

BUILDING BLOCKS

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Specifications | Complimenting the Drawings in Architectural & Engineering Construction Projects

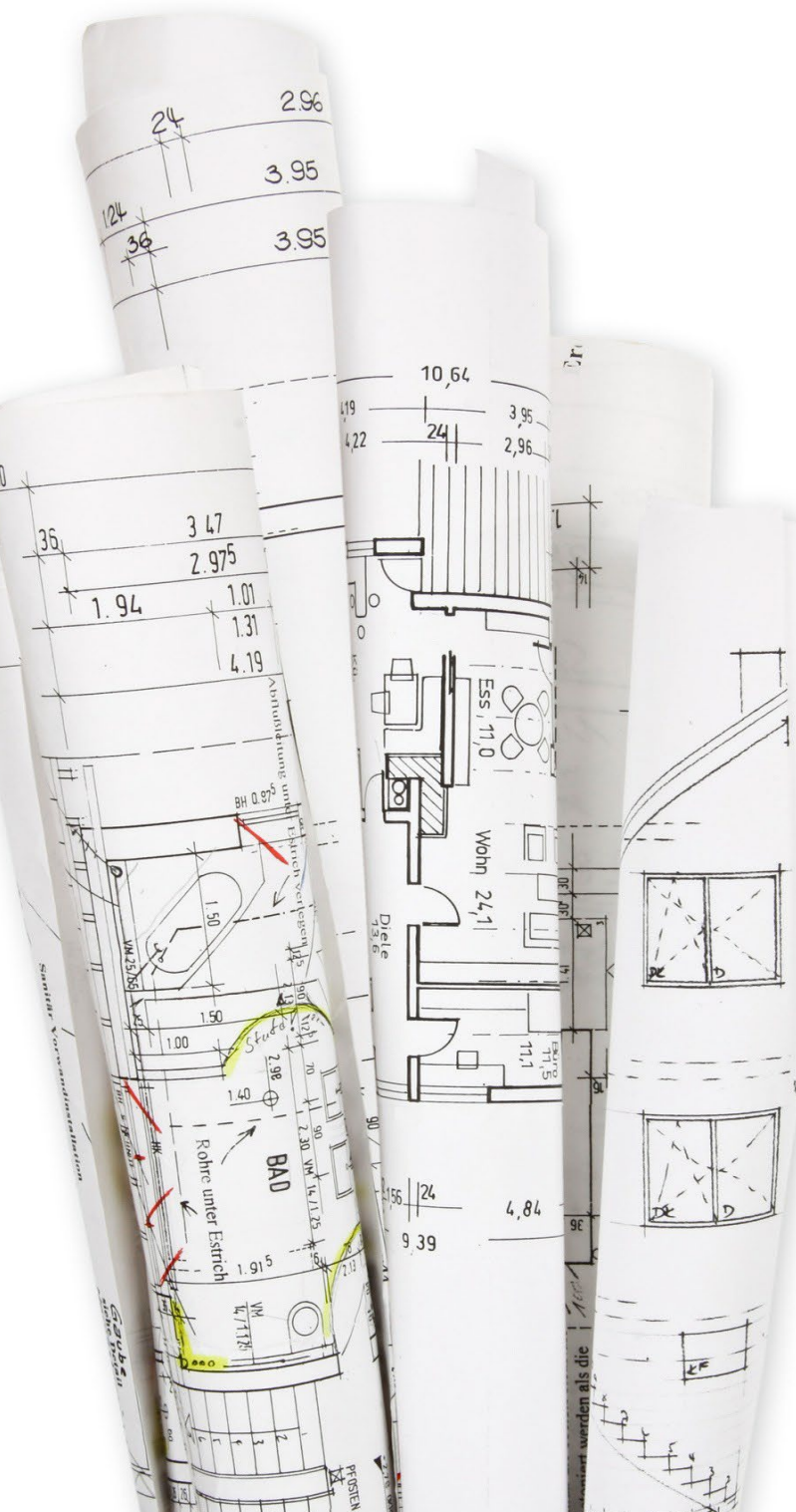
By: *Eric O. Pempus, FAIA, Esq., NCARB*
DesignPro Insurance Group

When people think of the documents that are prepared and used to construct a project, many times the other thing that they think of are the drawings. But drawings are just half of the story on how to design and build a project. The other half are the specifications.

Defined, specifying (specifications) is an act of describing or identifying something precisely or of stating a precise requirement. The word specification is broadly stated as "to state explicitly or in detail" or "to be specific". A specification is a documented requirement, or set of documented requirements, to be satisfied by a given material, design, product, etc.

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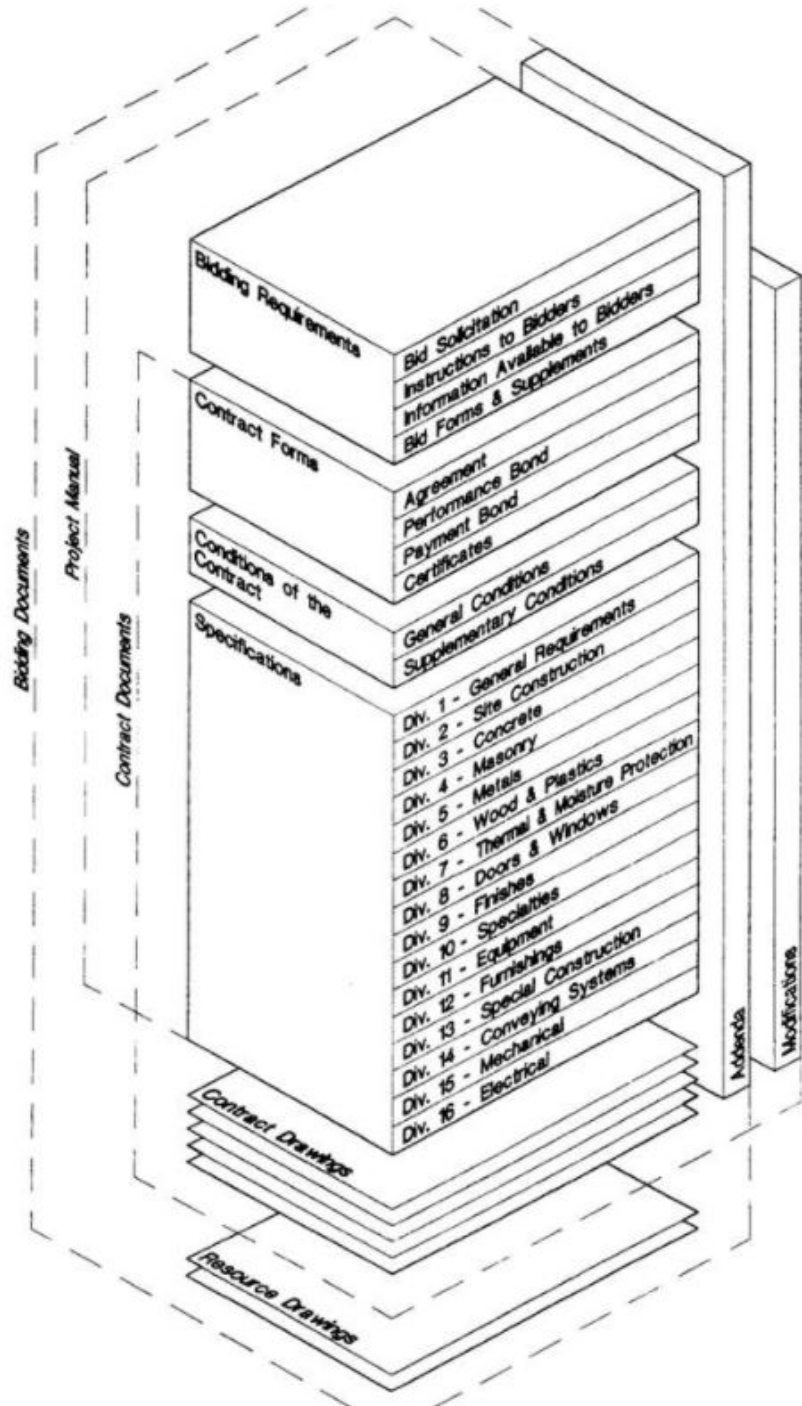


INTRODUCTION

Since it is not practical to include sufficient information on construction drawings to describe in detail all the product types, qualities and installation methods, a separate written document is typically needed. In so many words, the drawings define what materials are used, where, and in what quantity to build a project. The specifications define the remainder.

In the design and construction industry, this separate document is commonly called the “Spec Book” (8.5 inches by 11 inches). But accurately termed, this written document is actually called the “Project Manual.” This manual contains the specifications but may also contain many other documents, including numerous reference materials to communicate the design of a project for the construction contract to build a project. These involve procuring and executing the work of construction contractors, including but not limited to the bidding documents or other construction procurement documents, geotechnical and existing conditions information, a sample/model construction agreement for execution between the project owner and contractor(s), bond forms, General Conditions of the Contract for Construction, Supplementary General Conditions, etc.

The diagram to the side illustrates how all the project’s documents come together into a cohesive package. Even the project drawings are included by corporation by reference including the Owner-Contractor agreement.



<https://are5community.ncarb.org/hc/en-us/community/posts/1500001055122-Project-Documentation-What-is-in-the-Project-Manual-vs-Contract-Documents-vs-Bidding-Documents>

The coordination of the drawings and specifications is critical. At times, there may be conflicts between these documents. The American Institute of Architects (AIA) address this situation in its AIA General Conditions of the Contract, A 201 as follows:

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

Therefore, if there is an omission in the specifications but is included in the drawings, the omitted item is still required from the project. And vice versa, if something is omitted in the drawings but is included in the specifications, the project owner still owes that item in its bid for the project's design. In other words, there is no order of preference between drawings or specifications. *They are complementary, and what is required by one shall be as binding as if required by all.*

From a risk management standpoint, not only for design professionals but also the construction contractors, this is axiomatic.

STANDARDIZATION IS THE KEY WHEN SPECIFYING

A standardized approach to placing the project information in the construction documents simplifies the process so a project can be constructed efficiently and properly. A construction project has seemingly an infinite number of moving parts to coalesce into a completed building. This approach also reduces the possibility of conflicts, errors and omissions in construction documents. Lastly, a critical precept is that each bit of information should only be used one time, at its proper location. This theoretically eliminates the errors and mistakes, especially if one piece of information is changed but overlooked at other places in the construction documents. As far as drawings are concerned, a standardized approach is also utilized. But let's dive deeper into how the Project Manual is organized. The specifications are organized into "divisions" based upon the material designed into the construction project.

Masterformat CSI Divisions

00 GENERAL PROJECT REQUIREMENTS	12 FURNISHINGS	33 UTILITIES
01 GENERAL REQUIREMENTS	13 SPECIAL CONSTRUCTION	34 TRANSPORTATION
02 EXISTING CONDITIONS	14 CONVEYING EQUIPMENT	35 WATERWAY AND MARINE CONSTRUCTION
03 CONCRETE	21 FIRE SUPPRESSION	40 PROCESS INTEGRATION
04 MASONRY	22 PLUMBING	41 MATERIAL PROCESSING AND HANDLING EQUIPMENT
05 METALS	23 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)	42 PROCESS HEATING, COOLING, AND DRYING EQUIPMENT
06 WOOD, PLASTICS, AND COMPOSITES	25 INTEGRATED AUTOMATION	43 PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT
07 THERMAL AND MOISTURE PROTECTION	26 ELECTRICAL	44 POLLUTION AND WASTE CONTROL EQUIPMENT
08 OPENINGS	27 COMMUNICATIONS	45 INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT
09 FINISHES	28 ELECTRONIC SAFETY AND SECURITY	46 WATER AND WASTEWATER EQUIPMENT
10 SPECIALTIES	31 EARTHWORK	48 ELECTRICAL POWER GENERATION
11 EQUIPMENT	32 EXTERIOR IMPROVEMENTS	

THE CONSTRUCTION SPECIFICATION INSTITUTE (CSI)

The well-recognized and established organization in the design and construction industry is the Construction Specification Institute.



Founded in 1948, CSI is a national not-for-profit association of more than 6,000 members dedicated to improving the communication of construction information throughout continuous development and transformation of standards and formats, education and certification of professionals to improve project delivery processes. CSI members work tirelessly to effectively communicate the designers' vision, the material producers' solutions and the constructors' techniques to create outstanding facilities that meet facility owners' objectives.

CSI is dedicated to improving the communication of construction information through:

- A diversified membership base of allied professionals involved in the creation and management of the built environment.
- Continuous development and transformation of standards and formats.
- Education and certification of professionals to improve project delivery processes.
- Creation of practice tools to assist users throughout the facility life-cycle.

Design professionals seeking to further their knowledge and at the same time may seek recognition of their craft by obtaining the following certifications:

Certification

CSI is renowned in the industry for its rigorous certification programs, which include:

[Construction Documents Technology \(CDT®\)](#) – A comprehensive overview for anyone who writes, interprets, enforces, or manages construction documents.

[Certified Construction Specifier \(CCS®\)](#) – Demonstrates excellence in specifications and contract document preparation.

[Certified Construction Contract Administrator \(CCCA®\)](#) – Truly understand all facets of the construction process and contractual relationships.

[Certified Construction Product Representative \(CCPR™\)](#) An in-depth understanding of the construction process and superior ability in effective representation.

Within each division there are "sections" defining the material in more detail. And each section is then broken down into three parts: Part 1 – General, Part 2 – Products, and Part 3 – Execution. Each part consists of specific information regarding that section of the specification. The three parts are included in all specification sections and are consistent in number and title.

There are four methods of specifying: *performance*, *descriptive*, *reference standard*, and *proprietary*. See <https://services.caddetails.com/blog/do-you-know-the-four-methods-of-specifying>.

Performance Specifications

Performance specifying focuses on the end result, and includes information for verifying the end result. There are no limitations on the method of achieving this result. To be effective, a performance specification must clearly define the desired end result. If this is not done, the project can suffer from a loss of quality control. The end result should be somehow measurable through testing or evaluation. Descriptions of materials and processes should be minimal. Performance specifying encourages innovation to achieve desired results. Performance specifying can be used in any specification. Performance specifications can be selected as a way to access a range of options using current technology. It can also be used to invite innovation for technologies that are not yet developed or standard in the construction industry.

Descriptive Specifications

While descriptive specifications were once the preferred method of specifying, they are now used less often due to project complexity and increasing availability of reference standards. Descriptive specifications are detailed descriptions of the properties required of a material, product or piece of equipment. Detailed descriptions of workmanship required for installation are used. For descriptive specifications, the burden of performance rests with the architect or engineer. Descriptive specifications are lengthy, and writing them can be an involved process. They may be chosen when proprietary specifying is not an option and reference standards are not available

Reference Standard Specifications

Industry standards are published by professional groups, trade associations, standards-writing organizations, institutions, and governments. Industry standards are incorporated into reference standard specifications by reference to a number, title, or other designation. Use of standards saves the task of writing text that would indicate the requirements of the standard. The specification writer on a project should know the standard and incorporate it properly into the specification. Additionally, the specification writer should be aware of potential pitfalls including that standards usually refer to minimum requirements, and inadequate reference standards exist and should be avoided. Once a reference standard is included in a specification, means should be provided to ensure the standards are being met. This can involve test reports, samples, on-site reviews, test reports, manufacturer's literature, and other submittals.

Proprietary Specifications

Selected products may be identified directly in proprietary specifications. A specification is also considered proprietary even if a manufacturer's name is not mentioned if the specified product is available from a single source. Proprietary specifications on construction projects allow for control of product selection. This can reduce costs and save design time, and simplify the bidding process. The drawbacks of proprietary specifications include reduced competition, or errors made in model or product designations. Closed proprietary specifications name a single product, or several as options and substitutions are not allowed. Open proprietary specifications permit for substitutions, but require approval of the architect or engineer.

And lastly there are five **C's** of effective specifications to effectively communicate requirements. Specifications must be **C**lear, **C**oncise, **C**omplete, **C**orrect, and **C**onsistent.

IN CONCLUSION

The topic of specification and how to effectively and professionally develop these construction documents is immense. There are numerous reference materials published made available to design professionals, for both architects or engineers.

About the Author of this Risk Management Building Block Article

As a risk manager for the last 18 years for the design profession, Eric has experience in professional liability insurance and claims, architecture, engineering, land use, law, and a unique background in the construction industry. Prior to risk management, he has 25 years of experience in the practice of architecture/engineering, and as an adjunct professor teaching professional practice courses at the undergraduate and graduate levels for the last 35 years at Kent State University's College of Architecture & Environmental Design.

As a Fellow of the American Institute of Architects and AIA National Ethics Council 2021 Chair, he has demonstrated his impact on architectural profession. He has presented numerous loss prevention and continuing educational programs to design professionals since 2000 on topics of ethics, contracts, and professional practice in various venues across the United States and Canada. He is a former member and chair of his city's Board of Zoning & Building Appeals for 24 years, and is a licensed architect, attorney, and property & casualty insurance professional.

His educational background includes a JD from Southwestern University School of Law, Los Angeles; Master of Science in Architecture from University of Cincinnati; and BA in psychology/architecture from Miami University, Oxford, Ohio.

The above comments are based upon DesignPro Insurance Group's experience with Risk Management Loss Prevention activities and should not be construed to represent a determination of legal issues but are offered for general guidance with respect to your own risk management and loss prevention. The above comments do not replace your need for you to rely on your counsel for advice and a legal review, since every project and circumstance differs from every other set of facts.

Disclaimer: The viewpoints expressed in this article are those of the author(s) and are not necessarily approved by, reflective of or edited by other individuals, groups, or institutions. This article is an expression by the author(s) to generate discussion and interest in this topic.

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Brad Bush, CPCU, AU, Principal, DesignPro Insurance Group and
Eric Pempus, FAIA, Esq., NCARB, Risk Manager, DesignPro
Insurance Group

October 9, 2024, 12 Noon, Lunch & Learn
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www.halfmoonseminars.org

November 12, 2024 – 2:30 – 3:30 pm – Live Webinar

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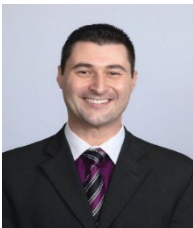
Brad Bush, CPCU, AU
Principal
brad.designproins@wichert.com



Eric Pempus
FAIA, Esq., NCARB
Risk Manager
eric.designproins@wichert.com



Connor Bush
Account Executive
connor.bush@wichert.com



Chuck Petretti
Account Executive
chuck.petretti@wichert.com



Roger Perry
Account Executive
roger.designproins@wichert.com



Tracey Heise
Account Manager
tracey.designproins@wichert.com



Tracy Combs
Risk Manager & Loss Control Specialist
tracy@wichert.com

DesignPro Insurance

5991 Chandler Court, Suite A
Westerville, OH 43082
614-794-4820

www.designproins.com

2301 Blake Street, Suite 100
Denver, CO 80205
614-426-3045