but usually does not, enter into construction contracts or serve as the constructor. When the CM as agent does serve as constructor, the role is one in which the CM serves as a surrogate for the owner and all of the CM's decisions and actions as agent are the decisions and actions of the owner as principle.

More common than the situation in which the CM as Advisor serves as the constructor, is the situation in which the CM provides many of the same contract administration services an architect might otherwise provide in a full-service architectural contract. In this capacity the CM may provide initial budgeting and estimating services, assist in the selection of trade contractors, review the progress of construction, review constructor submittals, and review change orders and pay applications. The level of involvement, authority, and responsibility of the CM in these tasks varies depending on the specific contract.

§ 1.4.5—CM At Risk

The CM at Risk differs only in very minor respects from the CM as Agent during the design development of the project. However, commencing with the process of contracting with the trade contractors and continuing throughout the process of managing the day-to-day construction activities, including procurement and scheduling, the CM at Risk is very much in the role of general contractor. Thus the term “CM at Risk,” since a CM in this capacity has all of the financial risks typically embraced by a general contractor.

§ 1.4.6—When Is The Addition Of A CM Warranted?

There are two primary indicators supporting the employment of a CM. Generally, a CM can be justified on large, complex projects that require significant levels of project oversight and coordination. Likewise, where the project owner is not sufficiently experienced to fulfill many of its required roles, including decision making, a CM may provide the necessary expertise the owner lacks.

A CM may be particularly valuable to the owner in a design-build context since the designer's loyalty has been contractually wed to the design-build entity rather than to the owner. In such situations, the CM can replace certain of the roles of the architect that have been eliminated or diluted by virtue of the very nature of the design-build contractual arrangements. However, as additional roles are imported into the design-build model, some of the beneficial economy supporting the model in the first instance is diluted.

§ 1.4.7—Advantages Of A CM

The CM is contracted to the owner, acts as an agent for the owner, and is charged with protection of the owner's interests. Accordingly, for an owner of limited experience, a CM can be a valuable ally, particularly where the role of the architect has been reduced or compromised.

Where the CM is also the constructor, it is positioned to control costs and thus provide to the owner with an early cost commitment. Further, where the CM has been directly involved in design development through constructability reviews and value engineering, the incidence of errors and unconstructable details is reduced.

§ 1.4.8—Disadvantages Of A CM

A project properly delivered in the traditional design-bid-build model has clearly defined roles and responsibilities. The overlap of duties and responsibilities is virtually non-existent. There is an economy of responsibility and the contractual chains of communication and responsibility are clearly defined and easily observed and respected.

The CM process can add a layer of administrative involvement that may overlap with the responsibilities of other project participants. Not only may the CM's role overlap with the duties of others, it may, if not carefully defined and administered, conflict with the roles, duties, and responsibilities of others. This potential overlap is at best an expenditure of unnecessary project funds and at worst creates destructive dissension within the project team. Finally, where the CM

serves as constructor, there is a conflict of interest between his role as a cost-motivated contractor and his role in protecting the best interests of the owner.

§ 1.4.9—CM Contract Resources

Efforts to define the role of the CM are evidenced in the proliferation of CM forms of contract. The following representative sample is from the AIA family of documents only:

- A101/CMA Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum;
- A121/CMc (AGC Document 565) Owner-Construction Manager Agreement Where the Construction Manager Is Also the Constructor;
- A131/CMc (AGC Document 566) Agreement Between Owner and Construction Manager Where the Construction Manager is Also the Constructor and Where the Basis for Payment is the Cost of the Work Plus a Fee and There is No Guaranteed Cost;
- A201/CMA General Conditions of the Contract for Construction - Construction Manager Edition;
- A511/CMA Guide for Supplementary Conditions - Construction Management - Adviser Edition;
- B141CMA Standard Form of Agreement Between Owner and Architect - Construction Manager Edition;
- B144/Arch-CM Standard Form of Amendment for the Agreement Between the Owner and Architect - Construction Management Services Adviser; and
- B801/CMA Standard Form of Agreement Between Owner and Construction Manager – Adviser.

It should be intuitively obvious that if the industry lacks solid definition of what a CM in fact is, standard form contracts purporting to define CM relationships should be approached with care. Whether crafting a custom CM agreement from scratch or adapting a standard, pre-printed agreement, great care is required to insure that the CM process is defined so as to achieve the parties' intended result.

§ 1.5 • PAYING FOR THE WORK

Methods of compensating the contractor for the labor and materials necessary to complete the construction of the project vary even more widely than do the methods of project delivery. It is not entirely uncommon to locate writings on the subject that tend to classify differing payment methods as distinct methods of project delivery. This is not strictly accurate since whether a project is delivered under a traditional design-bid-build model or one of the so-called alternate methods of delivery, almost any method of compensation can be adapted to the selected method of delivery.

Methods of payment include fixed price, cost plus fixed price, cost plus incentive fee, time and materials, and unit price.

§ 1.5.1—Fixed Price

Fixed price contracts are most commonly associated with the traditional design-bid-build method of project delivery since the “fixed price” is most commonly the contractor’s low, responsive bid. Under this method of contracting, the owner has reasonable certainty of the final cost of the project subject only to change orders for changed conditions and owner elective changes. As long as there are no changes in scope and no change in conditions, the contractor must deliver the project for the agreed upon price irrespective of the actual cost of the work. Because, at least in a technical contract sense, it is immaterial to the owner whether the contractor has managed a profit of nothing or a little or a lot, the owner generally has no right to examine the contractor’s accounting records (commonly called job cost records) or to determine whether or in what accounts there may be underruns or overruns.

§ 1.5.2—Cost Plus Fixed Fee

Under this method of contract compensation, the contractor is reimbursed for all costs identified in the contract as allowable costs, plus an additional fixed amount or “fee” to cover overhead and profit.²⁰ This form of contracting leaves with the owner the risk of uncertainty in times of rising costs resulting from escalation in the price of materials, increases in project scope or other factors beyond the contractor’s control. By retaining this risk sophisticated owner’s hope to achieve the most favorable but still “fair” price for their project.

Because the contractor is not burdened with the risk of cost escalation, the contractor need not include a contingency to cover such costs. Thus, if costs do escalate, the owner pays a “fair” price for the construction. But if costs remain stable or decline, the contractor does not reap a possible windfall from a built-in contingency or escalator that was never required. Rather, the owner who has determined to retain the risk of cost escalation for his own account receives the benefit of retaining that risk.

In many cost plus contracts the fee remains the same regardless of the final cost. In other contracts, the fee may increase as the cost increases but often by a percentage that is less than the base contract percentage. This fee is typically negotiated as a percentage of projected cost. Where the fee is allowed to increase in proportion to actual cost there is typically a maximum amount that can be recovered in fee.

Cost plus contracts may be drafted either with or without a guaranteed maximum price.

Since the owner’s payment obligation is tied directly to the actual incurred cost, it is common for a cost plus contract to include a right for the owner to audit the contractor’s accounting records. The greater the extent to which the owner’s financial interest in terms of the total to be paid for the completed project is tied to the contractor’s integrity in pricing and performing the work, the higher the level of good faith, trust, and confidence the contractor owes to the owner and the greater the owner’s right with respect to auditing the contractor’s cost records.²¹ In *Orion*

Refining Corp. v. Shaw Constructors, Inc., the court held that a clause in a cost plus contract that permitted the owner to audit the contractor's cost for any reasonable purpose also permitted an audit for the purposes of discovery once a claim was filed.²²

§ 1.5.3—Cost Plus Incentive Fee

As in a cost plus fixed fee contract, the contractor's costs in this model are reimbursed. However, instead of the fee being fixed, it is based upon an incentive formula—usually a percentage of the actual cost of the project. By way of example, where a contractor under a cost plus incentive fee agreement proposes cost saving value engineering measures, it may be entitled to an additional fee on that portion of the work.²³

§ 1.5.4—Time and Materials

A time and materials (T&M) contract reimburses the contractor for the cost of labor and materials as they are incorporated into the project. Compensation includes payment for material and supplies, direct labor costs, indirect labor costs, and profits. T&M contracts may, but need not have, a guaranteed not to exceed or guaranteed maximum price. Sophisticated owners who are capable of monitoring the construction and who are knowledgeable as to appropriate charges for “in-place” construction may find T&M contracts to their advantage. On the other hand, owners that do not have either the time or the ability to closely monitor the contractor's performance may find themselves at the mercy of a less than scrupulous contractor. As with cost plus contracts, owners typically have a right to examine the contractor's job cost records.

§ 1.5.5—Unit Price

Unit price contracts are most commonly encountered on projects where it is difficult to determine in advance the precise quantities of material that will be required to successfully complete the work. The parties agree upon a set price per unit (such as cubic yard of excavation, cubic yard of in-place concrete, squares of roofing, etc.). Once the exact quantity of material is determined based upon work completed, payment is made at the per unit price. It is not uncommon for unit price contracts to establish a different unit cost depending upon the quantity required. It is also common for a project to be contracted with another form of contract for the majority of the work and a unit price calculation reserved for only that portion that is both repetitive and subject to quantity uncertainty. It is always wise in a unit cost contract to stipulate whether additional quantities over a certain sum will be paid at the same or a higher or lower unit price than the expected “base quantity” and also to provide the same definition with regard to a reduction in unit price quantities below a certain level or quantity.

§ 1.6 • SUMMARY

Pressures of time and finances will continue to challenge design and construction professionals to develop innovative ways of addressing the concerns of owners and investors. These same participants in the design and construction process will turn to the legal profession for knowledgeable assistance in crafting the contractual arrangements necessary to accomplish the

goals and objectives they have defined. Only through detailed knowledge of the design and construction process, including, specifically, the risks to be managed and controlled and the rewards to be achieved, can the legal profession respond reliably.

Whether drafting contracts for the traditional design-bid-build model or any variation of an alternate means of project delivery, the drafting attorney must exercise great care in reviewing and adapting the standard form agreements. As valuable as they may be as a starting point, rarely, if ever, is the contemplated project perfectly suited to an unmodified standard form of agreement.

Attorneys practicing construction law must be sufficiently informed to understand and respond to their clients' concerns in all areas including roles and relationships of the project participants, bonding, insurance, risk management, licensing and statutory regulations, and limitations. The more innovative the method of project delivery, the greater the challenges for the attorney and the greater the level of skill and experience required. It is the objective of this and the chapters to follow to provide, at a minimum, a primer with respect to those challenges.

David C. Wells, Esq., Editor and Author (1999), *Wells, Love & Scoby*, was a previous contributor to this chapter.

NOTES

1. Design-bid-build is also occasionally referred to as "design-award-build." Some, however, use "design-award-build" to distinguish contracts that are awarded to the lowest bidder from negotiated contracts.

2. Ken Follett, *Pillars of the Earth* (NY: William Morrow 1989) (also published by Pan Macmillan, Penguin Putnam, and as an audio book by Brilliance Corporation and Simon and Schuster), provides a best-selling novelist's account of the trials of a 12th Century "master-builder."

3. According to AIA Document B141-1997, subparagraph 2.4.2.1, the Schematic Design Phase includes the preparation of conceptual design and perspective sketches and may include study models and preliminary selections of major systems.

4. Under the AIA Document B141-1997, subparagraph 2.4.3.1, Design Development refines the design to establish the scope, relationships, forms, size, and appearance of the project.

5. AIA Document B141-1997, subparagraph 2.4.1 states that during the Construction Documents phase, the architect will prepare plans and specifications "consisting of Drawings and Specifications setting forth in detail the requirements for construction of the project."

6. *Carolina Cas. Ins. Co. v. ADC Contracting & Constr., Inc.*, 300 A.D.2d 259 (N.Y. App. Div. 1st Dep't 2002).

7. C.R.S. § 43-1-1403 provides, "Notwithstanding any other provision of law to the contrary, the department [CDOT] may select a design-build firm and award a design-build contract for a transportation project as provided in this part 14. The department may include a warranty provision in any design-build contract that requires the design-build firm to perform maintenance services on the completed transportation project." As of this writing, House Bill 1064 is currently pending before the 2005 Colorado legislature. This bill authorizes the creation of additional Regional Transportation Districts and states: "Nothing herein shall be construed to affect the abilities of such entities to enter into design-build contracts. . . ."

8. Rob McManay, "Disaster Recovery Will Need Design Build," in *McGraw Hill Construction* (September 25, 2001).

9. Whether due to the fact the intended audience was comprised of members of the legal profession or other reasons, the AIA included in its Conference reservation form a rather striking clause as follows:

Force Majeure. The performance of this agreement by either party may be affected by force majeure (including, but not limited to, acts of God, acts of war or other acts of enemies, government regulation, disaster, strikes, floods, civil disorder, curtailment of transportation facilities, or other emergency or event beyond the control of the parties), thus making it inadvisable, unsafe, illegal, or impossible to provide required accommodations and/or meeting facilities, hold the meeting, or travel to the meeting. In the event of force majeure, either party to this agreement may terminate the agreement upon providing written notice to the other party without penalty or obligation. Such right of termination shall not be unreasonably exercised.

In addition, the AIA reserves the right, in its sole discretion, to cancel this meeting. In that event, the AIA shall refund to you all registration fees it has received from you for this meeting, but shall have no further obligation to you of any type, whether monetary or otherwise. Accordingly, the AIA shall in no event have any liability to you based on claims for indirect, special, or consequential damages of any type whatsoever, and shall have no other obligation to you of any type except as expressly stated in the preceding sentence.

10. Nevada casino construction has given rise to what is termed “flash-track” or “casino-track” construction in which the contractor may be required to provide a guaranteed maximum price and commence construction when the drawings are no further developed than 40 or 50 percent of design development.

11. An owner contemplating a fast-track approach to a project should expect to provide a larger than normal contingency, should anticipate a high likelihood that some in-place construction will need to be removed and rebuilt or at least modified, and should expect additional service fees from the architect to address changes as program requirements and details are refined during the progress of the work.

12. Throughout this Chapter, the following abbreviations are used: “AIA” (American Institute of Architects), “AGC” (Associated General Contractors), and “EJCDC” (Engineers Joint Contract Documents Committee).

13. *United States v. Spearin*, 248 U.S. 132 (1918).

14. For example, the AIA Document B162, Scope of Designated Services provides for “Phase I—Predesign Services.”

15. Value Engineering is an organized effort to analyze the cost of construction, functions of systems, equipment, facilities, services, and supplies with the objective of providing essential functions at the lowest initial and/or life cycle cost that is consistent with required performance, reliability, quality, and safety.

16. *Jacobellis v. Ohio*, 378 U.S. 184 (1964).

17. Michael Kenig, “The Industry Needs a Common Language,” in *Engineering News Record* (February 28, 2005).

18. American Institute of Architects and the Associated General Contractors of America, *Primer on Project Delivery* (2004).

19. Technically, CM as Advisor should be considered a method of project management rather than a method of project delivery. However, this distinction is not critical to the purpose of this discussion and will accordingly not be developed further.

20. See for example, AIA Document A117, Abbreviated Form of Agreement Between Owner and Contractor, Cost of the Work Plus A Fee, Article 5 “Costs to be Reimbursed.”

21. *A.A. & E.B. Jones Co. v. Boucher*, 530 P.2d 974 (Colo. App. 1974) (not selected for official publication).

22. *Orion Refining Corp. v. Shaw Constructors, Inc.*, 839 So.2d 161 (La. App. 2003).

23. For a discussion of the requirements for value engineering under an incentive contract with the U.S. Army Corp of Engineers, see *C.A. Rasmussen, Inc. v. U.S.*, 52 Fed. Cl. 345 (2002).

