SIXTH EDITION

CONSTRUCTION SPECIFICATIONS WRITING

PRINCIPLES AND PROCEDURES

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PREFACE

As the Construction Specifications Institute (CSI) notes at the beginning of its *Manual of Practice*, the history of construction specifications can be traced all the way back to Noah's Ark. Instructions for construction of the Ark were expressed in specifications; there were no drawings.

> So make yourself an ark of cypress wood; make rooms in it and coat it with pitch inside and out. This is how you are to build it: The ark is to be 450 feet long, 75 feet wide and 45 feet high. Make a roof for it and finish the ark to within 18 inches of the top. Put a door in the side of the ark and make lower, middle and upper decks. Genesis, Chapter 6, Verses 14–16 (*The Holy Bible, New International Version,* 1978, by New York International Bible Society)

Specifications alone were apparently sufficient to design and build the Ark in ancient times. Today, however, the process has become more complicated and specifications have evolved into complex documents and drawings have been added, reflecting new technologies and contractual relationships.

Both drawings and specifications have evolved as construction has become more complex. In the early 1900s, architectural drawings became virtually an art form, with ink drafting on cloth. Reproduction of drawings was by "blueprints": white lines on blue backgrounds. Specifications were essentially notes on the drawings, except on some large projects where the notes were gathered into "book specs." Now, production of graphic and text documents has been computerized with Computer-Aided Drafting (CAD) and at least computer-based word processing. The prospect is pending for the abolition of traditional drawings and specifications in favor of an interoperable database of information, known as the Building Information Model (BIM).

The benefits and consequences of BIM and its allied programs are being determined as this is written. Issues such as contractual duties and responsibilities, procurement (bidding) processes, compliance with regulatory requirements, and copyright protections are yet to be worked out for BIM projects. Somehow, the fundamental concept of a designer instructing a builder through specifications will prevail.

It is perceived that traditional construction documents will need to be produced for the foreseeable future. Thus, the focus of this book is on the conventional principles and procedures for production and use of construction specifications.

THE AUTHORS

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Mark Kalin is President of Kalin Associates, an independent specification consulting firm in the Boston area. In 2010, Mark is National Chair of the Sustainable Facilities Practice Group of the Construction Specifications Institute and President of Specifications Consultants in Independent Practice, an organization of independent and in-house specification writers in its 50th year. For the AIA, Mark has served as Chair of the MasterSpec Review Committee, the Library and Archives Committee, and the Specifications Professional Interest Area. For CSI, Mark has been President of the Boston Chapter and now serves on the national CSI Technical Committee.

Mark is the author of the original GreenSpec (1996) and Kalin Associates has completed specifications for over 160 projects seeking USGBC LEED certification. Mark has taught a course on Specification Writing at Harvard University's Graduate School of Design for several years, and is the primary author of the SPie Specifiers Property Set database now being used to link specification and BIM data.

Robert S. Weygant, CSI, CDT, SCIP
Robert Weygant is Owner of Sumex Design, a BIM consulting and development firm located in New Hampshire. Robert is focused on development of

BIM components for manufactured products and systems while promoting the use of new interoperability standards, the integral link between BIM and construction documentation. In 2010, Robert is the National Chair of the BIM Practice Group for the Construction Specifications Institute and a member of the national CSI Technical Committee. Complete with specification, performance, and lifecycle information, Robert has developed, and continues to manage, BIM components for many major building product manufacturers.

Robert's background consists of active roles as a general contractor, draftsman, product representative, and specifier. Combining the knowledge of these roles, he has a unique perspective on how to create and manage information necessary for all aspects of a project's lifecycle and improve communication of information through new technologies and techniques.

John Regener, AIA, CCS
John Regener is an Architect and Certified Construction Specifier (CCS) working in Irvine, CA. He is a member of both the American Institute of Architects (AIA) and the Construction Specifications Institute (CSI). In addition to CCS certification, he is a Certified Construction Contract Administrator (CCCA) and a MasterFormat Accredited Instructor (MAI) by CSI. Mr. Regener has been active in CSI and its education programs and is Past-President of Specifications Consultants in Independent Practice (SCIP). He has taught construction specifications at the community college level.

In 1992, John established an independent practice as a construction specifications writer and joined Specifications Consultants in Independent Practice (SCIP). His practice has been diverse in project types and has included commercial, industrial, hospitality, medical, and religious facilities, with about 80 percent of his projects K-12 schools. John is a frequent contributor to the specifiers' forums for 4specs and CSI.

Harold J. Rosen, PE, Hon. CSI
Harold Rosen retired in Chevy Chase, Maryland, after more than 60 years as a Professional Engineer specializing in producing construction specifications. An Honorary Member of the Construction Specifications Institute (CSI), the highest honor bestowed by the Institute, Mr. Rosen began writing construction specifications in 1942 while working for the U.S. Army Corps of Engineers, during a period of immense and extremely rapid construction due to World War II. After the war, Mr. Rosen worked for architectural firms during the busy post-war period. He witnessed firsthand the countless changes that have occurred in the construction industry and the practice of specifications writing.

Harold Rosen's experience included eight years as chief specifications writer for the New York City office of Skidmore, Owings and Merrill and eight years as an independent specifications consultant. He was one of the shapers of standard organization of construction specifications, especially the 16 Divisions that were a major organizational tool. Harold compiled and edited his articles for *Progressive Architecture* magazine into the basis for the first edition of *Construction Specifications Writing: Principles and Procedures* in 1973.

SPECIFICATIONS OVERVIEW

Following World War II, the pace of construction became intense, with new technologies for materials and new construction procedures. Yet, specifications writing resumed as it had been practiced since the beginning of the twentieth century. Construction contracting became highly competitive and expedience dominated over quality. "Successful" bidders were compelled to scrutinize the specifications to find the cheapest way to build. Construction specifications took on greater importance as a means of communicating design intent and quality assurance.

There were no standards for how the specification sections were placed in each book of specifications, except that there was an attempt to arrange them on the basis of chronology of the work: first earthwork, then concrete, masonry, structural steel, carpentry, and so forth. The "and so forth" varied from office to office and even within the same office. In addition, there were no groupings of similar specifications into what are now call "Divisions," to facilitate locating information.

In the public sector, interest in standardization carried over from war production. Experienced specifications writers from large public agencies, such as the Army Corps of Engineers (COE) and the Naval Facilities Engineering Command (NAVFAC), became involved with specifications writers from large corporations to form the Construction Specifications Institute (CSI) in 1948. Their intention was to organize construction specifications and develop recognized principles and procedures to make bidding and construction more coherent.

As a result, in 1963, CSI introduced a 16-division format for organizing specifications. In 1965, the American Institute of Architects (AIA) conceived a new title for the book of specifications, calling it the Project Manual because it contained more than the

specifications. The Project Manual also contained bidding, construction contract, insurance, administration, and technical documents and specifications. CSI's 16-division format was applied to AIA's Project Manual concept and resulted in CSI's flagship document, *MasterFormat*.

After nearly four decades, *MasterFormat* plus the principles and procedures published in the *CSI Manual of Practice* have proven to be effective. The ordering of documents according to these national standards continues to evolve to this day, accommodating changes in construction contracting and construction technology.

Not only the formats but also the physical production of construction specifications has undergone major changes over the past five decades. Making multiple copies of specifications with a hectograph (a machine used for making copies of text transferred to a gelatin surface) gave way to the mimeograph machine (which used a waxed fabric stencil that had typed characters cut by a typewriter, through which ink passed onto paper). In the late 1970s, xerographic copiers using an electrostatic image transfer process to apply and fuse powdered ink onto a page became affordable for businesses.

Specifications were typewritten onto bond paper, as business documents have been produced since the typewriters took over for hand-written business correspondence. Technical improvements were made to typewriters, especially the addition of electric assistance. Innovations such as IBM's "Selectric" typewriters with their golf ball–like, interchangeable type fonts advanced the productivity of typewriters.

In the middle to late 1960s, computers began to be used to produce documents. Keypunch cards and tape reels were used with mainframe computers to record text for replay through a printer that was essentially an automated typewriter. Later, punch cards and tape reels were replaced by "mag cards" (index card–size polyester sheets with magnetic recording media) and 8-inch "floppy disks" used with early generation mini-computers. In the mid-1980s the desktop personal computer (PC) superseded the minicomputer, and software was developed so that true computer-assisted text production was realized and made available to large and small businesses and to individuals.

With the introduction of laser-controlled electrostatic printers ("laser printers") in the late 1980s, the typewriter was supplanted by the computer for specifications production. Now PCs have capabilities that were unthinkable for even the most powerful mainframe computers four decades ago.

Some large architectural firms in the mid-1960s acquired in-house mainframe computers. Included in the use of these computers was the production of standardized documents. From this, the concept of "master specifications" was developed to make production of similar yet customized documents easier. These masters reflected the specific materials and designs that these firms had become familiar with and represented their continued and consistent experience project after project.

A national trend toward the development of master specifications started in the late 1960s and early 1970s, when large public agencies and private organizations, in addition to the AIA and CSI, began to produce standardized master texts for specifications. These masters enhanced the quality of specifications by guiding the specifier through notes and alternative choices.

However, a disturbing trend arose as a result of the availability of master specifications. Some firms decided that it was unnecessary to have a qualified construction specifier on staff to prepare project specifications. It was assumed that, with the imprimatur of the AIA and CSI on standardized master specifications, project-specific specifications could be produced less expensively by having a project designer, a job captain, or, in some cases, a draftsperson edit the office masters to produce project-specific specifications. The specialized training, aptitude, and skills of a construction specifier were not recognized.

There are countless anecdotal accounts of master specifications being utilized by individuals unschooled and ill prepared to edit master specifications, producing unintended and notably negative consequences. Staff without the ability to edit, fill in blanks, and select options resulted in project specifications subject to construction claims and lawsuits, because the final specification document was replete with errors and was not in sync with the drawings.

The development of master specifications, the development of more efficient reproduction techniques, and the ease of document editing by means of word processing software have evolved. Specifications themselves have evolved into voluminous documents reflecting the growth in complexity of construction technology, the increase in regulatory (building code) requirements, the inclusion of detailed quality assurance procedures, and recently adopted provisions for sustainable design and certification have made specifications writing more challenging.

Unfortunately, as the curricula of architectural and engineering schools have kept pace with the complexity of design and construction, education in construction documents, including construction specifications, has been largely omitted. Most

colleges and universities today offer as little education in specifications and other construction contract documents as they did a half-century ago. This has led to a misconception: If it isn't taught in school, it must not be important.

There are signs that this situation may be changing. Some colleges and universities have had long-standing classes in construction specifications, construction contracts, and construction materials. Others are becoming aware of the need for architects and engineers to have basic education in written construction documents, especially with the advent of the Building Information Model (BIM) more integrated processes for design and construction. Books such as this one, with its roots back into the 1960s and others are selling because of increased interest in specifications. Internet-based education programs are being introduced for continuing education of practicing design professionals.

This increased interest in specifications will probably mean a change in the role of those design professionals whose primary task has been that of a "specifications writer." In the future, specifications decision making and production (specifications writing) will be by generalists. The vision being promoted by those who publish specification masters is one where computer-based programs will guide a specifications process that is integrated into an overall computerized model of the facility to be designed, constructed, operated, maintained, and ultimately deconstructed or adaptively reused. Within this futuristic vision is the need for all design professionals to be educated in the production of construction specifications and other bidding and contract documents.

An analogy would be that of a young driver being given a high-performance sports car to drive. The car is a marvel of technology whose performance is dazzling. The young driver has played video games that simulate driving, and dreams of the day when the experience becomes real. The young driver in this analogy is the design professional with limited or no education in specifications and other construction contract documents. The high-performance sports car is the Building Information Model (BIM) or even a computer-assisted specifications program. The chances for a mishap or even a calamity are high.

To reduce the risk and raise the prospects of successful and profitable use of the "high-performance vehicles" now being developed for construction specifications, education and training in colleges and universities, and in continuing education programs for design professionals, are needed. Thus, this book has been produced.

INTRODUCTION

Knowledge of specification writing principles and procedures is essential to the specifier in an architectural or engineering firm in order to prepare sound, enforceable construction specifications. Unless skills are properly developed to understand and apply these principles, and unless expert knowledge of materials, contracts, and construction procedures is also applied, the architect or engineer cannot communicate successfully with the ultimate users of the specifications: facility owners, general contractors, subcontractors, materials suppliers, code authorities, and quality assurance inspectors.

What, then, constitute the principles of specification writing? Basically, the principles should encompass those factors that permit architects and engineers to understand clearly the relationship between drawings and specifications—between the graphic and the verbal—and should enable them to communicate effectively by setting forth in logical, orderly sequence information to be incorporated into the specifications portion of the construction documents.

This book presents the principles and procedures for organizing and producing construction specifications. It is intended for students in architecture and engineering curriculums and for practicing design professionals who participate in professional development and continuing education programs. It is also appropriate for others involved in the production and use of construction specifications, including facility managers, construction managers, and building product representatives.

In summary, this book presents principles and procedures for construction specifications writing as follows:

1. The Role of the Specifications. Specifications are one component of the documents used for bidding and construction of a project. Another component is the drawings. The specifications and drawings are intended to work in harmony to describe what shall be built. Other components are bidding requirements and other contract requirements, which prescribe the duties and responsibilities of the primary parties of the construction contract. Bidding requirements are applicable during the procurement or bidding phase prior to actual construction. Contract requirements apply during fulfillment or execution of the Contract for construction. Each component has distinct purposes. Specifications, as written instructions, are frequently judged by courts as having greater importance than drawings when these documents are in conflict, with judgments based usually on what is contained in the specifications. This means that specifications should be carefully prepared by knowledgeable people. Chapter 1 discusses the role of specifications in detail.
2. The Relationship between Drawings and Specifications. Specifications address qualitative requirements for products, materials, and workmanship, while the drawings indicate relationships between elements and show the location, identification, dimension and size, details and diagrams of connections, and shape and form. There should not be duplication or conflict between these two documents. Instead, they should be complementary. To improve coordination between drawings and specifications, there should be standardization of the information appearing in them. Chapter 2 discusses the purposes of drawings and specifications and their relationship.
3. Organization of Specifications. For many years, specifications were arranged in a series of Sections based on the order or chronology in which various trades appeared on the construction scene. However, it was found that our

increasingly complex building structures did not necessarily follow these simple rules, nor was there a uniform nationwide system of specifications. In 1963, the Construction Specifications Institute (CSI) established a uniform arrangement of the various Sections in a division-section organization titled the *CSI Format,* which in subsequent revisions has evolved into the CSI *MasterFormat.* The lists of Section numbers and titles in *MasterFormat* enable construction information to be consistently identified and retrieved. Chapter 3 discusses industry standards, including CSI formats, for organizing specifications.

4. The Project Manual and Specifications Sections. Specifications are included in a book published for the project titled the Project Manual. The Project Manual contains bidding and contract requirements and the construction contract Specifications. The Project Manual is divided into chapter-like Sections organized according to *MasterFormat.*™ Chapter 4 discusses how to determine the level of detail for Specifications and the appropriate Section number and title according to *MasterFormat.*
5. Format for Specification Sections. Until CSI promulgated the three-part *SectionFormat,* there was no universal arrangement of information in an orderly, coherent series of paragraphs dealing with the content of the Specification Section. With the addition of CSI *PageFormat,* there are industry standards for internal organization of the Section and standardized page presentation. Chapter 5 discusses how to organize and present a Section of the Specifications.
6. Types of Specifications. There are four methods of specifying the Work of a construction Contract to be performed by the Contractor. These methods, used individually or in combination, are descriptive specifying, reference standard specifying, proprietary specifying, and performance specifying. Additionally, there are considerations of whether the Specifications are "restrictive" (sole source or limited sources) or "nonrestrictive" (commonly known as "or equal") Specifications. Chapter 6 discusses how to choose and use the various methods of specifying.
7. Specifications Writing Principles. After the formats for specifications and the methods of specifying are understood, the technical and procedural content of the Specifications needs to be determined. The content is described using techniques involving appropriate specifications language, workmanship requirements, and coordination among various Specifications Sections to avoid redundancy and conflicting requirements. Chapter 7 discusses these principles.
8. Bidding Requirements. Bidding requirements consist of documents that are used in the solicitation of bids and typically include the Advertisement or Invitation to Bid, the Instructions to Bidders, and the Bid Form. The specifier often prepares these documents based on instructions from the owner. Chapter 8 discusses the content, purposes, and formats for the bidding requirements.
9. General Conditions of the Contract. The Conditions of the Contract define basic rights, responsibilities, and relationships of the entities involved in the performance of the Contract. The Conditions of the Contract are an inherent part of the Owner-Contractor Agreement and are considered to be the "general clauses" of the Agreement. There are generally two types of Conditions of the Contract: the General Conditions, which are found in a standardized, preprinted document, and the Supplementary Conditions, which are project-specific modifications to the standard document. Chapter 9 discusses the General Conditions of the Contract, and Chapter 10 discusses the Supplementary Conditions of the Contract.
10. Supplementary Conditions of the Contract. Each project has unique requirements. In terms of the general clauses or Conditions of the Contract, the unique requirements are presented in the form of Supplementary Conditions of the Contract, which modify the standard preprinted General Conditions. Chapter 10 discusses the typical content of Supplementary Conditions of the Contract.
11. Bonds, Guarantees, and Warranties. To ensure performance by the Contractor and to protect the owner from premature failure of products and workmanship, the Contract Documents include provisions related to bonds, guarantees, and warranties. These are presented in general terms as part of the Contract requirements, preceding the Specifications in the Project Manual, and in Specifications Sections to describe specific provisions. Chapter 11 discusses bonds, guaranties, and warranties.
12. Division 01 - General Requirements. These are Sections of the Specifications that apply generally to all Sections. The use of Division

1 follows one of the prime principles of Specifications writing: "Say it once." Chapter 12 discusses the use and content of Division 01 Specifications.

13. Modifications. It is inevitable that the bidding and Contract requirements, the Specifications, and the Drawings will require revision after being issued. Chapter 13 discusses the procedures and formats for preparing the various types of modification documents.

14. Specification Language. It is imperative to use clear technical language that can be understood by those who use the Specifications. In order to communicate with proper language, the specifier must sufficiently master the tools of specifications language, including grammar, vocabulary, spelling, use of abbreviations and symbols, punctuation, capitalization, sentence structure, and the unique considerations of streamlined writing and specifications detail. The specifier must not only follow hard rules of language but must understand the subtleties of language. Chapter 14 discusses the unique language requirements of construction specifications.

15. Specification Resources. Construction technology, project delivery methods, and sources of construction information change constantly and rapidly. Chapter 15 presents some common resources useful for specifiers.

16. Products Evaluation. Other books address construction technology in much more detail than can be accommodated in this book. Chapter 16, however, discusses fundamental procedures for evaluating products, identifying necessary attributes, and selecting appropriate products to be included in the Specifications.

17. Specification Writing Procedures. Applying the principles of specifications writing is facilitated if there are established procedures for producing Specifications Sections. Chapter 17 discusses those procedures and the use of Specifications checklists when gathering information, researching, and writing.

18. Master Guide Specifications. Master guide specifications are published and nationally marketed to assist specifiers. The publishing organizations have resources to continually research, create, and maintain construction specifications. Many architectural and engineering offices and independent specifications consultants use these master guide specifications to create office-specific master specifications that serve as the basis for project-specific specifications. Chapter 18 discusses the use of master guide specifications published by commercial organizations and public agencies, as well as the development of office-specific masters.

19. Computer-Assisted Specifications. Today, several true computer-assisted specifications programs are in the marketplace. These programs offer automation features beyond word processing programs that enable the specifier to more expediently and accurately create project-specific specifications—or so the marketing materials promise. Chapter 19 discusses the history and current offerings of three of the computer-assisted specifications programs.

20. Preliminary Project Description. During the preliminary design phase of a project, an alternative format, based on building Elements, is sometimes used to provide information for scope descriptions and cost estimating. Based on *Uniformat* rather than *MasterFormat,* a Preliminary Project Description (PPD) is produced from which Specifications are derived at later phases of the project. Chapter 20 discusses the PPD.

21. Outline and Shortform Specification. Used during the preliminary design of a project, Outline Specifications are produced using either the typical three-part Section format or an abbreviated format with sequentially identified articles. Outline Specifications describe preliminary product selections and other project-specific requirements. Another abbreviated specifications format, shortform specifications, is used for less complicated projects or those of limited scope where highly detailed information is either unnecessary or inappropriate. Chapter 21 discusses outline and shortform specifications.

22. Green Specs / LEED Specs. Specifications for projects seeking USGBC LEED certification must include procedures and products that comply with the requirements for achieving individual LEED credits. Division 01 in the Project Manual will typically include requirements for LEED submittals, construction waste management, indoor air quality during construction, commissioning and the LEED Scorecard for the project. Specifications in other Divisions will include requirements including materials with recycled content, regionally sourced materials, rapidly renewable materials, certified wood, and low-emitting adhesives, sealants, paints, and flooring. While

green specs for sustainable design and LEED specs may be different, the principles of specification writing apply to both.

23. Building Information Modeling (BIM) is an emerging technology affecting not just the design team, but the specifier, contractor, owner, and facilities managers. BIM couples traditional CAD-based projects with the product information and documentation associated with specific products, systems, and elements found on projects. In order for BIM to be fully effective, it requires an individual knowledgeable with not only the products and systems in the project, but the organization structure necessary to make the information useful. Just as specifications follow a standardized format, the information within a BIM requires standardization and organization to allow clear, concise, complete, correct, and *consistent* information among the documents, drawings, and 3D models.

Appendices follow the text and provide examples of Specifications and other Bidding and Construction Contract documents.

Construction Specifications Writing

Chapter 1

The Role of Specifications

DOCUMENTS FOR CONSTRUCTION

When an Owner decides to build, renovate, or reconstruct a facility, the Owner usually engages others to prepare documents describing the Work to be performed and the contractual requirements under which construction and related administrative activities are accomplished. Contemporary construction practices in North America are varied, and construction contracts likewise express varied contractual relationships, procurement (bidding and negotiation) methods, and regional construction practices.

This complexity can be very confusing, so, for the purposes of this book, the discussion will be generally limited to the context of the traditional design-bid-build method for construction procurement, with comments occasionally describing alternative procurement methods, such as design-build, multiple prime contracts, and phased ("fast track") construction. Also, the discussion will be in the context of three primary parties in the construction contract: the Owner, the Architect/Engineer, and the Contractor.

The Architect or Engineer, and his or her various consultants, prepare documents for construction of the facility. These develop over time, from conception of the design through gestation of design development, through the birth pangs of bidding/pricing and construction, until delivery of the completed facility at closeout of the construction Contract. Many types of documents are used during design and construction, but for actual construction three basic types of documents are used:

1. Bidding and Contract Requirements: Text documents
2. Drawings: Graphic documents
3. Specifications: Text documents

Combined, these three types of documents are called the Bidding Documents (before signing of the Agreement or "contract") and the *Contract Documents* (after signing the Agreement or contract). The difference concerns when the documents are used. Prior to execution (signing) of the Agreement, the combined documents are known as Bidding Documents under traditional design-bid-build projects. Under design-build and certain types of construction management-type projects, the documents prior to execution of the Agreement may be known as "Procurement Documents." This is a fine distinction reflecting the process of negotiation for selection of product vendors and subcontractors, but in most cases, even under design-build and construction management-type projects, a competitive bidding process is used. So, "Bidding Documents" will be the term used here for the documents prior to execution of the Agreement. After execution of the agreement, the documents are known as the Contract Documents.

BIDDING DOCUMENTS

"Bidding documents" is a term generally used to describe the documents furnished to bidders. For traditional design-bid-build projects, the Architect/Engineer and Owner prepare the set of Bidding Documents, consisting of bidding requirements, Drawings, and Specifications. These are issued to prospective general contractor bidders for competitive bidding and for the Owner to select the Contractor named in the Agreement and referenced in other Contract Documents.

However, there are projects where the Contractor is selected by a method other than competitive bidding, such as direct selection by the Owner based on qualifications of the Contractor. In such cases, competitive bidding still occurs but it is managed by the Contractor, who issues Bidding Documents and manages the bidding process.

The primary difference in documents between Bidding Documents and Contract Documents is the inclusion in the Bidding Documents of Bidding Requirements. These generally consist of the Advertisement or Invitation to Bid, the Instructions to Bidders, the Bid Form, and other documents to be submitted to the Owner for the Owner's selection of the Contractor and modifications to the documents issued during bidding (addenda). The Bidding Requirements are removed after bidding and selection of the

Contractor and are replaced by the Contract Requirements. The Contract Requirements typically consist of the executed (signed) Agreement with its related documents, such as insurance forms, bonds, and certifications. Note: the Bidding Documents typically include copies of the Agreement form and the Conditions of the Contract (General Conditions and Supplementary Conditions when industry-standard documents are used). The bidding process is described further in Chapter 8.

As noted above, two other types of documents are included in the Bidding Documents and the Contract Documents: the Drawings and the Specifications. This book will not describe principles and practices for production of the Drawings but will describe the types of information best presented on the Drawings (graphic presentation) and in the Specifications (text presentation), and the discussion will include coordination issues between the Drawings and the Specifications. Chapter 2 discusses the relationship between the Drawings and the Specifications in greater detail.

CONTRACT DOCUMENTS

"Contract Documents" is the term used for documents identified in the Agreement (construction Contract). It appears simple, but, of course, these documents can become complicated as the project delivery process becomes more complex and the relationships between the parties involved in the project become more varied and obscure. Considering the typical design-bid-build project, the Contract Documents consist of the following:

- *Agreement*—A written agreement between the Owner and the Contractor summarizing the work to be performed, the Time in which the Work shall be completed, and the Contract Sum to be paid. Also identified in the Agreement are the Contract Drawings, the Contract Specifications, and other referenced documents such as bond forms, insurance certificates, other certifications, Contractor's qualifications statement, documentation of the Contractor's financial status, subcontractors and suppliers lists, special warranty documents, and just about any other type of written document that the Owner requires. Note: the Agreement is typically prepared by the Owner's legal and insurance counsels or by the Construction Manager if one is involved in the project. The Architect/Engineer typically does not prepare the Agreement and its attachments. If the Architect/Engineer is involved in producing the Agreement and its attachments, it should be under the direction of the Owner. Architects and engineers are not trained to produce legal instruments (documents) and insurance documents, nor are they licensed to practice law and insurance underwriting.
- *Conditions of the Contract*—Typically, these consist of the General Conditions and the Supplementary Conditions. General Conditions are typically preprinted standard documents prepared by professional societies such as (for architectural projects) the American Institute of Architects (AIA) and (for engineering projects) the National Society of Professional Engineers (NSPE), American Consulting Engineers Council (ACEC), and American Society of Civil Engineers (ASCE). Together, the listed engineering societies jointly publish documents as the Engineers Joint Contract Documents Committee (EJCDC). The Conditions of the Contract are discussed in greater detail in Chapter 9.
- *Drawings*—Graphic descriptions of the Work to be performed by the Contractor. The content of Drawings and the relationship between the Drawings and Specifications are discussed in greater detail in Chapter 2.
- *Specifications*—Written descriptions of the Work to be performed by the Contractor. The types of Specifications, their content, and specification writing principles and practices are discussed in greater detail below and in Chapters 5, 6, and 7.
- *Modifications*—Architect's Supplemental Instructions (for contracts based on AIA *A201, General Conditions of the Contract*), Field Orders (for contracts based on *EJCDC C-700, General Conditions of the Contract*), Construction Change Directives (for contracts based on AIA *A201, General Conditions of the Contract*), *Work Change Directives* (for contracts based on *EJCDC C-700, General Conditions of the Contract*), and *Change Orders* (for contracts based on both AIA and EJCDC *General Conditions of the Contract*). "Modifications" are changes to the documents after execution (signing) of the Agreement. Prior to execution of the Agreement, changes are generally made using *Addenda.* Addenda and Contract Modifications are discussed in greater detail in Chapter 13.

Often the term "construction documents" is used as a synonym for "Contract Documents." This is

incorrect. Simply stated, the Contract Documents are the documents identified in the Agreement. The Contract Documents, together with other documents used during construction, may be called construction documents. Contractually, this is a fine but important distinction. The Contractor, the Architect/Engineer, and the Owner are only obligated to perform according to the Contract Documents. Other documents may be required by the Contract Documents to be produced and used during performance of the Work under the Contract, including shop drawings, construction schedules, construction reports, meeting notes, submittals, installation instructions, test reports, permits, and certificates from authorities having jurisdiction, and operating and maintenance data. However, these are not Contract Documents, although most should become part of the "contract record documents," which describe the completed Work of the Contract and which may be used by the Owner for operation and maintenance purposes.

SPECIFICATIONS

Imagine a movie or video presentation of the construction of a building, park, water or sewage treatment plant, refinery, highway, or bridge. Imagine that all the activities of construction are shown in great detail, from procurement of materials and manufactured products, through fabrication, delivery to the job site, storage and staging on the job site, surface preparation, mixing, application, installation, fitting, and finishing. Also imagine the Owner, the Architect/Engineer, the Contractor's managers and supervisors, the subcontractors, the testing and inspection agency personnel, the manufacturers' representatives, and code authorities meeting and discussing matters related to the construction. Imagine the movie or video presentation without a sound track. There is not only no background music, there is no dialog. It would be very difficult to construct the facility based only on a silent movie. To properly understand the requirements and construct the facility, dialog is essential.

The relationship between the Contract Drawings and the Contract Specifications is equivalent to this dialog. The Contract Specifications are essential for complete understanding of the Work to be performed by the Contractor.

Most Conditions of the Contract recognize the significance of construction specifications and refer to the Specifications as part of the Contract Documents, with importance equivalent to that of the Drawings. Because of this, it is imperative that all parties identified in the Agreement (the Owner, the Architect/Engineer, and the Contractor) understand the role of the Specifications and understand how the Specifications are used during bidding and performance of the Work under the Contract. Moreover, the Architect/Engineer should be just as skilled in preparing the Specifications as in preparing the Drawings. The documents are complementary and carry equal weight for interpretation of Contract requirements.

Unfortunately, the education of architects, landscape architects, engineers, specialty designers, construction managers, constructors, inspection personnel, code authorities, manufacturers, fabricators, installers, and applicators rarely includes more than superficial instruction in written documents for construction, including construction specifications. Perhaps this is because these parties are more familiar and comfortable with graphic documents (drawings) and computations (spreadsheets and calculations). Nevertheless, proper performance of the Work requires clear, correct, and adequate descriptions of the requirements of the project, including written documents called the "Specifications."

While the future appears to hold major changes in the way construction information is managed and presented, including object-oriented, 3D computer-assisted drafting (CAD) that blurs the lines between drawings and specifications, the current separation of information into Contract Drawings and Contract Specifications for bidding and construction will continue for many years. It is essential that those who prepare and use these documents understand their purposes and properly integrate them.

To drive this point home, realize that attorneys and some construction managers understand information written on an $8\frac{1}{2}$-by-11-inch page much better than they understand what is shown on a drawing. Although the General Conditions of the Contract may state otherwise, there is a tendency in a dispute to give greater significance to the Specifications than to the Drawings. This is a particularly good reason to apply as much care in preparing the Specifications as the Drawings.

STUDY QUESTIONS

1. What are the three basic types of documents used in construction contracts?
   a. Bidding and Contract Requirements
   b. Drawings
   c. Specifications
   d. Marketing data

2. Which of the following are included in the Bidding Documents but not in the Construction Contract Documents?
   a. Instructions to Bidders
   b. General Conditions of the Contract
   c. Agreement Form
   d. Bid Form

3. True or False? Specifications describe the construction in text form.

4. True or False? Construction specifications apply only to the Construction phase of a project.

5. True or False? Development of construction specifications for a project begins during the Contract Document phase.

6. True or False? Procurement documents include construction specifications.

7. True or False? Design-Bid-Build and Design-Build are two valid methods to procure a construction project.

8. True or False? Contract Documents are identified in the Agreement for a construction project.

9. True or False? Drawings are the graphic descriptions of the work to be performed by the Contractor.

10. The Agreement includes which of the following for the construction contract?
   a. Summary of the work to be performed by the Contractor
   b. Time within which work shall be completed
   c. Amount of money to be paid by Owner to Contractor
   d. All of the above

Chapter 2

Relationship between Drawings and Specifications

WHAT GOES WHERE

The information necessary for construction of a facility is developed by the Architect/Engineer and is presented in two basic types of documents: the Contract Drawings and the Contract Specifications. These two types of documents are a means of communicating information between the Architect/Engineer and the Contractor, but each type uses special forms of communication. One is pictorial or graphic, and the other is verbal or textual. Despite these distinctions, each type of document should complement while not contradicting or duplicating the other. In this way, each type of document fulfills its unique function.

According to *AIA Document A201-2007 - General Conditions of the Contract for Construction,* Paragraph 1.1.5, "The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams."

According to *AIA Document A201-2007,* Paragraph 1.1.6, "The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services."

In broad terms, the Contract Drawings are graphical depictions, and the Contract Specifications are written descriptions of the end result of the Work to be performed. Each type of Contract Document, whether Drawings or Specifications, contributes to the overall "story" of construction of a new, remodeled, renovated, or reconstructed facility. To repeat the metaphor used in the preceding chapter, the construction Contract is like a movie or video presentation of a story. The Contract Drawings are like the video portion of the presentation, and the Contract Specifications are the audio portion. Both are necessary for understanding the story. Without the audio portion, it would be a silent movie.

The video and audio tracks need to be synchronized. Imagine the graphic depiction of the jamb condition of an interior hollow metal door frame in a metal stud wall, coupled with the text description of a wood door frame in a wood stud wall. Which is the correct depiction of the Work?

In both definitions from *AIA Document A201,* referred to above, the term "Work" is used. This is a very important term to understand. According to *AIA Document A201-2007,* Paragraph 1.1.3, "The term 'Work' means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project."

Consider that the Work may be simple or complex. Consider the broad range of activities embodied in the Work, from procurement of materials and manufactured products, through fabrication, delivery to the project site, storage and staging at the project site, surface preparation, mixing, application, installation, fitting, and finishing. Consider that the activities include administrative procedures, such as preparation and review of shop drawings, product data, and samples. Consider that the Work includes tests and inspections, as well as demonstrations, adjustments, and validation of performance, also known as "commissioning." Consider that the Work includes activities and construction that are temporary in nature, such as temporary utilities, barriers, field offices, security, and cleaning. Descriptions of the Work need to be detailed to suit the nature of the Work—its simplicity or complexity, its need for careful craftsmanship, its need for monitoring to ensure quality, and its need for compliance with codes, standards, and administrative requirements. Most of these do not lend themselves to graphic depictions. Most are best described in written requirements presented in the Specifications.

To maintain the separate yet complementary nature of these two types of documents, to ensure

that they will be interconnected without describing overlapping or contradictory requirements, and to avoid omissions in necessary information, it is essential to understand the nature of the Drawings and Specifications.

THE DRAWINGS

Drawings present a picture or a series of pictures of a project or parts of a project to be constructed. Drawings present the size, form, location, and arrangement of various elements of the project. This information should not be described in the Specifications because it is best described graphically on the Drawings. In fact, a Drawing can be considered a special language or means of communication to convey ideas of construction from one person to another. These ideas cannot be effectively conveyed by words alone.

Drawings should indicate the relationship between elements of the facility and may designate the following for each material, assembly, component, and accessory:

- *Location* of each material, assembly, component, and accessory.
- *Identification* of components and pieces of equipment. Use only generic names and locations, and coordinate terminology used on Drawings and in Specifications with short keynotes.
- Give *dimensions* of components and sizes of field-assembled components.
- Indicate *interfaces and connections* between materials, detail assemblies, and diagram systems. Indicate boundaries between materials of different capacities.
- Show *forms and relationships* of building elements.
- Indicate *limits of Work* and, as applicable, indicate areas of construction phases.
- Indicate *extent of alternates* and indicate "base bid" and "alternate bid" construction so that the scope of each condition is clear.
- Indicate work to be performed by or for the Owner under separate contracts.
- On multiple-prime contract projects, indicate *locations, limits, and extent of the Work included in separate contracts* and detail interfaces between scopes of Work.
- Identify *applicable Drawing symbols* in a schedule of symbols.
- Indicate the *graphic scale* of Drawings.

Well-prepared Drawings:

- Should not use *comprehensive or too many notes.* Redundancy should be avoided; concise notes enhance the clarity of the Drawings. The Specifications should present information in text form.
- Should not use *notes that define Work* to be performed *by a specific subcontractor or trade* unless required by authorities having jurisdiction. The Contract Documents are addressed to the Contractor, who has overall responsibility for all Work under the Contract. The General Conditions of the Contract typically note that the Contract Documents do not establish trade or subcontract jurisdiction for portions of the Work.
- Should not use *proprietary names and slang terms.* Instead, use proper, generic terms that are coordinated with the terminology used in the Specifications.
- Should not *cross-reference* with specifications *by indicating* "*SEE SPECS.*" The Specifications should always be "seen." Use of this phrase could be interpreted to mean that there is information presented that does not require "seeing" or reading of the Specifications.

The purpose of the Drawings is to convey information regarding the intent of the design and depictions of Work to be accomplished. The Drawings may be in the form of plan views (looking down on the floor), in small- and large-scale sections (looking at a cutaway view), in details (large-scale, limited portion of the work), in diagrams and schedules (such as single-line power diagrams and finish materials schedule), and in notes (tied to specific elements by arrows or as symbols referencing keynotes on a table or listed in the margin of the Drawing).

Throughout the nineteenth century and into the early decades of the twentieth century, Drawings were organized in a simple numerical sequence, without distinctions between design discipline and construction trades. The Drawings were depictions of the end result of construction and included information regarding the structure, the finishes, the fenestrations, the portals, the weather barriers, the heating and ventilating appliances, and the decorative and accessory elements of the facility. Notations were relatively sparse and concise, yet the information was sufficient for performance of Work necessary for the project.

As construction technology became more complex and as construction contracting became more competitive, information needed to become more

extensive and precise. One response was to segregate information into series of Drawings in the overall set prepared by specialist design professionals. No longer was the Architect a "master builder" who produced all-encompassing drawings. Structural engineers, mechanical engineers, and electrical engineers were engaged by the Architect to design portions of the project and to present graphic depictions of the Work on "S" (structural), "P" (plumbing), "M" (mechanical or heating/ventilating), and "E" (electrical) drawings. Over time, these expanded with inclusion of "C" (civil or site development) and "L" (landscape irrigation and planting) drawings. Specialty products and systems were included for "K" (kitchen or food service equipment), "F" (fire protection), "T" (vertical transport or elevator), and "Q" (equipment such as laboratory, medical, and process equipment).

With advances in reprographics, Drawings sometimes include aerial photography of the site, photographic presentations of existing conditions, and photographs of components to be replicated. Color as well as the more common black-and-white xerographic printing processes are becoming as common as diazo ("blueline," "blackline," and "sepia") reproduction processes. True "blueprints" (white linework on a blue background) are now considered archaic and, if available, are usually prohibitively expensive. With drawings being archived on restricted-access (intranet) project websites for ready access by project team members, the traditional concept of printed drawings is being challenged. The impact of these changes is unclear at this time.

For greater discussion of organization and production of construction contract drawings, see the *National CAD Standard* (*NCS*)™, available from the Construction Specifications Institute (CSI). The *NCS* has been developed by the National CAD Standard (NCS) Project Committee, a group of representatives from many professional and industry associations, including the Construction Specifications Institute (CSI), the American Institute of Architects (AIA), and the U.S. Department of Defense Tri-Service Computer-Aided Design and Drafting and Geographic Information Systems (CADD/GIS) Center, convened by the National Institute of Building Sciences (NIBS). NCS is an industrywide effort to improve the efficiency of building design, construction, and management throughout the life cycle of building facilities. It includes:

- NCS Project Committee Report
- Introduction and Amendments to Industry Publications
- *Uniform Drawing System* (*UDS*)™, published by CSI
- Plotting guidelines, developed by the National CAD Standards Project Committee
- CAD Layering Guidelines™, published by AIA

THE SPECIFICATIONS

As defined above, from *AIA A201-2007,* Specifications are merely "that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services." *The New Oxford American Dictionary, Second Edition* (New York: Oxford University Press, 2005) defines the term *specification* as "a detailed description of the design and materials used to make something; a standard of workmanship, materials, etc. required to be met in a piece of work." Neither of these definitions suffices in practice.

The definitions of Specifications and Drawings by the AIA, described above, and the dictionary definition give no indication of the relationship between the Specifications and the Drawings other than that they are both part of the Contract Documents. They are closely interrelated, however, as the metaphor of a movie or video uses both images and sound to tell a story. Both are needed to understand the requirements of the Work under the Contract and the intent of the design for the project. The Drawings and the Specifications each serve distinct purposes in telling the story. Specifications should generally describe the following:

- Type and quality of every product in the work, from the simplest material through the functioning system
- Quality of workmanship, including quality during manufacture, fabrication, application, installation, finishing, and adjusting
- Requirements for fabrication, erection, application, installation, and finishing
- Applicable regulatory requirements, including codes and standards applicable to performance of the Work
- Overall and component dimensional requirements for specified materials, manufactured products, and equipment
- Specific descriptions and procedures for allowances and unit prices in the contract

- Specific descriptions and procedures for product alternates and options
- Specific requirements for administration of the contract for construction

Specifications should not overlap or duplicate information contained on the drawings. Duplication, unless it is repeated word for word, is harmful because it can lead to contradiction, confusion, misunderstanding, and difference of opinion.

In broad terms, lines of demarcation should be established between the Drawings and the Specifications for specific elements in the project so that one does not attempt to do what is more suitable to the other. For example, the Drawings should indicate a material such as gypsum board in general terms, using graphic indications or simple notations. It should be left to the Specifications to describe specific attributes of the gypsum board, such as thickness and resistance to fire, impact, and moisture.

What if there is more than one type of material, such as gypsum board? The Specifications should assign a "type" indicator to each type of gypsum board and specify the attributes of each type. See Exhibit 2-1 for an example of what the specifications should state.

EXAMPLE OF GYPSUM BOARD TYPES AND KEYNOTE CODES

A. Gypsum Board, Type GB1 [09250.gb1]:

1. Use: Typical walls, unless otherwise indicated.
2. Fire resistance: Fire Resistant, Type X.
3. Thickness: ⅝-inch (15.9 mm).
4. Long edges: Tapered.
5. Description: ASTM C 1396, Type X.

B. Gypsum Board, Type GB2 [09250.gb2]:

1. Use: Typical ceilings, unless otherwise directed.
2. Fire resistance: Fire Resistant, Type X.
3. Thickness: ½-inch (12.7 mm).
4. Long edges: Tapered.
5. Description: ASTM C 1396, proprietary product having improved fire resistance over standard Type X. Acceptable manufacturers and products:
   a. G-P Gypsum Corp.; Firestop Type C.
   b. National Gypsum Company; Gold Bond Fire-Shield G.
   c. United States Gypsum Co.; SHEETROCK Brand Gypsum

C. Gypsum Board, Type GB3 [09250.gb3]:

1. Use: Exterior gypsum soffit board, for walls and ceilings in damp interior locations such as showers and laundries.
2. Fire resistance: Fire Resistant, Type X.
3. Thickness: ⅝-inch (15.9 mm).
4. Long edges: Manufacturer's standard.
5. Description: ASTM C 1396, Type X.

D. Gypsum Board, Type GB4 [09250.gb4]:

1. Use: Walls of corridors.
2. Fire resistance: Fire Resistant, Type X.
3. Thickness: ⅝-inch (15.9 mm).
4. Long edges: Tapered.
5. Description: ASTM C 1396, proprietary product having impact-resistant facing and Type-X fire-resistant core. Acceptable manufacturers and products:
   a. National Gypsum Company; Gold Bond Hi-Abuse Wallboard.
   b. United States Gypsum Co.; SHEETROCK Brand Abuse-Resistant Gypsum Panels.

Exhibit 2-1. Example of Product Types and Keynote Codes.

This is the authors' recommendation for one method of identifying multiple types of similar products. Other specifiers may disagree. How does one decide which process to follow? It is a matter of professional judgment. Each design office should establish design criteria (principles) and formal policies (procedures) for production of the Drawings and Specifications. These policies should be clear and cover all likely conditions. They should be readily available to those who actually produce the documents and should be included in staff training programs.

Principles and procedures for producing Specifications will be addressed in subsequent chapters. First, however, we must discuss the design process and the resolution of conflicts and disputes during construction, which often involve issues touched upon above.

COORDINATING THE DESIGN PROCESS

To achieve proper separation of information between the Drawings and the Specifications, it is essential that development of the Specifications go hand in hand with preparation of the Drawings. At the outset, a member of the design team for each discipline should be made responsible for establishing and keeping an all-important project checklist. This person can be the project architect or project engineer.

The project checklist should establish a schedule of what is to appear on the Drawings, what is to be described in the Specifications, and what is to be itemized and listed in schedules on the Drawings. The checklist should indicate milestones for publishing various versions of the Specifications, including preliminary or outline specifications, design coordination draft Specifications, Specifications for plancheck submissions to code authorities having jurisdiction, Specifications for use in preparing estimates of probable construction costs, Specifications for issuance to bidders, and Specifications included as a portion of the Contract Documents used for actual construction.

Accompanying the Checklist should be listings of decisions made by designers and detailers, with action items noted for matters to be developed or resolved. Changes in design and detailing should be recorded and described, with notations on why the changes were made.

In Masterspec®, published by ARCOM for the AIA, two types of supplementary documents are included with the guide Specifications, titled "Drawing Coordination Checklist" and "Specification Coordination Checklist." These closely follow the principles and practices stated here. They are examples of fundamental coordination items that can serve as the basis for developing more comprehensive, office-specific procedures. These checklists are included in the Masterspec subscription. A/E office standard checklists should be developed otherwise.

Specifications checklists should be used to ensure that:

1. Necessary items are identified appropriately in the Drawings and Specifications. Specified items need to be consistent with the indications on the Drawings. For example, if acid-resistant sinks are specified for a laboratory, the Drawings should not indicate stainless steel sinks for the laboratory, and the Drawings should indicate and the Specifications should include appropriate drain piping for acid waste.
2. Specified product names and series, models, and catalog numbers are correct. Availability of specified products also needs to be verified, especially for the project location and regulatory requirements such as air quality (VOC emissions).
3. Drawings and Specifications do not contain duplicate and conflicting information. Typically, Specifications supplement and amplify information shown on the Drawings, but they should not repeat the information. For example, the manufacturer and model number of a boiler should be identified in the Specifications and not on the Drawings. The ceramic tile manufacturer, pattern, and colors could be identified in a legend associated with the Finish Materials Schedule included in the Drawings, and the Specifications would then refer to this specific information "as indicated on Legend of Finish Materials Schedule in the Drawings."
4. Cross-references in the Specifications are correct, especially the use of Section numbers and titles for related Work specified in other Sections. Sometimes, references are made to Specifications Sections that do not exist.
5. Referenced standards are correct and applicable. Industry associations change names. Standards are superseded or withdrawn.
6. Manufacturers' names are correct and contact information is current. The business world is in constant change, and corporate names, addresses, and telephone numbers change often.

TERMINOLOGY

To ensure correct understanding on the part of users of the Drawings and Specifications, it is essential that standard terminology be employed and used consistently. Often terms are used on the Drawings that do not appear in the Specifications, and vice versa. For example, "service sink" in the Specifications should not be "janitor's sink" on the Drawings, and "G.I. flashing" on the Drawings should not be "galvanized sheet metal" in the Specifications. Worse still, "G.I. coping" on the Drawings should not be "prefabricated aluminum coping system" in the Specifications.

There have been pitched battles in architectural and engineering offices over proper terminology. Old habits die hard. Change is uncomfortable. That is why there needs to be a commitment by upper management to adopt and implement the use of proper industry-recognized terminology and to insist on coordination of terminology between the Drawings and the Specifications. Where there is an in-house specifications writer, this person can be the authority for terminology. Where a consulting specifications writer is used, either this person needs to be given authority or a senior member of the design team needs to implement instructions for the specifications consultant.

These are simple principles, and procedures for implementing them can be simple. However, they require a great deal of care and considerable expenditure of time and energy in order to be a regular part of Drawings and Specifications production.

CONSIDERATIONS FOR USERS OF DRAWINGS AND SPECIFICATIONS

It is a common maxim that authors should know their readers. This also holds for users of Drawings and Specifications. However, catering to all possible users of the documents is not only impossible but may prove to be counterproductive and may increase the professional liability risk of architects and engineers.

First, Drawings and Specifications are prepared as from the Owner to the Contractor. The Owner and the Contractor are the two parties who sign the Agreement (contract), and the Drawings and Specifications are portions of the Contract Documents identified in the Agreement. Thus, the primary purpose is to describe the construction and services required by the Contract Documents and the responsibilities of these two parties in fulfilling their obligations under the Contract. One other party is identified in the Agreement: the Architect/Engineer. Although this person is not a signer of the Agreement, the General Conditions of the Contract and the Specifications prescribe his or her duties and responsibilities. (It is important that the Architect/Engineer ensure that the provisions of the Contract for construction are consistent with the Agreement for professional services between the Owner and the Architect/Engineer.)

Because the Contract Documents are addressed as between the Owner and the Contractor (typically a general contractor), addressing other parties who are not bound to the Owner by the signed Agreement is inappropriate and perhaps creates risk for the one who prepares the Contract Drawings and Specifications. For example, prescribing subcontract responsibilities ("concrete contractor shall prepare floor slab to receive ceramic tile") may be a noble attempt to ensure quality, but it can backfire when subcontractors claim that certain portions of the Work are not included in the scope of their contracts with the (general) Contractor. Or it can be troublesome when the general contractor intends to have an equipment supplier be responsible for making final utility connections, including engaging licensed plumbers and electricians, when the equipment specifications state, "plumbing connections by plumbing subcontractor" or "electrical connections by electrical subcontractor." Work may be omitted from the Contract sum or the Contract sum may include double payment for the same portion of the Work.

In typical AIA and EJCDC General Conditions of the Contract, the means, methods, techniques, and sequences of construction are stated to be solely the responsibility of the Contractor. Managing the Work is the Contractor's responsibility. There is typically a line item in applications for payment from the Contractor for this management task. Usually it is called "Division 01" or it is part of the Contractor's "overhead and profit." When a design professional specifies how the project is managed (what the means, methods, techniques, and sequences of construction shall be, and which trade or subcontractor shall perform which portion of the Work), the design professional is assuming management responsibility over the Work.

Perhaps under some project delivery methods, such as multiple prime contracts and design-build contracts, or when a Construction Manager is involved as one of the parties in the Contract, assignment of subcontracts may be appropriate. But for the purpose of this discussion of preparation of construction specifications, the prohibition against identifying trades and subcontracts will be held. Assignment of portions of the Drawings and Specifications can be made in the Agreement or another referenced Contract document, leaving the