

Chapter 1

Introduction to Construction Contract Administration

Construction is the execution of the work as required by the contract documents. Construction contract administration (CCA) involves the activities necessary to effect and determine the fulfillment of the contract requirements by the parties to the construction contract. The construction stage of the project follows the design and procurement stages and precedes the facility management stage in the life cycle of a facility. Construction is a team effort that includes the contractors, subcontractors, testing agencies, architect/engineer (A/E), consultants, owner, authorities having jurisdiction (AHJs), product representatives, and others, all working toward the common goal of delivering the completed facility ready for its intended use.

The participants in the construction stage can generally be divided into four teams: the contractor team, the design team, the owner team, and the supplier team. Depending on the project delivery method, the contractor may be an independent entity, a construction manager as constructor (CMc), or the design-builder. A construction manager as adviser (CMa) is a member of the owner team.

The basic responsibilities of those involved in the construction processes are stipulated in the contract documents. Depending on the project delivery method, the contract documents may have been based on standard documents published by the American Institute of Architects (AIA), the Engineers Joint Contract Documents Committee (EJCDC), ConsensusDOCS endorsed by several construction associations, the Design-Build Institute of America (DBIA), the Construction Management Association of America (CMAA), or based on nonstandardized documents created by an owner. Except when stated otherwise, this practice guide will focus on the most widely accepted CCA procedures as established by AIA and EJCDC as defining the basic rights, duties, and responsibilities of the various parties to the construction contract based on the traditional design-bid-build delivery method.

The procedures implemented during the construction stage encourage team commitment to the project. The team members' commitment to communication, coordination, and cooperation can greatly affect the attitude of project team members as they strive to achieve a successful project, constructed on schedule, within budget, and with no unresolved claims.

1.1 Construction

Construction is the coordinated effort of all those involved in providing the owner with a successful project.

When the construction stage is complete, the owner or the owner's facility manager takes over for the facility management stage of the life cycle. The owner may, in time, continue the facility life cycle through the process of renovation or alteration to accommodate new requirements. Construction contract administration begins when the agreement between the owner and contractor is executed and ends when final payment is accepted by the contractor. The construction stage includes the contractor's planning and scheduling activities, mobilization of equipment, material purchasing, fabrication of components, and construction. Primary decision makers during this stage are the A/E, owner, and contractor.

Construction activities can be divided into two broad categories:

Construction Contract Administration Activities related to administering the contract for construction, typically performed by the A/E

Contractor Project Management Activities related to managing the construction process, typically performed by the contractor. Contractor project management should not be confused with construction management. Construction management is a delivery method. Contractor project management is managing the construction process, whether by a contractor, a construction manager, a design builder, or other entity responsible for constructing a project.

1.2 Construction as a Team Activity

The construction of a facility is the culmination of the collective ideas, talents, and services of a large and diverse group. The main participants are:

- The owner that initiates the project
- The A/E who designs the facility or alterations to an existing facility
- The contractor who is awarded a contract for the construction

There are others involved in the project with one of the main participants. They include:

- Subcontractors, who perform portions of the work under the direction of the contractor
- Product representatives, who assist with submittals and furnish field services such as inspecting installed work
- Suppliers, who furnish materials or products for the project
- Manufacturers, who produce materials or products
- Consultants, who provide professional services to the A/E, contractor, or owner
- Testing laboratories and inspection agencies, which provide quality control (QC) services to the owner and contractor

- Financial advisers and institutions that arrange for the project financing
- Attorneys, who coordinate the legal and contractual issues of the project
- Insurance advisers and companies that provide risk coverage to the owner, contractor, and A/E
- Bonding companies, which ensure the performance of the contractor and subcontractors
- Authorities and regulatory agencies which have jurisdiction over the construction and that establish criteria in the form of codes, ordinances, and permits

The team member with the greatest number of project management responsibilities is the contractor; however, basic technical competence and workmanship is but a small part of the overall responsibility of the contractor. The contractor is responsible for maintaining and controlling project coordination; project schedule; subcontractor and supplier performance; payment procedures; safety, insurance, and bonding requirements; quality assurance and quality control tasks; submittals; and a multitude of other business management functions.

The responsibility for CCA oversight typically rests with the A/E. The A/E provides services to the owner through the design stage and usually continues to represent the owner during the construction stage, thereby allowing the A/E to maintain continuous involvement in both the design and construction processes.

1.2.1 Team Approach

The cumulative and coordinated efforts of the owner, the A/E, and the contractor, during design and construction, are the means that produce the end: the completed project, which is a facility. The success of the project is dependent on how well the participants understand their roles and responsibilities and those of the others, how well they carry out those roles, and how well they meet the expectations of the other participants. The success of the completed project is rarely the unilateral effort of a single team entity, but rather the conscious effort of the participants working as a team toward the common goal of a well-constructed project, completed on time and within budget.

The expectations that the owner, the A/E, and the contractor have of each other stem from responsibilities identified in the agreements, conditions of the contract, and specifications. Other expectations are based on a standard of care and basic moral obligations. Regardless of the source, these expectations affect the way the parties relate to one another during the construction process. If all participants acknowledge these expectations, then all should function as a team during the construction process.

1.2.2 Benefits to Working as a Team

There are many benefits to the project team's working together in harmony. These benefits may include:

- Better communication and coordination
- Increased productivity
- Reduced project costs
- Earlier project completion

- Improved project team morale
- Fewer claims and delays

When project participants work together as a team, the participants usually benefit from increased productivity. Increased productivity results from reduction in downtime while waiting for response to questions, resolution of disagreements, reduction in work that needs to be redone, and reduction in paperwork associated with claims and disputes.

Working together as a team may also result in reduced project costs for all participants. A cooperative approach by team members typically results in a reduction in the number of contract modifications and claims that occur. Reducing modifications and claims reduces the total cost of the project to the owner, reduces the labor and paperwork costs to the A/E and the contractor, and reduces the labor and material costs to the contractor by minimizing delays and confusion that reduce efficiency in advancing the work.

If delays and interruptions to the progress of the project are minimized, the contractor may be able to expedite project completion. Minimizing the number of conflicts and problems that need to be resolved allows the contractor to concentrate on scheduling and efficiency, which may facilitate the contractor's efforts to complete the project in the shortest time possible. The project develops a positive momentum. This benefits all team participants by reducing overhead costs and allowing them to move on to other projects.

When project participants feel that they are working together toward a common goal, rather than working against each other, the resulting positive attitude and sense of accomplishment can significantly improve the project. A positive outlook affects participants at all levels of a project. A positive outlook may result in better workmanship as workers are motivated to produce their best work, with a willingness among construction contract administrators and project managers to expedite the project progress, and encourage cooperation among trades in completing the work with fewer conflicts. High morale on a project team also promotes a sense of personal pride and a stake in creating a successful project.

On a project where the participants have a sense that they are working together for the common good, the participants are often willing to work together to resolve conflicts and develop creative solutions to the problems that inevitably arise. They are also far more likely to contribute to solutions than increase or create conflicts.

1.2.3 Obstacles to Working as a Team

There are obstacles inherent to every project. How the project team members manage these obstacles may affect how successful the project will be. These obstacles may include:

- Adversarial relationships/personalities
- Incomplete or inaccurate contract documents
- Unreasonable schedule requirements
- Unplanned or inordinate number of changes to the project scope
- Labor issues
- Delays in product fabrication or delivery
- Poor communications
- Delays caused by ineffective management

Each project brings together a different construction team, the members of which may not have worked together before. Personality conflicts may stand in the way of getting the project completed. It is important to maintain a professional demeanor at all times, removing personality differences and focusing on resolving issues to get the project completed. Sometimes this may require involving alternate people in the project to work through a specific problem.

Incomplete or inaccurate contract documents require additional time and effort on the part of project participants, and progress may be delayed while interpretations or revisions are being prepared. Contract modifications are typically required to resolve issues resulting from incomplete or inaccurate contract documents. The time and effort required to prepare and respond to the contract modifications may distract project participants from concentrating on the project. Negotiating price and time revisions often result in disagreement or conflict.

Unreasonable schedule requirements often result in conflict between project participants. If participants are not allowed a reasonable period of time to complete their work, they may incur costs and inefficiency because of increased crew size or overtime work, may cut corners to appear to maintain the schedule, and may utilize means and methods that produce the quickest result rather than the desired result. Proper work sequencing may be set aside to increase productivity in order to make up time. These occurrences may negatively impact the completed facility.

Unplanned, extensive, or an excessive number of changes to the project scope requested by the owner may result in incomplete or inaccurate contract documents and, when combined with unreasonable schedule requirements, may have a negative effect on project participants. The A/E's agreement with the owner is normally modified to include additional services necessary for design or redesign, modification of the contract documents, and extended or reduced CCA. Change orders for modifications to the contract price, contract duration, or both need to be processed. These changes also impact purchase orders and scheduling, and usually result in a higher cost to the owner than if the changes were originally incorporated into the contract documents.

Labor issues, including contract negotiations, walkouts, slowdowns, and strikes, may delay completion of a project. Depending on the nature and duration of the labor issue, the contractor may need to work overtime or double shifts to make up for time lost during a labor dispute. This significantly increases the contractor's labor cost. The owner may also be required to extend the contract time equivalent to the duration of a labor dispute. An extension of the contract time results in increased overhead costs and may reduce a participant's ability to begin or continue work on other projects.

Delays in product fabrication or delivery create challenges to project completion. If products cannot be fabricated because of the unavailability of a certain material, an alternate product may need to be considered. Product substitutions increase the risk that an inferior product may be furnished in lieu of the product originally specified or selected, and increases the potential for installation conflicts when other participants proceed with related work based on the originally selected product. When delivery dates are not met, expedited shipping may be required to keep the project on schedule. In addition to increased shipping costs, delivery delays may adversely impact the performance of related work. Proper sequencing of the work may again be affected.

Poor communications and poorly followed communication procedures inevitably result in conflicts. Project participants need to follow the communication procedures included in the contract documents. To minimize the potential for future conflicts, oral communications should be documented in writing, with copies sent to the parties involved.

Ineffective management may delay project progress and completion through reduced efficiency, incorrectly ordered materials, poorly scheduled deliveries and installation, and lack of coordination of dependent construction activities. Ineffective management on the part of one or more participants can significantly affect the working relationship of an entire project team. When a project is ineffectively managed, unanticipated work may result in significant additional effort and project costs.

1.2.4 Team Building and Collaborative Effort

All projects benefit when the owner, A/E, and contractor work together in a collaborative effort. A collaborative effort includes an expressed commitment to proactive cooperation during the execution of the project. Each of the parties actively works to:

- Understand the extent of their contractual rights and responsibilities and effectively carry them out
- Work fairly, efficiently, and swiftly to solve problems through communication
- Act in an ethical manner

One such collaborative effort is known as partnering. The AGC states in *Partnering—A Concept for Success* that it strongly believes that all participants in the construction process need to work as partners. One of the primary benefits of this partnering process is that it increases the perception of all parties to the contract that they have the same common goals. Other benefits include:

- Reduced exposure to litigation through open communication and issue resolution strategies
- Lower risk of cost overruns and delays because of better time and cost control over the project
- Increased productivity and lower administrative costs because of elimination of defensive case building
- Increased opportunity for innovation through open communication and the element of trust, especially in development of value analysis changes and constructability improvements
- Increased opportunity for a financially successful project

Another collaborative effort is “Integrated Project Delivery,” which is addressed later in this chapter.

Partnering develops a team-building process that creates mutual trust and respect for one another’s respective roles in the construction process and recognizes the risks inherent with those roles. The team concept changes the attitude from “I-win-you-lose” to a “win-win” for the entire project team.

The partnering process:

- Sets ground rules for communication
- Establishes how problems will be addressed
- Identifies critical decision makers from each of the parties to the contract
- Often includes a mission statement for the project
- Often includes a written and signed pledge to work to resolve problems without conflict

It is important to note that partnering does not change the terms and conditions of the contract. For partnering to be effective, each member of the project team needs to participate in the partnering process, jointly establishing the project mission statement and partnering goals, identifying the issue escalation process, and mutually agreeing to the issues that will be important to the project and team members. The partnering concept attempts to make all team members partners in the process of constructing the project.

1.3 Understanding the Documents

A prerequisite to executing the work is a basic understanding of the documents used in construction. A basic introduction to construction documents and contract documents is stated in the *CSI Project Delivery Practice Guide*. Construction documents are defined as the written and graphic documents prepared or assembled by the A/E for communicating the project design for construction and administering the construction contract. Various documents constitute the contract documents that are the basis of the contract. Other documents are for reference, such as geotechnical data and surveys, and others are generated to carry out the requirements, such as shop drawings and test reports. Certain requirements used in the procurement of the construction contract may no longer apply once the agreement is signed and the contract is formed. These documents include procurement solicitations, instructions for procurement, bid security, and procurement forms. The *CSI Construction Specifications Practice Guide* explains how these documents are prepared. Understanding how they are prepared will provide a greater understanding of how to benefit from their use. The following is an abbreviated description of typical documents used in construction.

1.3.1 Contract Documents

These documents are listed and enumerated in the agreement and referred to in the conditions of the contract for the work to be performed. They are the documents that are a legal part of the contract and describe the work. The contract documents describe the proposed construction (referred to as the *Work*) that results from performing services, furnishing labor, and supplying and incorporating materials and equipment into the construction. Contract documents consist of both written and graphic elements and typically include the following:

Contracting Requirements These include contracting forms (agreement) and conditions of the contract (general and supplementary conditions, or owner furnished general or special conditions) as well as various named attachments and forms. Revisions, clarifications, and modifications are changes applicable to the contract documents such as addenda issued during the procurement process or change orders issued during the course of the work.

Specifications These include specific written requirements for the work. Specifications define the quality requirements for products, materials, and workmanship upon which the contract is based and establish requirements for administration and performance of the project. They are generally written for each work result as sections and organized by divisions using *MasterFormat*®.

Contract Drawings These include large graphic illustrations of the physical form of the work to be performed. The drawings are graphic representations of the work upon which the contract is based. As the graphic documents usually contain more than plan views, the preferred term is *drawings* rather than *plans*. They show the quantitative extent and relationships of elements to one another.

The contractor signing the agreement with the owner has the responsibility of accomplishing the work in accordance with the contract documents. Therefore, the contract documents are addressed only to the contractor; however, owner and A/E responsibilities are also included within these “contract documents.” Contracting requirements and specifications are usually bound into the *project manual*. Contract drawings are generally bound separately because of their larger size.

There are several types of drawings, reports, and specifications that may be utilized during construction but may not be included with the contract documents. These may include surveys, hazardous material reports, assessments, and geotechnical data.

1.3.2 Drawings

Various drawings represent information about the work to be performed. As indicated in *The CSI Project Delivery Practice Guide* they illustrate relationships between elements as well as quantities, locations, dimensions, sizes, shapes, and forms of the elements and assemblies in the project. Paper drawings are two-dimensional by their very nature. Certain types of specialized views can show elements in isometric or perspective views, but one cannot see every view possible. The current limitations of single views leave many portions of the work unseen. Communicating the information accurately may require multiple views. Understanding how drawings are prepared and the types of information shown is a major aspect of interpreting the information.

Plan views are drawings that show the horizontal layout, as if one is looking down on the subject. This view does not usually convey information about the vertical dimensions. Other views such as elevations, sections, and profiles give a view looking perpendicular to the horizontal plane. These basic types of views require the user to mentally compare the two views to understand what is happening in the three dimensions of space. It is somewhat difficult to understand how far an element extends if it does not appear at the plane in which the view is drawn.

Fitting the various views together is like doing a jigsaw puzzle. To further explain various conditions, details are drawn as if the element were sliced or viewed at a particular location. These details indicate more specific information and may be considered representative of unique conditions or typical of most conditions.

Understanding what exists in the space indicated by the drawings leads to a consideration of the sequence necessary to carry out the work. The means, methods, and techniques are in the contractor’s control and the efficiency is a result of ingenuity and timing of each activity.

Various types of views and drawings prepared by various professional disciplines are associated with stages of the facility life cycle.

1.3.2.1 Resource Drawings

These are the drawings furnished during the procurement stage that generally show existing conditions such as roads, buildings, and current construction circumstances. These

may be drawings that were prepared for the construction of existing facilities. Drawings of this nature rarely show exact as-built conditions and may be record drawings from the previous contractor. Resource drawings are generally furnished for reference only and are not contract documents. Resource drawings may also include items such as owner-furnished and -installed equipment that requires utility rough-in locations or attachment requirements.

1.3.2.2 Contract Drawings

Contract drawings are those named in the agreement and can be supplemented by various forms of interpretations and modifications including small-size sketches. These drawings document the work to be performed. They may show work to be removed and work to be constructed. They help to establish the extent of the work and are complementary with the specifications. The contract documents are interrelated and they provide different types of information required to carry out the work.

1.3.2.3 Shop Drawings

These are drawings that are prepared by manufacturers, suppliers, subcontractors, and contractors to illustrate a portion of the work. Only shop drawings required by the specifications are normally reviewed and acted on by the A/E. These drawings usually illustrate proposed details and techniques to show compliance with the contract documents. Shop drawings may include dimensions obtained at the project site showing how the specialized work will be incorporated into the project. Shop drawings, regardless of approvals, are not contract documents and do not waive requirements of the contract documents.

1.3.2.4 Coordination Drawings

Information provided by various subcontractors and the contractor are brought together to coordinate utilization of limited space. Information on the contract drawings may be diagrammatic, with single lines indicating general locations. Coordination drawings are drawn with actual (scale) dimensions of the elements. These drawings help determine how elements will actually fit in the space available. Without coordination drawings, the installation of each element may require that the next element fit in the remaining space. Frequently, this creates a problem that is extremely difficult to rectify requiring elements to be repositioned. Coordination drawings, regardless of submission or approval by the A/E, are not contract documents.

1.3.2.5 Record Drawings

The contract documents may require record drawings. Often the contractor marks up the contract drawings to indicate changes and field conditions. The contract documents indicate the type of information required to be included on the record drawings. Concealed conditions and utility locations are the most common information required. These record drawings are submitted through the A/E to the owner as a permanent record of the actual conditions of the completed work.

1.3.2.6 Electronic Models

As technology continues to evolve, some traditional locations of facility information are changing. Building Information Modeling (BIM) uses computer programs to document

facility design, to simulate construction, and to simulate facility operation. BIM is more than 3D modeling of facilities and components with the traditional information typically found in contract drawings. A BIM database can be an intelligence-rich model that allows extraction of graphical and data information. BIM is beginning to incorporate some traditional specification and product-specific information into the model. For example, a BIM database may contain information on doors at the specific door location. The door may be identified by size, type (metal, wood, aluminum, and glass), fire rating, finish, and hardware set.

BIM allows design and construction team members to collaboratively embed intelligence into the model in order for personnel to concentrate on design and problem-solving tasks while allowing the computer to perform tasks such as quantity take-offs for cost estimating or product ordering, clash detection, scheduling, and quality assurance.

1.3.3 Specifications

Specifications, in general, can include various types of data; however, the specifications included as a part of the contract documents are the written description of the work to be performed by the contractor and are prepared by the A/E. The specifications may be simple notes on a drawing or more detailed descriptions bound in the project manual. The specifications are typically organized in accordance with the Construction Specifications Institute (CSI/CSC) *MasterFormat*® and the three-part *SectionFormat*™. *MasterFormat*® establishes the organizational structure for the documents and sections within a project manual, each with its unique number and title. A section is further divided into the three PARTs defined in *SectionFormat*™.

MasterFormat® is organized into 50 divisions. Division 00 contains procurement and contracting requirements. Divisions 01 through 49 contain the specifications. The specifications group of divisions is further divided into major subgroups. These include:

- General Requirements Subgroup—Division 01
- Facilities Construction Subgroup—Divisions 02 through Divisions 19
- Facilities Services Subgroup—Divisions 20 through 29
- Site and Infrastructure Subgroup—Divisions 30 through 39
- Process Equipment Subgroup—Divisions 40 through 49

Division 01 specifies the general requirements consisting of administrative, procedural and temporary facility requirements that apply to the entire project. Divisions 02 through 49 contain the “work results” sections generally consisting of materials, products, systems, or assemblies and their installation.

SectionFormat™ establishes a consistent structure for information, making it easy to locate and understand. The parts separate the information into groups that indicate general information, products, and the execution of work. Certain product specifications may be written in a proprietary or descriptive manner, while others are based on reference standards or performance requirements, or a combination of methods. These specifications, and not those of the manufacturer, are a part of the contract documents.

A good understanding of the structure of specifications and the individual sections greatly aids in administering the work. For example, PART 1—GENERAL of the specification further defines and establishes administrative items that are related to Division 01—General Requirements. This part includes submittals and other items of procedural

matters. PART 2—PRODUCTS contains specifics about the products to be utilized, while PART 3—EXECUTION gives preparatory information and requirements for installation, application, or erection of the products specified in PART 2.

Other types of specifications and standards, not bound in the project manual, may include those of organizations such as ASTM International, American Association of State Highway and Transportation Officials (AASHTO), and National Electrical Manufacturers Association (NEMA). Specifications and standards by these organizations may be contract documents if they are incorporated into the contract specifications by reference to specific standards.

Manufacturers develop data sheets that give specifics about their products. These product data sheets may be required as a submittal to provide evidence of the kind and quality of products being furnished by the contractor. These data sheets are like shop drawings and are not contract documents. Manufacturers may also develop guide specifications specifically for their products to assist the A/E in preparing project specifications.

Record specifications are similar to record drawings in that they utilize contract documents, which are then marked by the contractor to indicate actual conditions such as the products provided during the construction stage.

1.3.4 Revisions, Clarifications, and Modifications

Precontract revisions include revisions made prior to signing the agreement. Addenda are written or graphic information issued to clarify, revise, add to, or delete information in the original procurement documents or in previous addenda. Typically, an addendum is issued prior to the receipt of bids or proposals. Other revisions may include bid or proposal revisions when permitted. Addenda items affecting the contract documents are contract document revisions and should be enforced during the administration of the contract.

Clarifications and proposals include documents initiating changes or clarifications that have not been incorporated into the contract by formal contract modifications. These documents include requests and proposals.

Contract modifications include modifications after the construction agreement has been signed and may include additions to, deletions from, or modifications of the work to be done. These are accomplished by change orders, change directives, and minor changes. These can be issued at any time during the contract period.

Revisions, clarifications, and modifications are addressed in greater detail in Chapter 8, “Interpretations and Modifications.”

1.4 Administering Construction Based on Delivery Methods

Although there are many similarities, the CCA and contractor project management processes vary with the project delivery method selected for the project. A comparison of CCA and contractor project management requirements based on project delivery method follows.

1.4.1 Design-Bid-Build and Design-Negotiate-Build Project Delivery

The most common form of construction contracting is the single prime contract. It involves negotiation or competitive bidding for a single construction contract, incorporating all work required to complete the project. Many people consider design-bid-build (D-B-B) to be the traditional method of construction contracting. Typically, an owner hires an A/E who designs the project with the help of consultants and makes the project available for bid. Contractors submit bids to construct the project, and generally the qualified bidder with the low bid is awarded the project. After the project is awarded, the contractor constructs the project. CCA services are typically performed by the A/E as part of the basic services agreement with the owner. Communications normally flow from the owner to the contractor through the A/E. Contractor project management is provided by one or more contractors, depending on whether a single-prime contract or a multiple-prime contract is used. Depending on the size and extent of the project, contractor project management services may be performed by a project superintendent, a project manager, or a team of personnel, each responsible for different aspects of the contractor's project management responsibilities. Standard AIA and EJCDC, document forms are frequently used for the D-B-B and design-negotiate-build (D-N-B) project delivery methods.

The A/E is typically responsible for:

- Representing the owner during the construction stage
- Observing the work for conformance with contract requirements
- Observing project progress for review of contractor applications for payment
- Preparing and recommending contract modifications
- Attending project meetings
- Inspecting the project to determine substantial and final completion

In addition to CCA services typically performed by the A/E, the owner is typically responsible for:

- Making periodic payments to the contractor
- Approving contract modifications involving changes to contract time or price

The contractor typically has a project manager on staff to handle contractor project management responsibilities. These responsibilities may include:

- Preparing applications for payment
- Administering subcontracts
- Purchasing
- Preparing, monitoring, updating, and revising project schedules
- Attending project meetings
- Communicating with the A/E and subcontractors
- Preparing proposal requests and responding to A/E issued contract modification proposals
- Preparing and implementing safety programs
- Requesting clarifications and interpretations of the contract documents
- Administering the submittal process

A variation of the design-bid-build project delivery method is the design-negotiate-build project delivery method. The main difference is that in the D-N-B project delivery method, the project is not put out for bids from contractors. The contractor still goes through the process of developing prices for the project, just as if bidding. Whereas the D-B-B project delivery method typically utilizes lump-sum or unit cost contracts, projects with D-N-B project delivery frequently use contracts with a cost of the work plus a fee and sometimes include a guaranteed maximum price (GMP). The administrative responsibilities of the owner, A/E, and contractor on projects with D-B-B and D-N-B project delivery are similar. If cost plus a fee or time and material pricing is utilized, the contractor is typically required to submit to the A/E and owner records of actual costs incurred with the contractor's applications for payment.

D-B-B and D-N-B project delivery methods usually involve a single contract but may involve administering multiple-prime contracts. Multiple-prime contracts are generally associated with the construction management project delivery method. If a construction manager is not involved, the owner may be required to administer and coordinate the contracts.

The size and extent of the project will affect how each contractor performs its contractor project management services. The number of other projects being constructed by the contractor will also affect how the contractor will perform contractor project management services. For each contract, the contractor may utilize a superintendent, a project manager, or a team of persons to manage its contractor project management responsibilities.

1.4.2 Construction Management Project Delivery

Construction management services are often provided in one of two basic forms: construction manager as constructor (CMc), sometimes known as construction manager at risk, and construction manager as adviser (CMa). The CMc is effectively the contractor and provides contractor project management services, guarantees the cost of construction, and signs subcontracts for most or all of the construction work. The CMa usually divides the project into multiple contracts for procurement and award of contracts. The CMa provides management services to the owner and usually includes consolidating applications for payment and coordination among contracts. A construction manager may also provide construction expertise, cost estimating experience, and scheduling services to the A/E during the design stage of a project.

When using the multiple-prime contracts, the owner (when CMa is used) or the construction manager (when CMc is used) enters into a separate contract with each prime contractor. CCA responsibilities for multiple-prime contracts may be very similar to those for a single-prime contract, except that the A/E is now administering several contracts. Record keeping and information processing increase with the number of separate prime contracts, as does the importance of coordination. The key to success in multiple-prime contracts is coordination among the prime contractors. The A/E needs to understand and ensure the performance of the responsible party to coordinate the contracts. Communication still flows from contractors through the A/E and CMa or CMc to the owner.

CCA and contractor project management in a construction management contract depends on the form of construction management to be provided. If the construction manager acts as an agent or adviser to the owner and does not perform construction, the construction manager provides certain CCA functions.

In CMA, the construction manager provides some of the CCA services typically provided by the A/E. These services may include:

- Representing the owner during the construction stage
- Observing project progress for review of contractor applications for payment
- Reviewing and approving contract modifications
- Attending project meetings
- Serving as the communication link between the A/E and the contractor

Refer to standard documents, such as AIA Document A232, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

In acting as the CMA, the construction manager provides all of the CCA services typically provided by the owner and may provide many of the CCA services typically provided by the A/E. With CMA, the contractor project management responsibilities and procedures are similar to those required for a D-B-B delivery method, except the contractor communicates with the owner and A/E through the CMA, rather than communicating directly with the A/E.

When the construction manager acts as the contractor, the owner may retain the A/E for CCA services. In CMc, contractor project management services provided by the construction manager are similar to the contractor project management services typically provided by the contractor. The CMc's responsibilities may include contracting, purchasing, and supervising of construction by guaranteeing the cost of the project and signing subcontracts, acting as the contractor rather than as an adviser. In a CMc project, contractor project management services are typically performed by a project manager or team, rather than by the project superintendent. Refer to AIA Document A133, Standard Form of Agreement Between Owner and Construction Manager as Constructor where the basis of payment is the Cost of the work Plus a Fee with a Guaranteed Maximum Price.

Unless clearly identified in the owner–construction manager agreement and the contract documents, the responsibility for administering the contract can be confusing. Standard AIA, EJCDC, ConsensusDOCS, and CMAA documents are frequently used for the construction management project delivery method. These standard documents define the responsibilities of each party and their lines of communication.

1.4.3 Design-Build Project Delivery

As project cost control and speed of delivery have become more important, the design-build (D-B) method of project delivery has become more popular. In the D-B project delivery method, the owner contracts with a single entity, the design-builder, to design and subsequently to construct the project. The design-builder may have a contract with an independent A/E for design services, or may provide A/E services as part of a D-B company. The significant difference is that the A/E services are provided for the design-builder, rather than the owner. Standard AIA, DBIA, ConsensusDOCS, and EJCDC contract document forms are frequently used for the D-B project delivery method.

The distinction between CCA services and contractor project management services may become blurred in a D-B contract because the design-builder may be providing both types of services. The owner (or its administration professional) typically retains some of the CCA responsibilities, such as verifying project progress prior to making periodic

payments to the design-builder, but many of the CCA responsibilities that would typically be performed by the A/E or construction manager are typically performed by the design-builder. The responsibility for performing CCA and contractor project management services may also vary depending on whether the design-builder is a single entity or a joint venture between a contractor and an A/E. The responsibility for performing CCA and contractor project management services needs to be clearly addressed in the agreement between the owner and the design-builder and in the agreements between the design-builder and the contractor (if applicable) and A/E. CCA and contractor project management services in a D-B contract are typically provided in one of the following two ways:

1. A member of the D-B team is assigned to administer the contract and is responsible to the design-builder. This member's duties may be significantly modified from the usual form of CCA under a single-prime contract.
2. An administrative professional may be retained by the owner to represent the owner's interests during construction. The agreement between the owner and design-builder stipulates the responsibilities of this administrative professional performing CCA so the design-builder knows how to conduct the design-builder's communications and process submittals during construction.

This delivery method provides the owner with one company to deal with from design through construction. However, because the A/E works for the design-builder rather than the owner, the owner may need to provide some of the CCA services that would be typically performed by the A/E on a D-B-B project. These services may include:

- Observing the work for conformance with contract requirements
- Observing project progress for review of design-builder applications for payment
- Reviewing contract modifications

Because the A/E's contractual relationship is with the design-builder rather than with the owner, the A/E may often be in the position of making recommendations to the design-builder rather than the owner. In addition to CCA services required by the A/E's agreement with the design-builder, the A/E is required to provide services as set by state licensing regulations.

A design-builder without a separate agreement with a contractor typically assumes responsibility for the contractor project management services. In addition, through the design-builder's agreement with the A/E or through A/E on staff, the design-builder is typically responsible to the owner for many of the CCA services performed by the A/E. Because management services of the contractor and administrative services of the A/E are being provided by the design-builder, these services may be performed more expediently and with fewer personnel.

1.4.4 Owner-Build Project Delivery

When the owner-build (O-B) project delivery method is utilized, the owner provides many of the contractor's project management services, and a layer of management is eliminated. Depending on the extent of the project, the owner may retain an A/E for design services and for obtaining required permits for the project. The A/E's CCA

services during the construction stage are at the direction of the owner. Depending on the level of participation desired by the owner and included in the owner-A/E agreement, the A/E might be very involved in the construction stage, even assuming responsibility for conducting the owner's communications with contractors and suppliers. At the opposite extreme, there may be no formal CCA at all, other than that required by A/E licensing laws. Typical documents for the O-B delivery method are owner specific and may not be based on standard documents such as those from AIA or EJCDC. These documents may be prepared directly by the owner or the facility manager.

The administrative procedures required when the O-B project delivery method is used may be greatly reduced from those required under the D-B-B or D-B project delivery methods. Because the owner is providing contractor project management services, this will likely reduce requirements for submittals, approvals, and similar activities. Procedures for addressing construction modifications are also greatly simplified. Standard AIA and EJCDC contract document forms can be modified for use for the O-B project delivery method.

1.4.5 Integrated Project Delivery

Integrated project delivery (IPD) requires early collaborative contributions during the design phases of what are traditionally late applications of expertise. Contractors, facility managers, subcontractors, manufacturers, and suppliers become involved with the design team in the design process. Decisions are usually made based on the appropriate solutions for the project and the owner's needs rather than solely on first cost. The early involvement of more "team members" creates synergy and allows the project to yield the highest potential of good design and construction solutions meeting the owner's requirements. As stated in the American Institute of Architects (AIA) and AIA California *Integrated Project Delivery: A Guide*, IPD practices

... integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction.

In the Construction phase, the benefits of the integrated process are realized. For architects under traditional delivery models, construction contract administration is considered the final stage of design—the last chance to address issues and achieve solutions. But in Integrated Project Delivery, the design and its implementation are finalized during the Detailed Design and Implementation Documents phases. Thus, construction contract administration is primarily a quality control and cost monitoring function. Because of the greater effort put into the design phases, construction under IPD will be much more efficient.

A collaborative effort in the IPD method allows for coordinated documents. Since much of the work that has been traditionally performed during construction has moved forward into the design phases, CCA should be simplified. For example, a particular manufacturer or supplier may have had input during design and their product information may have been incorporated into the documents. Therefore, review of submittals may be eliminated except to verify that an item that was documented in the documents is in fact furnished and installed into the project.

1.5 Construction Contract Administrator

CCA usually begins when the owner-contractor agreement is executed and concludes when final payment is accepted by the contractor. Under special circumstances, CCA services may begin during the procurement stage of a project, and may extend to the expiration of the correction period. The actual start and completion times of CCA services vary, depending on the specific requirements of the contracts between the A/E and the owner and between the contractor and the owner. The start and completion milestones of construction, as identified by the AIA and EJCDC documents, will identify the duration of CCA—that is, beginning with execution of the owner-contractor agreement and ending with acceptance of final payment by the contractor.

A construction contract administrator should:

- Be a team member and be able to effectively represent the interests of the owner, the A/E, and the A/E's consultants. In many ways the construction contract administrator is an extension of a good design team.
- Have good communications skills.
- Know the contents of the owner-A/E and the owner-contractor agreements.
- Know and understand the project forms to be used for the project, particularly the conditions of the contract, and the underlying principles of contract law upon which they are based.
- Have a working knowledge of construction materials, construction trades, means and methods, and the relationships between subcontractors, suppliers, and manufacturers.
- Understand the codes and regulations that govern the project.
- Be open-minded, fair, and responsive.

CCA services are usually provided as part of the A/E's basic services. The individual responsible for the CCA may be the A/E or a member of the A/E's staff, or, in the case of large firms or large projects, CCA may be provided by a full-time project representative. The term *A/E* is used when referring to a construction contract administrator because the service is most often provided by the A/E.

There are individuals who provide CCA as a specialty service. They work as consultants to the A/E when CCA is performed as part of the basic A/E services, or as a consultant to the owner when the owner has assumed responsibility for some or all of the CCA services. In some instances, CCA responsibilities may be split between the A/E and a CCA consultant. In either case, careful attention to the division of responsibilities and coordination between the A/E and the CCA consultant is necessary.

When the owner is a large corporation, a developer, or a governmental or public agency, CCA may be provided by the owner's staff, either to supplement or to replace the A/E. Because the A/E creates the contract documents, there should be a clear understanding of who will interpret those documents during construction and who is responsible for verifying conformance to the contract requirements. A/Es must understand their responsibilities under state licensing laws to ensure that they have not relinquished services that they cannot legally divest.

CCA services are sometimes provided by third parties. Lenders may have a contract administrator to ensure that the lender's interests are being protected. The lender's contract administrator's duties may consist of attesting to the quality of completed work and the quantity of work in place to substantiate monthly payment requests. A municipality may have a contract administrator on the site to document certain construction activities or ensure proper coordination with municipally owned infrastructure. Regardless of the variation employed, the agreements among the parties to the contract acknowledge the various roles and identify their responsibilities.

CCA is not the same as construction management. The construction manager is an added participant in the process, who may be employed by the owner for pre-construction services, construction services, or both. CCA, on the other hand, is usually an integral component of the basic services agreement between the A/E and the owner.

1.6 Contractor's Project Manager

A contractor's project manager should:

- Be a team member and be able to effectively represent the interests of the contractor, subcontractors, suppliers, and the contractor's consultants. The contractor's project manager has primary responsibility for compliance with the requirements of the contract documents.
- Have good communications skills.
- Know the contents of the owner-contractor agreement, subcontracts, and purchase orders.
- Know and understand the standard forms to be used for the project, particularly the conditions of the contract, and the underlying principles of contract law upon which they are based.
- Have a working knowledge of applicable safety regulations and understand the importance of maintaining the contractor's safety program.
- Have sufficient training in cost accounting, budgeting, and construction scheduling to be able to monitor and report the project's budget and schedule status.
- Have a working knowledge of construction materials, construction trades, means and methods, and the relationships between subcontractors, suppliers, and manufacturers.
- Understand the codes and regulations that govern the project.
- Be open-minded, fair, and responsive.

Many of the duties of the contractor's project manager are similar to those of the construction contract administrator. It is important to note, however, that the construction contract administrator represents the owner on the project, while the project manager represents the contractor. Each is responsible for contract compliance by its respective party to the contract.

It is advisable that personnel who serve in either of these capacities have appropriate training, supplemented by sufficient field experience.

1.7 Owner's Project Manager

An owner's designated representative is the individual identified by the owner in writing as having the legal authority to bind the owner to decisions being made during construction. The designated individual is often the owner's project manager, but may have different titles. The owner's project manager should:

- Be a team member and be able to effectively represent the interests of the owner.
- Have good communication skills.
- Know the content of the construction documents.
- Know and understand the project forms to be used for the project, particularly the conditions of the contract, and the underlying principles of contract law upon which they are based.
- Have a working knowledge of construction material, construction trades, means and methods, the construction process, and the relationship between subcontractors, suppliers, and manufacturers.
- Be open-minded, fair, and responsive.

The owner's responsibilities during construction will be defined in the agreement and also included in the conditions of the contract. Many owners have limited roles during construction. Typical responsibilities include:

- Making payments
- Signing change orders

However, sophisticated owners with experience in construction activities have more active roles. The owner's role in CCA is determined on a project basis, and there is not a "normal" role model.

