

Sheet Specifications

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Some projects are of such a small size that for a separate project manual containing the project specifications is considered unnecessary. However, relying solely on the graphical and notational information on drawings is not sufficient to ensure a quality project—there is still a need to provide some qualitative requirements within the contract documents.

As a compromise, many design professionals place the project specifications on one or more drawing sheets commonly referred to as “sheet specifications” or “sheet specs.” This practice is very common with noncommercial residential construction and has slowly migrated into the small commercial project arena, such as tenant improvements and small alteration projects. Unfortunately, unlike the standard method of specifying, this method of specifying lacks a nationally recognized format standard.

Since the 1960s, CSI and CSC¹ have jointly published standards that help organize and format a project manual. MasterFormat™ provides the organizational structure for the placement of information in the project manual, while SectionFormat™ and PageFormat™ provide the structure of a specification section and the layout of the page (e.g. headers, footers, margins, paragraph structure, etc.), respectively. In the absence of an organizing and formatting standard for sheet specifications, this article will establish some guidelines that design professionals can refer to when preparing sheet specifications for their projects.

Why Sheet Specifications?

For small projects, sheet specifications are a great alternative to the standard bound project manual. Those in the single-family residential design business have used drawing-based specifications for their projects for many years, albeit in a much different format than what is presented in this article.

Typically, smaller projects involve fewer people; thus, collaboration and communication between the contract parties are easier to manage. Additionally, smaller

projects utilize fewer materials and systems. The simplified nature of a smaller project eliminates the need for overly detailed specifications—only the most pertinent requirements are needed to ensure a quality outcome. However, when specifications for a small project are distilled down to their essential elements, the remaining content is not enough to warrant the preparation of a separate bound set of documents—hence, sheet specifications.

Location in the Drawing Set

The location of sheet specifications within a set of drawings needs to be considered carefully in order to prevent the potential loss of information that comes with the splitting of a drawing set among the various subcontractors on a project; however, this is less of a concern when electronic documents are used.

There are two options that are available to design professionals when it comes to locating the sheet specifications in a drawing set:

Option 1: Locating all specification information in a single location within a drawing set.

Option 2: Locating specification information within the portion of a drawing set applicable to a particular design discipline.

For both options, the Uniform Drawing System (UDS)² developed by CSI can be used as a starting point for locating specification information in a drawing set. The UDS organizes a drawing set into subsets using a letter (Level 1 designator) and title that consist of the following:

- G – General
- H – Hazardous Materials
- V – Survey/Mapping
- B – Geotechnical
- C – Civil
- L – Landscape
- S – Structural
- A – Architectural
- I – Interiors

¹ CSI is the Construction Specifications Institute and CSC is the Construction Specifications Canada.

² The UDS is a component of the *United States National CAD Standard* (NCS) published by the National Institute of Building Sciences (NIBS).

- Q – Equipment
- F – Fire Protection
- P – Plumbing
- D – Process
- M – Mechanical
- E – Electrical
- W – Distributed Energy
- T – Telecommunications
- R – Resource
- X – Other Disciplines
- Z – Contractor/Shop Drawings
- O – Operations

Option 1 – Single Location in Drawings

For Option 1, the most logical place for locating the sheet specifications would be in the “G – General” subset. According to the UDS, a Level 2 designator can be used to group related drawings within a Level 1 subset. Since “S” is generally reserved in each of the other subsets for site-related drawings, it should not be used for sheet specifications in the “General” subset. Per the UDS guidelines, Level 2 designators “J” and “K” are available for user-defined content. Therefore, the “K” designator (selected for the hard “K” sound associated with the informal “spec” term) will be used in the Level 2 position when numbering drawing sheets (*i.e.* “GK”). If the project is so small that sheets solely for the specifications are not necessary, then the specifications can be located on drawing sheets that include other content and need not use the Level 2 designator.

The three-digit sheet sequence number that follows the double- or single-letter designator should begin with a zero to indicate it is a “General” sheet per the UDS guidelines. The remaining two digits are sequential numbers starting with “01” up to “99”; however, it is unlikely that 99 sheets of specifications will be used in a drawing set. Thus, the first sheet of the specifications with a double-letter designator would be numbered “GK001.” The sheet number for a single-letter designator would depend on the sheet where the specifications are located (*e.g.* “G-003”).

The organization of the specifications on the sheet should follow MasterFormat™ using sections from the 50 divisions as applicable to the project. However, the

use of numbers and titles from MasterFormat™ should be carefully considered. It is this author’s suggestion that numbers and titles for sheet specifications be limited to those for Level 2 if various materials of the same type are used (*e.g.* “04 20 00 Unit Masonry” for brick and CMU)—use of multiple Level 3 and Level 4 numbers and titles within one division could provide too much granularity for what should be a simple set of specifications.

Option 2 – Multiple Locations in Drawings

Option 2 would be organized similarly to Option 1, except that the specifications applicable to each drawing subset per the UDS would be located within that subset. For example, following the guidance for Option 1, the first sheet of specifications for the “A – Architectural” subset would be identified as “AK001,” or “A-001.” Division 01 General Requirements specifications and, if applicable, Division 00 Procurement and Contracting Requirements should still be located in the “GK” or “G” sheets as described for Option 1.

Layout Format for Specification Content

The presentation of specification content on a drawing sheet could prove challenging depending on the size of the sheet, margins, and title block. The UDS recommends margins of ¾-inch at the top, bottom, and right edges, and a 1½-inch margin at the left edge (*i.e.* binding edge). Title block size will vary based on office practice. Thus, the remaining area (“drawing area” per UDS terminology) is the space available after the margins and title block are applied to a drawing sheet regardless of size.

The sheet sizes most commonly used in the U.S. are the “D” (24 by 36 inches), “E” (36 by 48 inches), and “F” (30 by 42 inches). Applying the recommended margins and a 3-inch title block, the respective drawing area for each of the sheet sizes indicated above consist of the following dimensions:

“D” – 22½ by 30¾ inches.

“E” – 34½ by 42¾ inches.

“F” – 28½ by 36¾ inches.

The UDS recommends that the drawing area be divided into modules that create a grid. Although the UDS

mentions square modules, this is nearly an impossible task unless margin and title block sizes are manipulated to ensure a square module layout. Therefore, this author recommends dividing the drawing area into equal modules vertically and horizontally, even if the resulting module size is a rectangle (See Figure 1).

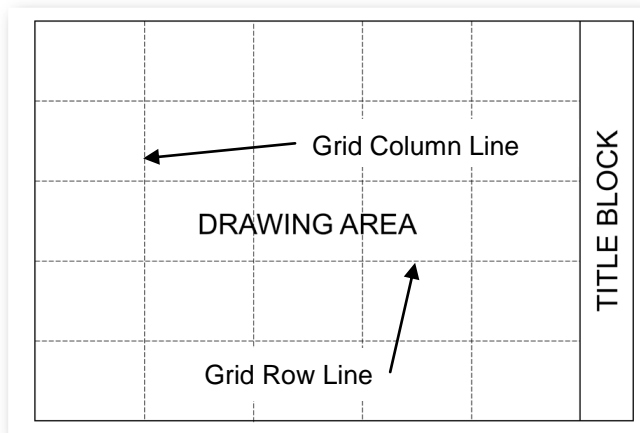


Figure 1 - A possible layout for a 24- by 36-inch D-size sheet. The grid size shown is approximately 4.5 by 6.15 inches. The grid lines are indicated here to show how the pattern would lay out; however, one only needs to mark the grid along the borders or use a nonplotting grid layer.

The module size should be consistent throughout all sheets of a drawing set. Therefore, the sheet specifications should work within the established grid and not create its own. Additionally, the sheet specifications should not dictate the grid for a drawing set—the grid should be a size that works well for drawings and notes, as well as specifications. Something to keep in mind is that all drawings, notes, and specifications need not fit within a specific module column (*i.e.* width) or row (*i.e.* height)—multiple columns and rows can be used for a single drawing block, note block, or specification block, if a module is too small. For example, if the column width creates unusually narrow paragraphs when indenting, then two columns could be used.

Once the grid is established, the work of placing specification content can begin. For written content on the drawings, the best approach is to lay out the specifications from left to right on the sheet; in other words, the beginning of the specification content should start at the upper left corner and end towards the lower right corner

if a full sheet is used (See Figure 2). However, if only a partial sheet is needed, then justify the specification block to the upper right corner (See Figure 3).

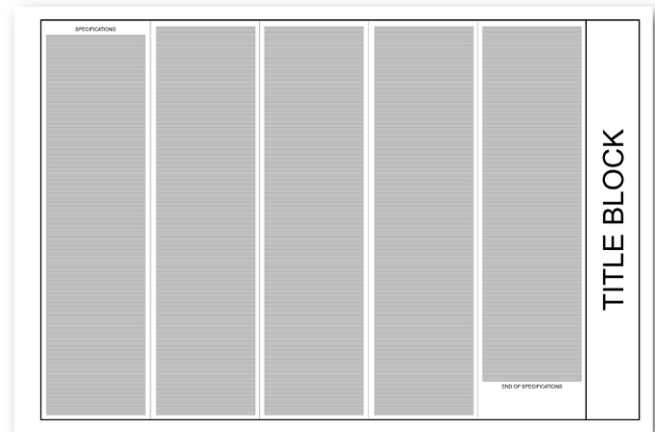


Figure 2 - Locate specification content that covers all columns of the sheet starting in the first column upper left corner. Content will be read from top of the column down, and from the left column to the right.

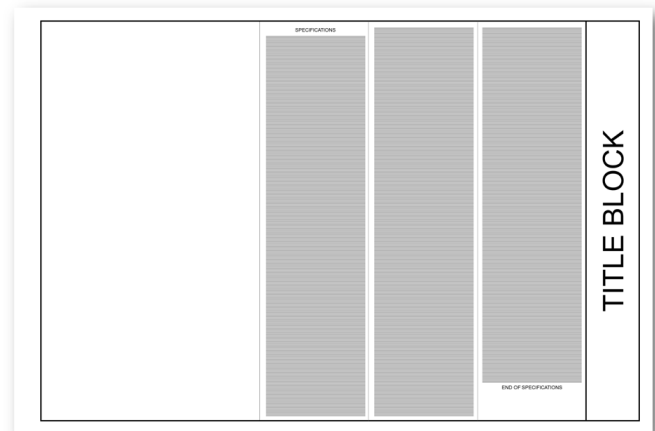


Figure 3 - If specification content does not use all columns, justify the specifications block to the far right column.

There should be sufficient margins between the specification text and sheet borders, and between adjacent columns of specification text. Generally, a 1/4- to 3/8-inch margin should be provided between the text and the sheet border. A 1/2- to 3/4-inch space between columns of text should be sufficient separation. A line centered be-

tween the two columns (*i.e.* grid column line) can be added to improve readability.

General Organizational Format of Sheet Specification Content

The organizational format of specification content on a drawing sheet will be significantly different from a specification section in a project manual, which is formatted in accordance with SectionFormat™ and PageFormat™.

The most significant recommended change is the elimination of the three-part structure: Part 1 - General, Part 2 - Products, and Part 3 - Execution. Due to the simplified nature of sheet specifications, there is no need for this level of information categorization, but the order of the content in a sheet specification section should generally follow the order in SectionFormat™. Other notable departures from typical specification writing include the following:

- “SECTION” is eliminated before each section number. This permits the reader to quickly scan the left side of each column for a particular section and paragraph, since all numbers—division, section, and paragraph—are located on the left side.
- “END OF SECTION” is eliminated at the end of each section. In a project manual, this practice is necessary to verify that all pages of a section are provided. However, with sheet specifications, this is unnecessary.
- Paragraph structure is modified. This allows the text to be slightly more condensed than what is used in a typical project manual.
- Content is significantly abbreviated. For small or simple projects, verbosity is not needed. Sheet specifications are somewhere between outline specifications and full specifications, and are probably closer to the former. Content should be succinct and relevant to the specific project.

Recommended Format Guidelines

Division Titles: Identify each division with the number and title in capital letters (*e.g.* “01 – GENERAL REQUIREMENTS”). Provide two extra lines between the division title and previous text, and left-justify the text.

Section Titles: Identify each section with the number and title (conforming to the MasterFormat™ *Applica-*

tions Guide) in capital letters (*e.g.* “01 40 00 - QUALITY REQUIREMENTS”). Provide one extra line between the section title and previous text, and left-justify the text.

Article Titles: Identify each article with a number and title in capital letters. Article numbers should be a sequential number followed by a decimal and a zero (*e.g.* “1.0 SUMMARY OF WORK”). If only one paragraph is required for the article, follow the article title with a colon and add the paragraph content in standard sentence case. Left-justify the text.

Paragraphs: If more than one paragraph is required for an article, place the first paragraph below the article title with no extra line. Paragraphs should be numbered sequentially using the first number from the article title and replacing the zero with the sequential number. The paragraph number should be followed by a tab. Multiple lines of text in a paragraph should be indented and left-justified to align with the beginning of the text in the first line (See Figure 4)

XX - DIVISION TITLE	(Division Level)
XX XX XX - SECTION TITLE	(Section Level)
1.0 ARTICLE	(Article Level)
1.1 Paragraph.	(Paragraph Level)
a. Subparagraph.	(Subparagraph Level 1)
1) Subparagraph.	(Subparagraph Level 2)
a) Subparagraph.	(Subparagraph Level 3)

Figure 4 - Indenting structure.

Subparagraphs: Multiple levels of subparagraphs should be avoided with the maximum number of levels set at three. Ideally, only one subparagraph level should be used, which may be for situations when acceptable manufacturers or products are listed, or when product characteristics or options are listed.

Level 1 subparagraphs are addressed using sequential lower case letters followed by a period then a tab.

Level 2 subparagraphs are addressed using sequential single digit numbers followed by a parentheses then a tab.

Level 3 subparagraphs are addressed using sequential lower case letters followed by a parentheses then a tab.

Subparagraphs should be indented so that the letters or numbers are aligned with the paragraph or subparagraph text above. Multiple lines of text in a subparagraph should be indented and left-justified to align with the beginning of the text in the first line (See Figure 4).

Font: The UDS recommends that lettering for drawing notations be 3/32-inch high, which is roughly equivalent to a 7-point font. However, for specifications in a project manual, the recommended minimum font is 10-point. Since sheet specifications are entirely text—no drawings—searching through and reading a large block of 7-point text would be difficult, so the use of a 10-point sans serif font would be considered acceptable.

Also contrary to the UDS, bold font could be used for division and section titles for ease of visually searching the specifications. Bold font can also be used for end of specifications line.

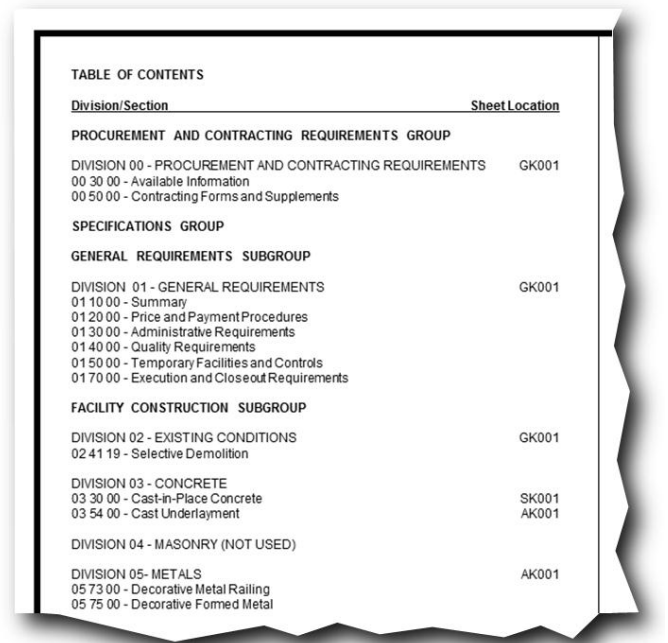
End of Specifications: In lieu of the “END OF SECTION” line used for specification sections, place an “END OF SPECIFICATIONS” line centered after the last line of specification content with an extra line between. If Option 2 is used for location of specification content, use “END OF [SUBSET] SPECIFICATIONS” and replace [SUBSET] with the specific drawing subset title. For example, if the specifications are for the architectural subset, use “END OF ARCHITECTURAL SPECIFICATIONS.”

Table of Contents: A table of contents should be prepared so that the reader can quickly ascertain what specifications are provided. The recommendations of the MasterFormat™ *Applications Guide* should be considered when developing the table of contents. However, since small projects may not use many of the divisions, a range of divisions can be identified as not being used (e.g. “DIVISIONS 03 – 06 (NOT USED)”).

For either Option 1 or Option 2 location formats, the table of contents should always be located in the “G – General” subset. If Option 2 is used, then the table of contents should list the sheet numbers where the section is specified. If an entire division is located within a single drawing subset, then a sheet number is provided for the division. If two or more sections within a division are located in different drawing subsets, then a sheet lo-

cation should be provided for each section (See Figure 5).

Figure 6 (next page) provides a partial example of how a sheet specification would appear using the recommendations described in the previous paragraphs.



Division/Section	Sheet Location
PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP	
DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS	GK001
00 30 00 - Available Information	
00 50 00 - Contracting Forms and Supplements	
SPECIFICATIONS GROUP	
GENERAL REQUIREMENTS SUBGROUP	
DIVISION 01 - GENERAL REQUIREMENTS	GK001
01 10 00 - Summary	
01 20 00 - Price and Payment Procedures	
01 30 00 - Administrative Requirements	
01 40 00 - Quality Requirements	
01 50 00 - Temporary Facilities and Controls	
01 70 00 - Execution and Closeout Requirements	
FACILITY CONSTRUCTION SUBGROUP	
DIVISION 02 - EXISTING CONDITIONS	GK001
02 41 19 - Selective Demolition	
DIVISION 03 - CONCRETE	
03 30 00 - Cast-in-Place Concrete	SK001
03 54 00 - Cast Underlayment	AK001
DIVISION 04 - MASONRY (NOT USED)	
DIVISION 05 - METALS	
05 73 00 - Decorative Metal Railing	
05 75 00 - Decorative Formed Metal	

Figure 5 - An example of a table of contents for a project with specifications located in different drawing subsets per Option 2. Sheet numbers are not required for Option 1.

Preparing Sheet Specifications

The method of editing and adding specification content onto the drawings can be a little more labor-intensive than preparing specifications bound in a project manual. The ease of preparing specifications for drawing sheets depends on the software program or programs used.

The use of word processing software, such as MS Word or WordPerfect, is probably the most efficient way of editing specifications for the drawings. Currently, there are no master guide specifications for sheet specifications from the major publishers of master guide spec-

ifications.³ If you subscribe to one of the major publishers, you could create an in-house master from their content.

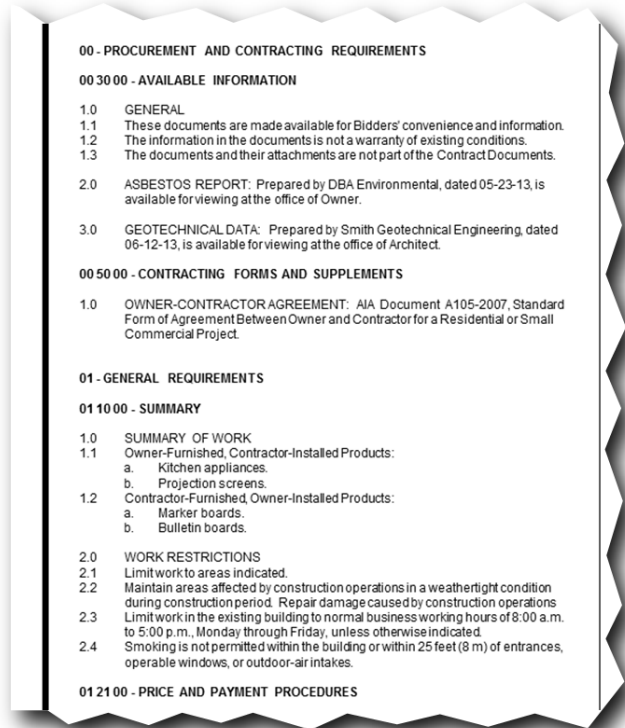


Figure 6 – An example of a partial specification using the recommendations provided in this article.

For those using Revit, as of the date of this article, there is no method available to import a word processor document directly into Revit. The document has to be either inserted into an AutoCAD drawing and then linking back to that file while in Revit, or the entire document is copied and pasted into a Revit text field; however, with the latter, you will lose nearly the entire document formatting.

If the drawings will eventually be converted into portable document format (PDF), then a blank drawing sheet can be converted to PDF and the specification content can be added using a PDF editor with formatting capabilities, such as Adobe Acrobat. This method al-

lows the content to be easily revised without having to use CAD software.

The Future of Sheet Specifications

Sheet specifications will likely be used for projects until the time when all specification information is integrated into the building information model. Since drawing-based specifications will remain in the design professional's toolbox for many years, it may be time to standardize the way the content is presented. Until an organization like CSI develops a nationally recognized standard, this article can be the grassroots of such an effort.

About the Author: Ronald L. Geren, AIA, CSI, CCS, CCCA, SCIP, is a Certified Construction Specifier and a Certified Construction Contract Administrator, and is the principal of RLGA Technical Services located in Scottsdale, Arizona, which provides specifications and code consulting services to architects, engineers, owners, and product manufacturers. A 1984 graduate of the University of Arizona, Ron has over 28 years of experience with military, public, and private agencies.



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³ Master guide specifications for sheet specifications are available from Kalin Associates (www.kalinassociates.com); however, the format does not follow the one recommended in this article and the content is organized using an older version of MasterFormat™.