INTRODUCTION

MasterFormat™ is a master list of numbers and titles for organizing information about construction requirements, products, and activities into a standard sequence. Construction projects use many different delivery methods, products, and installation. Successful completion of projects requires effective communication among the people involved on a project. Information retrieval is nearly impossible without a standard filing system familiar to each user. MasterFormat facilitates standard filing and retrieval schemes throughout the construction industry. MasterFormat is a uniform system for organizing information in project manuals, for organizing cost data, for filing product information and other technical data, for identifying drawing objects, and for presenting construction market data.

The 1995 edition of MasterFormat replaces the 1988 edition. It is produced jointly by the Construction Specifications Institute (CSI) and Construction Specifications Canada (CSO).

HISTORY

Since it was introduced in 1964, the 16-division format has been widely accepted as standard practice in the United States and Canada. First published as part of the "CSI Format for Construction Specifications" it was later used as the basis for the "Uniform System for Construction Specifications, Data Filing and Cost Accounting"—"Title One Buildings" published in 1966. The "Uniform System" was developed and endorsed by the following organizations: American Institute of Architects, American Society of Landscape Architects, Associated General Contractors of America Inc., Council of Mechanical Specialty Contractors of America Inc., (formerly known as the Associated Specialty Contractors), Producers' Council Inc., National Society of Professional Engineers, and Construction Specifications Institute. In 1966 a similar effort in Canada produced "The Building Construction Index" (BCI), based on the 16-division format that had been introduced by the Specification Writers Association of Canada, renamed Construction Specifications Canada in 1974.

The U.S. and Canadian formats were merged into a single format in 1972 and published as the "Uniform Construction Index" (UCI). The UCI was a comprehensive framework for organizing information contained in project manuals, as well as providing a basis for data filing and project cost classification.
In 1978, Construction Specifications Canada joined with the Construction Specifications Institute to produce the first edition of MasterFormat, introduced by CSI as MP-2-1 and by SSC as Document 004E. It incorporated a complete organizational format for project manuals by including bidding requirements, contract forms, and conditions of the contract in addition to the 10 division list of numbers and titles used primarily for specifications.

The first revised edition of MasterFormat was published in 1983. It retained the basic principles of organization contained in the previous edition. However, revisions and additions recognized the needs of the engineering disciplines.

The 1988 edition included revisions and additions needed to re-recognize new products and developments in the construction industry, and was based on input from MasterFormat users.

This Edition

This edition of MasterFormat has undergone a more extensive public review and coordination with industry users than any previous edition. It incorporates many minor revisions in numbers and titles, and several changes in style and presentation. There are also some significant rearrangements of numbers and titles, particularly in Divisions 1, 2, 13, 15, and 16. The following list is a summary of the significant changes from the 1988 Edition:

- An expanded “Application Guide” follows the “Introduction.”
- Since organizing specifications is only one purpose of MasterFormat, references to specification sections within the list of numbers and titles and explanations have been removed.
- An effort was made to include construction products and activities for other than building projects.
- The title categories of “broadscope,” “mediumscope,” and “narrowscope,” introduced in the 1983 edition of MasterFormat, have been replaced by a hierarchical system composed of four levels. A Division title is considered level one, and subordinate titles are identified with five-digit numbers at level two and level three. Titles at level four are unnumbered.
- The Explanation column, opposite the numbers and titles, now refers to level three as well as level two titles, as does the Key Word Index.
- The Explanation column includes standard explanations and cross-references to other titles.
- The former the “Bidding Requirements, Contract Forms, and Conditions of the Contract” has been reorganized and is now presented as two separate groupings: “Bidding Requirements” and “Contracting Requirements.”
- “Bidding Requirements” titles were changed to match terms used in popular standard documents for bidding, including those used in the public sector. Titles were added to identify bidding scopes to accommodate non-traditional methods of construction pricing.
- “Contracting Requirements” titles were changed to match terms used in popular standard documents for contracting, including those used in the public sector. Titles were also added to identify contract scopes to accommodate non-traditional methods of construction delivery.
"Facilities and Spaces" title was added to accommodate descriptions of multiple facility projects and preliminary specifications for facilities and spaces. In specifications applications these titles become a part of the specifications, supplementing the specifications in Divisions 1 through 16. A breakdown of types of facilities and spaces is not included in this edition.

"Systems and Assemblies" title was added to accommodate descriptions, cost reports, and performance specifications of these elements. In specifications applications these titles become a part of the specifications, supplementing the specifications in Divisions 1 through 16. MasterFormat does not include a breakdown of systems and assemblies, but refers to UniFormat™ for this information.

Division 1 contains titles related to general requirements for construction. This Division was completely rearranged to clarify that general requirements may apply to products and execution as well as administration. Titles extending general requirements over the entire facility life cycle were added. The new arrangement is more closely aligned with SectionFormat™. The level two titles are as follows:

- Summary
- Price and Payment Procedures
- Administrative Requirements
- Quality Requirements
- Temporary Facilities and Controls
- Product Requirements
- Execution Requirements
- Facility Operation
- Facility Decommissioning

The level two title, "Basic Materials and Methods," was added to most Divisions that did not already provide for such a grouping.

Level two and level three titles for "Restoration" were added to almost all Divisions.

Division 2 was retitled "Site Construction" and completely rearranged with level two titles for:

- Basic Site Materials and Methods
- Site Remediation
- Site Preparation
- Earthwork
- Tunneling, Boring, and Jacking
- Foundation and Load-Bearing Elements
- Utility Services
Drainage and Containment
Bases, Ballasts, Pavements, and Appurtenances
Site improvements and Amenities
Planting
Site Restoration and Rehabilitation

- Division 4 now facilitates applications dealing with masonry as individual products and with masonry as an assembly. Existing titles were modified to be applicable to individual units and a new level two title "Masonry Assemblies" was added.
- "Railroad Track" was moved from Division 2 to Division 5.
- "Skylights" was moved from Division 7 to Division 8.
- Division 13 remains "Special Construction," but several titles were changed. This Division now includes lightning protection, cathodic protection, hazardous material remediation, security access and surveillance, detection and alarm, and fire suppression.
- Division 15 was changed to group piping by application and to include industrial process piping. Fire protection piping components remain in Division 15 as an option, but fire suppression and control, as components and as a system, is relocated to Division 13. Heating, ventilating, and air-conditioning equipment is rearranged to match industry terminology. Temperature control is no longer arranged by system technology.
- Division 16 was rearranged to include a level two title for electrical power. Lightning protection, cathodic protection, detection and alarm, and security access were relocated to Division 13, and a new title was added for "Sound and Video."

INDUSTRY ACCEPTANCE

Over the past 35 years, the system of numbers and titles at the heart of MasterFormat has been used increasingly by the construction industry. Today, MasterFormat is the only system of organizing construction specifications in widespread use in the United States and Canada. And its system of organizing construction information into "Bidding Requirements," "Contracting Requirements," and 16 Divisions of products and activities is commonplace.

MasterFormat is adopted for use by the United States Department of Defense and is also used at state and municipal levels of government.

CSC promotes standardization of construction documents in Canada, its efforts have been supported by the Royal Architectural Institute of Canada, the Association of Consulting Engineers of Canada, and the Canadian Construction Association. MasterFormat is also used by provincial and municipal governments to organize master specifications, data files, and cost-analysis systems. MasterFormat is the basis of the titling and numbering system for the Canadian Federal Government's National Master Specification (NMS), which is used by all Canadian federal government agencies and a large portion of the private sector.
BASIC ORGANIZATION

Groupings
The numbers and titles in MasterFormat are grouped under the general headings:

- Introductory Information (numbered 00001 to 00099)
- Bidding Requirements (numbered 00100 to 00499)
- Contracting Requirements (numbered 00500 to 00999)
- Facilities and Spaces (no numbering)
- Systems and Assemblies (no numbering)
- Construction Products and Activities (Divisions 1 - 16)

The first grouping, "Introductory Information," is a location for indexing. The second and third groupings, "Bidding Requirements" and "Contracting Requirements," are locations for defining relationships, responsibilities, and processes for construction. The last three groupings, "Facilities and Spaces," "Systems and Assemblies," and "Construction Products and Activities," are locations to describe the physical aspects of construction.

Divisions
MasterFormat arranges related construction products and activities into 16 level one titles, called Divisions. The numbers and titles of the Divisions are:

- DIVISION 1  GENERAL REQUISITES
- DIVISION 2  SITE CONSTRUCTION
- DIVISION 3  CONCRETE
- DIVISION 4  MASONRY
- DIVISION 5  METALS
- DIVISION 6  WOOD AND PLASTIC
- DIVISION 7  THERMAL AND MOISTURE PROTECTION
- DIVISION 8  DOORS AND WINDOWS
- DIVISION 9  FINISHES
- DIVISION 10  SPECIALTIES
DIVISION 11 EQUIPMENT
DIVISION 12 FURNISHINGS
DIVISION 13 SPECIAL CONSTRUCTION
DIVISION 14 CONVEYING SYSTEMS
DIVISION 15 MECHANICAL
DIVISION 16 ELECTRICAL

The level two titles (formerly called "workscope titles") identify clusters of products and activities having an identifying characteristic in common. Usually, these titles are a logical categorization of the Division title. Sometimes, particularly in Divisions 2, 13, 15, and 16, these titles are arbitrary breakouts of the Division, essentially acting as subdivisions. Level two titles are the highest level generally used in listing and arranging units of construction information. In MasterFormat level two titles are presented at an uppercase letter and bold typeface.

MasterFormat shows both numbers and titles at level three. Level three titles are presented as first letter uppercase and bold typeface. Level three numbers are presented as the last three digits of the five-digit designation in bold typeface.

MasterFormat suggests titles at level four, but does not indicate numbers. Users should create numbers by interpolating between assigned numbers when using level four titles or creating new titles. Level four titles are presented alphabetically in regular non-bold typeface.

A key word index of requirements, products, and activities is included in MasterFormat to help find appropriate numbers and titles to construction subjects. Alphabetized entities may refer to either level two or level three numbers.

Title Explanations

A general description of the coverage of each MasterFormat title is provided opposite its listing. The explanation together with the list of subordinate titles provide an understanding of the scope of each title. In addition, the right-hand column provides cross references to level two and level three titles.

RELATIONSHIP WITH UniFormat

CSI and CSC also publish UniFormat Interim Edition — For Trial Use and Comment which provides numbers and titles for functional elements comprising systems and assemblies of construction products. This edition of MasterFormat establishes a location for numbers and titles of systems and assemblies. This location is immediately before the listing of construction products and activities (Divisions 1-16) defined by MasterFormat.

MasterFormat deleter to UniFormat for organizing and listing systems and assemblies. The two documents are therefore complementary in applications, such as project manuals and cost estimating, where reference to both products and functional elements may be useful.
APPLICATION OVERVIEW

The following brief discussion provides an overview of using the numbers and titles for various applications. Refer to the "Application Guide" for more detailed analysis.

Project Manuals

MasterFormat is the fundamental standard for compiling and arranging project manuals containing bidding requirements, contracting requirements, and specifications.

*Introductory Information:* Indexing documents included in this grouping are found at the beginning of project manuals. They are not actual contract documents unless they are incorporated by reference from one of the contract documents.

*Bidding Requirements* and *Contracting Requirements* are often referred to as "Series Zero" documents, not "Division Zero." They are not specifications. They define the relationships, processes, and responsibilities for projects. The documents in "Bidding Requirements" do not become a part of the construction contract; of course the documents in "Contracting Requirements" certainly do become contractual documents, since they are the contract forms and conditions of the contract. In these groups, level two and level three MasterFormat numbers have been assigned to provide a consistent identification, but it is not necessary to renumber or restate printed forms and standard documents published by various professional societies.

*Facilities and Spaces* and *Systems and Assemblies:* MasterFormat indicates a location, but does not include standard numbers and titles for these groupings. Facility and space titles are often project specific, and neither CSI nor CSC have a master list of numbers and titles for these groupings. Refer to UniFormat for system and assembly numbers and titles.

*Construction Products and Activities:* The heart of MasterFormat remains the 18 Divisions, the titles of which are the level one titles of specifications. Divisions 1 through 18 remain a complete method of numerating and titling sections of specifications, both for arranging master guide specifications or for arranging a project specification.

Product Data

Identifying product data with MasterFormat numbers and titles is practical because of the relationship between products and specifications. Some particular uses in this application include arranging publications in a technical library, filing information on products, methods, suppliers, and subcontractors; and inventory of construction products.
Cost Estimating

MasterFormat is useful for identifying unit prices and cost report items for products and activities, arranging a database of product and activity unit costs, arranging and tabulating a project budget according to a product and activity breakdown, and relating cost items to specifications and drawings. MasterFormat is not particularly useful for value analysis, which requires assigning cost to particular functional elements, rather than to particular products and activities.

Drawing Elements

MasterFormat is used in keynoting applications, and has found some success there when used to link drawing objects to specification sections. It is also used to identify CAD layering organizations.

Construction Market Data

Market data reporting agencies routinely use MasterFormat to list products used on a project being bid. This practice allows users to quickly identify sales potential for their products and services on a particular project.

Facility Management

Facility managers can identify data associated with products incorporated into buildings. MasterFormat numbers can be used in filing systems for maintenance and operating instructions, procurement, maintenance work orders, shop drawings, warranties, operating histories, operating costs, and other data related to the life-cycle of a facility.
APPLICATION GUIDE

This Guide reflects some current practices in the construction industry, supplementing those found in the
Manual of Practice published by the Construction Specifications Institute, Inc. (CSI), and the Construction

The Application Guide suggests basic strategies for numbering and naming documents, files, cost items,
products, and construction activities. It is not intended to describe rigid methods for applying
MasterFormat™ but to develop the user's intuition for using MasterFormat consistently.

The Application Guide also outlines important considerations regarding MasterFormat applications,
including the implied classifications underlying MasterFormat, its relationship to UniFormat™ as
developed in this edition. MasterFormat's site hierarchy, appropriate use of its 5-digit title numbering, and
some of its other conventions. These should be understood before considering strategies suggested for
using MasterFormat for numbering and titling in specific applications.

THE STRUCTURE UNDERLYING MasterFormat

The 18-division format was developed in the 1960s to address the plethora of inconsistent arrangements
and titles for specification sections. Empirical in nature, it was heavily influenced by the intuition of the
specifiers who developed it. Because of its practical nature, it is very effective despite not being a
complete or consistent classification.

MasterFormat is a list of numbers and titles by which information relevant to facilities can be arranged
consistently.
Although it is not a strict classification, the 16 Divisions can be considered as being based on an underlying set of classification tables, not fully exposed to view. These underlying tables of classification include:

- Material (e.g., Concrete);
- Location (e.g., Site);
- Function (e.g., Thermal Protection);
- Application (e.g., Finishes);
- Attribute (e.g., Electrical).

Tracking just one of these underlying classifications as an example, consider Divisions 3 through 6. They look like a list of construction products classified by their material composition, with concrete, masonry, metal, and wood and plastic at the top level (level one). However, applying this "material" classification is incomplete in three ways.

First, each of these Divisions excludes products that could be considered properly located in it, but the intuition of the MasterFormat authors is that the products belong elsewhere. For example, formed metal laundry chutes are not in Division 5 - Metals, even though there are other formed metal products listed there. In this case, some other attribute of the product (i.e., its function) is more identifying than its material composition.

Second, there are other materials or products that are not given top-level consideration in this classification scheme. Glass, for example, is not addressed, but is spread among other Divisions depending upon location, function, product replacement, or some other consideration.

Third, often the materials categorization appears at a lower level, after some other classifications have been executed.

MasterFormat is the result of filtering underlying classification tables into a series of intersected but independent lists. As a result, the same product or activity could be listed in more than one Division. In some instances, differing applications of a product may be in different locations. For example, stone pavers are found in Division 2 because of their location, rather than in Division 4 because of their composition or Division 9 because of their function. Experienced MasterFormat users intuitively know a stone is masonry (Division 4), a stone paver is site construction (Division 2), and stone floor tiles are finishes (Division 9).

The usefulness of MasterFormat for many applications rests on the flexibility stemming from its filtering of various classification tables. And the basic challenge to the user is to develop an instinctive feel for the different classifications while relying on the key word index to resolve the title in a specific application.
THE MasterFormat HIERARCHY

MasterFormat exhibits a hierarchical organization of titles for products and related activities. Previously, the hierarchy was described in terms of specification section scope: "Broadscope," "Mediumscope," and "Narrowscope." MasterFormat now refers to its title hierarchy in terms of "levels."

Level one of the hierarchy comprises the major groupings of construction information, such as "Building Requirements," "Contracting Requirements," and the 16 Division titles.

Level two is the broadest grouping of related requirements, products, and activities within a Division or a major grouping (e.g., Contracting Requirements). Level two numbers usually end in "00." Examples include:

03200 CONCRETE REINFORCEMENT
03300 CAST-IN-PLACE CONCRETE
03400 PRECAST CONCRETE

Note, however, that the following are also examples of level two titles even though they don’t all end in two zeroes:

13090 RADIATION PROTECTION
13100 LIGHTNING PROTECTION
13110 CATHODIC PROTECTION

Level three is the last level to be indicated with both numbers and titles in the "Master List." Level three numbers often end in a single zero, implying nine numbers that are unassigned between level three titles. Level three titles reflect important product and activity subcategories. The following examples are listed under the level two title:

03200 CONCRETE REINFORCEMENT
  -210 Reinforcing Steel
  -220 Welded Wire Fabric
  -230 Stressing Tendons
  -240 Fibrous Reinforcing
Level three titles may not always end in a single zero. For example, the following are level three titles:

- 449 Wood Ornaments
- 445 Simulated Wood Ornaments
- 450 Standing and Running Trim
- 455 Simulated Wood Trim

All unnumbered titles are considered to be level four in the hierarchy. They often name product units, making them very narrow titles. There are cases where there is no intervening level three title, and titles listed under a level two box are not numbered. These titles are treated as level four titles, and it is acceptable to create a level four title for grouping purposes. Example:

11020 SECURITY AND VAULT EQUIPMENT

Safe Deposit Boxes
Sales
Vault Doors and Day Gates

A reasonable number and title for safe deposit boxes and vault doors is "11022 - Vault Equipment."

SELECTING MasterFormat TITLES

Proper selection of titles based on their relative hierarchy helps users make inferences about the scope of documents, files, and line items. For example, consider this sequence of titles in Division 8:

08200 WOOD AND PLASTIC DOORS

- 210 Wood Doors
  Flush Wood Doors
  Prefinished Wood Doors

- 220 Plastic Doors
  Laminated Plastic Doors
  Solid Plastic Doors

Depending on the application, the user may choose from the titles above to identify laminated plastic doors. If those doors are considered by themselves, for example in a level four title, then a reasonable choice is "08221 - Laminated Plastic Doors" (any user-determined number between 08221 and 08229 is acceptable). Other reasonable choices are "08220 - Plastic Doors" and "08200 - Wood and Plastic Doors." Laminated plastic door specifications, data files, cost estimate line items, or drawing references may carry any of those numbers, since the product is included in all of their respective titles.
If laminated plastic doors are grouped with other plastic doors, as in a specification section of medium scope, then "08200 - Plastic Doors" is a correct choice, although it is still appropriate to use "08200 - Wood and Plastic Doors." Choosing the more narrow title indicates to the user that there are no wood doors, but choosing the broader title does not require wood doors to be included (although they are implied). Likewise, a narrower focused specification section, data file, or cost estimate line item including only laminated plastic doors could be identified as 08200. For clarity, though, it is preferred that titles closely match the scope of the specification section, product data brochure, or cost estimate line item.

A specification section with a broad scope, a similar data file, or cost estimate summary item with both wood and plastic doors should be titled with the level two number and title; narrower titles will not clearly identify coverage.

To take full advantage of MasterFormat as an industry standard, standard titles should be used as much as possible. Users may modify titles or develop additional titles to reflect new generic subjects (a new product technology, for example). Users may also create new level four titles for user-specific variations, e.g., "Garage Building Pre-Cast Concrete" or "Light-Duty Hydraulic Elevators." These special titles should relate to the coverage explained in the right-hand column of the "Master List," and should be consistent with adjacent titles. It is also important to follow the guidelines for using the 5-digit MasterFormat numbering system.

**Assigning MasterFormat 5-Digit Numbers**

A standard number in MasterFormat should always be used with its associated standard title, and only with that title. If a title is modified, or a new title created, then a number that is reasonably interpolated between the existing assigned numbers should be used.

MasterFormat titles are numbered with 5-digits, and this style is usually carried into most applications. Where possible, MasterFormat shows the last two digits as zeros for level two titles, and the last digit as zero for level three titles. This scheme should be kept in user applications where practical.

Unassigned numbers are available for users to assign to level four titles and, at any level, to non-standard titles (i.e., those titles not included in the master list). With rare exception, level four titles are listed alphabetically, an organizing convention that is not intended to imply a numerical order among the group as the user assigns numbers. Occasionally there are more titles listed as possible level 4 titles than sequential numbering would allow; if a user's application requires the full range of titles, sub-groupings can be created using a system such as those suggested below. It is necessary to make the arrangement of level four numbers and titles consistent with adjacent level three titles in the "Master List."

When additional subcategories are required, the 5-digit number can be supplemented with a suffix, although this is usually not done in project manuals. The suffix may be letters, numbers, or a combination. Letters can refer to a manufacturer's name, for example:

16425GE (Manufacturer A)
16425WE (Manufacturer B)
When numbers are added, it is helpful to use some mark of punctuation to delineate the basic 5-digit component. Usually a decimal point is used, but other punctuation is acceptable; the choice is left strictly to user preference or other considerations such as software requirements. Delimiting punctuation is also acceptable when only letters are used as a suffix. For example:

08780.12
09300-C2080
15425/WE

Suffix punctuation has uses besides serving as a separator for browsing or scanning purposes. It can denote a logical "AND" function, identify a particular distinction such as color or other attribute, or indicate a hierarchical subdivision. Suffixes may be based on a characteristic name, a size, some other standard identification, or they may be arbitrary. Consider the following examples:

- A cost estimate line item number can indicate the building system in which a product is used by appending a UniFormat designation. For example, if the designation A2020 refers to the basement wall element, then line number 03300.A2023 refers to cast-in-place concrete used in the basement wall, and 04225.A2020 refers to masonry units used in the basement wall. The code 04225.A2022 can be read "concrete masonry units AND basement wall."

- In the same way, another scheme besides UniFormat can be used to form a compound identifier. For example, drawing numbers could be appended to the 5-digit number to assist in a cost estimating take-off by sheet. 16510.54 denotes an insiner lubricant shown on Sheet E4.

- A suffix can identify clients or projects. This allows a specifier to identify master sections with particular clients or kinds of projects. 07450.RCA, 07450.MED, and 07450.EDS, for example, are different versions of a master specification for fiber-reinforced cementitious panels.

Almost any attribute or characteristic can be identified with a suffix, including color, style, size, or weight. Cost data for structural steel sections can use a suffix to denote wide-flange shapes and sizes:

05120.W8x24
05120.W8x48
05120.W10x68

Of course, the actual shape and size can be replaced with an arbitrary number: 05120.32 could stand for a W8x24 shape, for example. The decision to use physical values or codes is an arbitrary choice left to the user.
A suffix can be used for level four titles, to avoid the limit on titles imposed by the 5-digit system. This convention is not usually used for specifications, but it is entirely appropriate for applications such as drawing notes and cost estimate line items. For example:

- 05210.1 Deep longspan steel joists
- 05210.2 Longspan steel joists
- 05210.3 Open web steel joists
- 05210.4 Steel joist girders

This scheme can be combined with an attribute identifier, such as one for size:

- 05210.21 Longspan steel joist, 12-inch deep
- 05219.22 Longspan steel joist, 18-inch deep
- 05210.32 Open web steel joist, 18-inch deep

Use the 5-Digit Number with Leading 0s. This is especially important when the number is sorted by a computer program. Sorts on text strings without leading 0s will result in an improper ordering of titles. For example, 01230 will sort in front of 12250, but 1230 will sort behind 12250.

OTHER MasterFormat CONVENTIONS

There are several conventions in MasterFormat, and becoming aware of them will aid the user in making number and title assignments.

An unassigned block of numbers at the beginning of each Division, usually the first 50 digits, is intended to be used for numbering miscellaneous Division-related items such as general data, design assistance data, technical papers, and cost information applicable to the entire Division.

Basic materials and methods titles now appear in Divisions 2, 3, 4, 5, 6, 7, 8, 9, 15, and 16. The numbers -050 to -099 are reserved for basic materials and methods for each respective Division. In Division 12 there is a basic materials category titled "Fabrics." For example:

- 06050 BASIC WOOD AND PLASTIC MATERIALS AND METHODS
  -060 Wood Materials
  -065 Plastic Materials
  -070 Wood Treatment
  -090 Factory-Applied Wood Coatings
  -090 Wood and Plastic Fastenings

These titles are used primarily for data filing, although in some cases it may be appropriate to identify a specification section or unit price using these numbers. This is a common titling practice in Divisions 15 and 16, which have carried these titles since the 1978 edition of MasterFormat. Refer to the discussion about specific applications for more information.
“Restoration” titles have been added to many Divisions. For example, in Divisions 2, 3, 4, 5, 6, and 12, these titles appear at the end of the Division as a level two title numbered either -900 or -950. Divisions 7, 8, 9, 10, 14, 15, and 16 have level three restoration titles associated with level two titles. There are no titles for restoration in Divisions 11 and 13.

The explanation column uses standard reference terms to clarify the scope and range of titles. The reference terms are used consistently as follows:

- Includes means the product or activity is included in the title, and generally implies it is the primary title.
- Usually includes means the product or activity is normally included in the title but there may be other titles that include the same product or activity under some conditions. There is often a companion see also reference to clarify the alternative titles and related conditions.
- May include means that the product or activity is normally included in another title, but may be included in this title under some conditions. There is often a companion see also reference to clarify the alternative titles and related conditions.
- Does not include identifies a product or activity that should not be considered in the scope of the title. There will often be a companion see reference to direct the user to the appropriate title.
- See refers to another title for a related product or activity not included in the title from which it is referenced.
- See also refers to another title for an included product or activity, and implies the product or activity may be included under either the title from which it is referenced or the referenced title, depending upon conditions. The relative conditions are sometimes stated in the reference, but may be left to user reference in cases such as regional variations in practice.

Conventions for using the Division title with a 5-digit number are not explicitly covered in MasterFormat, but there are several acceptable styles in use:

- Use the Division title, and add the suffix "000" to the Division number, e.g., "07000 - Thermal and Moisture Protection." or "16000 - Electrical."
- Add the suffix "001" to the Division number, but modify the title slightly to avoid duplicate titles; e.g., "01001 - Basic Requirements" or "10001 - Specialty Products."
- Use the Division title, and add the suffix "001" to the Division number; e.g., "01001 - General Requirements." or "10001 - Concrete."

Any of these practices is acceptable as long as the resulting numbering and titling is consistent within the application.
MODIFICATIONS TO APPROACHES

Different approaches to some subjects have been introduced in this edition of MasterFormat, as follows:

Selective Demolition: Selective demolition for remodeling has traditionally been included in Division 2. Those titles have been deleted, and Division 2 now only deals with site demolition or demolition of entire buildings or structures on a site. Division 1 contains titles related to the general requirements for demolition (such as mobilization, measurement and payment, odages, notifications, submittals, etc.), and now includes a place for common execution requirements, which can include selective demolition. Technical requirements related to selective demolition of a specific product are included as part of that product's title in the appropriate Division.

There are no standard stand-alone titles for selective demolition products and activities, but the user is free to create them, or may simply locate demolition requirements with related product requirements. For example:

- Demolition of existing cast-in-place concrete can be covered under "03300 - Cast-in-Place Concrete," or under a user number and title, such as "03305 - Selective Concrete Demolition."
- Removal of existing gypsum board partitions can be included in "09250 - Gypsum Board," or under a new title, such as "Selective Gypsum Board Demolition."
- For selective demolition of both lath and plaster partitions and gypsum board partitions, consider a user number and title, such as "09264 - Selective Partition Demolition."
- If selective demolition is common to an entire Division, a title under basic materials and methods is appropriate; for example, "04055 - Selective Masonry Demolition."

Testing, adjusting, and balancing and related titles are another source of confusion. Division 1 continues to have titles related to the general requirements (such as qualifications, notifications, reports and submittals, etc.), but now it also contains titles for common technical requirements related to these activities, whether they are considered under the category of quality control, closeout, or commissioning. Again, product- or system-specific testing and adjusting should be included with the product title in the appropriate Division.

Common requirements for operation, maintenance, and decommissioning are now included in Division 1. Since these titles are new, there are no existing practices for their application. These titles are not intended to be the primary locations for information related to these activities, just a slot for general or common requirements. Product-specific requirements for operation, maintenance, and decommissioning should be covered under titles in the appropriate Divisions.
USING MasterFormat

Using MasterFormat to Arrange Project Manuals

One of the most important things to remember when organizing a project manual is that specification sections do not have a hierarchical relationship to each other. Even though MasterFormat establishes a hierarchy for its numbers and titles, specification sections are complementary with each other and with other contract documents. One specification section cannot "govern" another except to the extent that, as complementary documents, all specification sections potentially affect all other specification sections.

Another important consideration is that "Introductory Information," "Bidding Requirements," and "Contracting Requirements" are not specifications and are not usually the responsibility of the specifier or design professional. Standard legal practice tends toward identifying these documents by name only, and not by number. MasterFormat numbers can be used to identify these documents in the project manual, but it is important to avoid referring to these documents as "sections" or otherwise confusing them with specifications. It is also not necessary to renumber preprinted documents if they are already identified. This includes the standard general conditions published by various professional societies.

Specification section titles and arrangement do not imply how the work is assigned to various trades or subcontractors. This principle is clearly stated in standard conditions of the contract published by the American Institute of Architects (AIA) and the Engineer's Joint Construction Documents Committee (EJDOC) in the United States and the Canadian Construction Documents Committee (CCDC) in Canada. MasterFormat divisions and section titles may sometimes coincide with the work of a specific trade; Division 18 - Electrical, for example. The coincidence is unfortunate because it has confused specifiers and contractors for a long time, and has served as a stumbling block for getting past the trades issue.

Specification sections for many products installed by the same trade are listed next to each other, but that is not the mandatory arrangement for all sections related to the subcontractors plying that trade. MasterFormat titles are not arranged in correspond consistently to common trade and subcontractor assignments. For example, electrical heating units may be purchased from an electrical supply house by an electrical subcontractor and installed by an electrician. But electrical heating units, if they are used for space heating, are specified in Division 15. If they are cooking units, such as ovens, they are specified in Division 11. The purchasing subcontractor and the installing trade are not relevant to the identification of the specification section.

An important strategy for naming and numbering specification sections is related to the need to link requirements between complementary documents. The AIA, EJDOC, and CCDC each publish standard general conditions that declare the "Contract Documents are complementary," meaning that one must examine the entire set of contract documents to determine all of the requirements for a single product. Section names should be consistent with terminology used in other contract documents, such as the drawings, to identify the specified products. Otherwise, specification users will be confused as they try to relate products named on the drawings with their specified requirements. MasterFormat should be used to determine a naming standard for products.
Using MasterFormat for Naming Data Files

The titling system for product files must be able to accommodate the different ways in which products are marketed by manufacturers and distributors. These include a consideration of the function or the most frequent use of a product; similarity to other products, especially those it is intended to replace; and the material from which a product is made or the technology used to produce or install it.

Product Data are identified using MasterFormat numbers and titles to clarify the relationship between products and specifications. Usually product data are identified with level two or three titles, with additional information indicated in suffixes to the 5-digit MasterFormat number. These suffixes often distinguish manufacturers.

Organizing a library of product data using MasterFormat numbers is useful for the same reason, and is often applied in similar fashion. Shelf order codes may be based on level one or level two numbers, depending upon the number of items found shelved in each category. A guide, however, librarians generally limit a single shelf category to no more than 25 items. Suffixes can be added to the shelf category number on item cards or binders to distinguish manufacturers.

If an electronic library database is developed, MasterFormat numbers can be used as subject headings as well as shelf categories. MasterFormat numbers can be used as suffixes within another cataloging system, such as the Dewey Decimal Classification, the Universal Decimal Classification, or the Library of Congress Classification.

The numbers and titles under Division 1 are not generally applicable to technical product literature, but are useful for filing other kinds of general construction and site-related information. "Series Zero" also may be used to collect and organize information on collateral subjects not directly concerned with construction products.

Suppliers and subcontractors data (such as qualification information or submittals) may be identified by the products they supply or install. Of course, these often cut across Division boundaries, so some method is required for multiple references to MasterFormat titles from the same supplier or contractor. The solution includes using a supplier or contractor "code" as a more primary reference than the MasterFormat numbers that are attached to the data.

Inventory of construction products is made simpler by using the specification section number, perhaps as a suffix to the project number. If more than one product is specified in a section, then some form of suffix to the section number is needed to distinguish the products.

Using MasterFormat in Cost Estimating Applications

Cost estimating requires identification of line items, which are often related to products and activities. An identification scheme based on MasterFormat can be flexible, varying with each construction project, or more rigid and uniform, establishing a single number and location for similar costs in many projects.

Organizing unit-price databases using the same numbering and titling format for specifying and naming data files benefits the user with increased uniformity and standardization. Familiarity with MasterFormat allows users to relate specification requirements, product information, and cost data.
Numbers and titles listed under "Bidding Requirements" and "Contracting Requirements" identify cost items devoted to bonds, insurance, permits, fees, and other general items. Numbers and titles in Division 1 identify unit costs for temporary construction facilities and controls, mobilization, project site administration, and other general requirement cost items. Numbers and titles in Divisions 2 through 16 identify costs related to products and their installation. Unassigned numbers at the beginning of each Division are commonly used to identify general cost items related to the Division.

Organizing and tabulating cost reports may require indicating or summarizing products and activities. Using MasterFormat numbers and titles will aid users in making inferences about material costs while analyzing the report.

Value analysis requires a consistent naming scheme carried throughout the project. MasterFormat is not particularly useful for value analysis, which requires attaching a cost to a particular use or facility function, rather than to particular products and activities. JHMFormat is more appropriate for this application, although using MasterFormat numbers as suffixes to the element designation can assist the value analyst in evaluating value analysis change proposals from a contractor.

Using MasterFormat for Organizing Drawings
An important strategy for naming drawing elements is related to the need to link requirements between complementary documents. One must examine the entire set of contract documents to determine all of the requirements for a single product. Product names on drawings should be consistent with terminology used in other contract documents, such as the specification, to identify the specified products.

Keeping applications have accepted MasterFormat as a base numbering system, to enhance cross-referencing between drawings and specifications. This formal method of linking drawing objects and the specification is encouraging increased development of automated software.

CAD layers and objects also can be identified with MasterFormat numbers, but there are other schemes that appear to be more popular. Often, layer names are based on drawing presentation requirements or construction elements. CAD objects usually have functional names, and do not relate to construction products and activities.

Using MasterFormat with Construction Market Data
Market data reporting agencies routinely use MasterFormat to identify products specified in a project being bid. This practice allows users to quickly identify substitution and sales potential for their products and services on a particular project.

In order to develop a comparable database and optimize communication, an agency may have to report a product occurrence using a standard number that differs from the project specification section number. The agency may wish to identify specific products that are covered in a level two title by using the number associated with a narrower (level three or level four) standard title.

21
Using MasterFormat for Facilities Management

Facility managers often use MasterFormat numbers and titles to identify data associated with products incorporated into their buildings, and for identifying items that may be referenced in several documents. The added titles related to restoration, renovation, and repair will provide a scheme for recording general maintenance information as well. Usually the numbers and titles will be taken from the original project specifications and other documents.

MasterFormat and UniFormat Used Together

Applications. MasterFormat and UniFormat can be used together in all of the applications that have traditionally been the domain of MasterFormat. This edition of MasterFormat includes references to UniFormat to guide users in applying both formats together. These applications include project manual organization, specification numbering and titling, data filing, cost estimating, drawings, construction material data, and facility management.

Types. Both systems can be characterized as either "single," "serial," or "parallel."

1. Single applications utilize only MasterFormat or UniFormat exclusively throughout the application.
2. In a serial application, such as a project manual, a number and title is applied to each item based on either MasterFormat or UniFormat. Both systems can be used within the same application.
3. Parallel applications are those in which each item is named with titles and numbers from both MasterFormat and UniFormat. This is a powerful method in many applications such as cost estimating, where information about a cost estimate file item can be tracked to a product as well as to a system or assembly.

The following table compares several applications, showing how MasterFormat and UniFormat can be applied to each.
<table>
<thead>
<tr>
<th>Application</th>
<th>Type</th>
<th>Master/Format</th>
<th>Unit/Format</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manual and</td>
<td>Single</td>
<td>Arrange project manual;</td>
<td>Not used</td>
<td>Traditional project manual applications</td>
</tr>
<tr>
<td>Specifications</td>
<td></td>
<td>number and title specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial</td>
<td></td>
<td>Number and the project</td>
<td>Number and the project specifications</td>
<td>Project manuals that include project descriptions at one or more stages of development</td>
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<tr>
<td></td>
<td></td>
<td>descriptions (preliminary</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>specifications)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial</td>
<td></td>
<td>Number and the system and</td>
<td>Number and the system and assembly specifications</td>
<td>Typical design-build project where some design is complete with products selected but other requirements are at functional system and assembly level</td>
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<tr>
<td></td>
<td></td>
<td>assembly specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial</td>
<td></td>
<td>Arrange project manual</td>
<td>Number and the specifications</td>
<td>Typical design-build project where design-build is responsible for meeting performance specification</td>
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<tr>
<td>Data Filing</td>
<td>Single</td>
<td>Number and the files</td>
<td>Not used</td>
<td>Manufacturer’s product data</td>
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<tr>
<td></td>
<td>Single</td>
<td>Not used</td>
<td>Number and the files</td>
<td>General design data related to systems</td>
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<td></td>
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<tr>
<td></td>
<td>Parallel</td>
<td>Arrange files; number and</td>
<td>Number and the design and calculation, value analysis, and other files related to systems</td>
<td>Project technical data filing</td>
</tr>
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<td></td>
<td></td>
<td>title product-related files</td>
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<td></td>
<td></td>
<td>such as shop drawings</td>
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<tr>
<td></td>
<td>Parallel</td>
<td>Subject codes related to</td>
<td>Subject codes related to systems and assemblies</td>
<td>Library shell codes and subject headings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>construction products and</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Estimating</td>
<td>Serial</td>
<td>Number and the unit prices</td>
<td>Number and the unit prices for systems and assemblies</td>
<td>Cost estimating database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>for construction products and</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>activities</td>
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<tr>
<td></td>
<td>Parallel</td>
<td>Number each line item as to</td>
<td>Number each line item as to system and assembly</td>
<td>Typical project cost database to allow reporting by product or by system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>product and activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Parallel</td>
<td>Optionally number each line</td>
<td>Number each line item as to system and assembly</td>
<td>Cost reports for use in value analysis procedures</td>
</tr>
<tr>
<td></td>
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<td>item as to product and activity</td>
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</tbody>
</table>

23
<table>
<thead>
<tr>
<th>Application</th>
<th>Type</th>
<th>MasterFormat</th>
<th>UnFormat</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawings</td>
<td>Serial</td>
<td>Number keynotes related to specification sections for products and activities</td>
<td>Number keynotes related to specification sections for systems and assemblies</td>
<td>Typical drawing keynotes</td>
</tr>
<tr>
<td></td>
<td>Serial</td>
<td>Identify standard details and component lists containing detail drawings and schedules related to products</td>
<td>Identify standard details and component lists containing detail drawings and schedules related to systems and assemblies</td>
<td>Detail and drawing component identification system, UnFormat is more useful for this application to the extent that most details are composed of numbers for individual products.</td>
</tr>
<tr>
<td></td>
<td>Parallel</td>
<td>Name layers</td>
<td>Name layers</td>
<td>CAD layering conventions</td>
</tr>
<tr>
<td></td>
<td>Serial</td>
<td>Name products that are shown on drawings, to match terminology and coding in specification</td>
<td>Name assemblies that are shown on drawings, to match terminology and coding in specification</td>
<td>Linking between drawings and specifications</td>
</tr>
<tr>
<td></td>
<td>Single</td>
<td>Name products that are identified in a project</td>
<td>Not used</td>
<td>Reporting</td>
</tr>
<tr>
<td>Construction Market Data</td>
<td>Parallel</td>
<td>Identify construction products for operating and maintenance applications</td>
<td>Identify building solutions for operating and maintenance applications</td>
<td>Facility document management and maintenance control</td>
</tr>
<tr>
<td>Facility Management</td>
<td>Parallel</td>
<td>Identify construction products for operating and maintenance applications</td>
<td>Identify building solutions for operating and maintenance applications</td>
<td>Facility document management and maintenance control</td>
</tr>
</tbody>
</table>

Note: Neither MasterFormat nor UnFormat may be satisfactory when used as the sole scheme for identifying layers, but most numbers and titles can be used as suffixes to layer names based on their schemes when a very detailed naming system is appropriate.