National Master Specification

User's Guide

January 2000

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Section 1 - Description and Background

NMS User's Guide

January 2000

1.1 The NMS

The National Master Specification (NMS) is a comprehensive library of construction specification sections used by government and private industry.

The NMS is a resource tool, available in English and French, designed for Canadian conditions, containing more than 650 specification sections comprising about 4000 hard copy pages in each language or 20 megabytes of electronic data.

The NMS is supported by all major construction industry associations, and is updated regularly by industry specialists to incorporate changes in:

technology,
environmentally responsible choices for materials, products and systems,
installation requirements, and methods, and
current industry practices

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The NMS is a resource tool and reference document. It is considered to be a delete master that is based on providing alternatives and/or blank spaces which require editing by the project specifier.

Reference to materials and methods in the NMS does not necessarily preclude the use of other materials or methods suitable for the purpose.

The NMS is divided into Divisions and Sections in accordance with **CSC/CSI *MasterFormat***, the master list of titles and numbers for the construction industry jointly produced by the **Construction Specifications Institute (CSI)** and **Construction Specifications Canada (CSC)**.

Sections are formatted in accordance with the **CSC/CSI** three part ***SectionFormat***.

It is the policy of the federal government to use the NMS for the preparation of specifications for construction, renovation, restoration and repair of building, landscape, marine, structural and heavy civil engineering projects, whether designed in-house or by private consultants.
The NMS is currently available in various electronic formats through authorized publishers**.** Each publisher enhances the ease of use of the NMS through a variety of software applications.

1.2 History of The NMS

The history of the NMS is intrinsically linked to the history of specification writing in North America. The development of the CSI Format in 1962/63 marks the beginning of a uniform system for filing technical information and organizing specifications. These 16 Divisions were adopted in Canada and integrated with an overall filing system called the Building Construction Index (BCI), issued in February 1966. In 1972, the BCI was superseded by the Uniform Construction Index (UCI). From the UCI in 1978, a subject-specific document for specifications was developed entitled *MasterFormat*.

The NMS began as the Government Master Construction Specification (GMS) for use by government and private sector s for federal government projects. In 1974 the mandate was shared by five federal government departments: National Defence, Public Works, Indian and Northern Affairs, Industry, Trade and Commerce and Transport Canada.

In 1978, the GMS became the Canadian National Master Construction Specification (now known as the NMS) when Construction Specifications Canada (CSC) provided private sector input and made it a truly national master construction specification for use by both the public and private sectors.

The NMS has become the largest generic master construction specification of its kind in North America, and is the only master specification available in both French and English.

1.3 Administration of The NMS

The NMSS

The National Master Specification Secretariat (NMSS), a part of the Technology Directorate, Architectural and Engineering Services (A & ES) Sector, Real property Services Branch of Public Works and Government Services Canada (PWGSC), is responsible for managing and maintaining the NMS; developing work plans for the maintenance and update of the NMS database; administering the NMS technical review process and maintaining the integrity, the style and format of the NMS document.

With regard to specific documents the NMSS coordinates the continued development, maintenance and update of the:

National Master Specification,
Conservation specification sections for Canadian Heritage and Environment Canada (CH/EC),
Specialty sections for PWGSC, National Defence (DND) and the private sector,
PWGSC Specification Brief portion of "Doing Business with A & ES",
Reference standards for federal government users,
Manufacturers' catalogues and reference library.

The NMS Policy Committee

The NMS Policy Committee is comprised of senior management members from the centres of expertise and client service units of PWGSC-Real Property Services (RPS),DND-Directorate of Infrastructure Support (DIS), and representatives from private sector professional associations. It is responsible for providing overall direction by establishing goals and direction for the NMS, as well as reviewing and approving work plans for the NMS.

The NMS Technical Review Groups And Committees

The NMS Technical Review Groups and Committees are comprised of specialists from PWGSC-RPS client service units and centres of expertise, DND-DIS and private sector professional, trade and manufacturer associations. They are responsible for the technical integrity, content and relevancy of the sections that they review.

SGML Conversion of The NMS

The NMS database has been converted to *Standard Generalized Mark-up Language* (SGML), an electronic tagging process, that permits data to be viewed and manipulated through user-preferred word processing programs. As a result, the NMS database is in a neutral format which is independent of computer platforms (operating systems) and word processing software. Many of the construction standards organizations referenced in the NMS have already converted, or are in the process of converting, their respective databases to SGML.

1.4 The NMS Users Guide

The NMSS, in response to the Canadian construction industry, has initiated a National Master Specification User's Guide. The NMS User's Guide is designed to replace former NMS documents titled:

- NMS Style Guide, and
- NMS Description and Use Manual.

The User's Guide is intended to assist in the effective use of the NMS to produce uniform project specifications with a consistent logic, appearance and style.

The NMS Users Guide makes specific reference to the CSC Construction Specifications Handbook for expanded information on a number of subject areas.

1.5 Use of Standards

Introduction:

Two basic types of standards are referenced in the NMS; standards specifications and standard methods and practices (test standards). Building materials standards describe the primary or raw ingredients or describe a usable construction material. Standard methods and practices are standard testing methods for ascertaining the properties, qualities, or the conformance with standards of any given material or product.

Use:

Standards are listed in Part 1 by number, date and title under the "References" heading and repeated within the text by reference to the number only.

The NMS supports the use of standards through reference.

The Standards Council of Canada (SCC) actively fosters and promotes voluntary standardization in Canada through its various advisory committees.

The National Standards System (NSS) concerns itself with standards writing certification and testing. The NSS is also involved in international standardization through national committees ie. Canadian Standards Association, Canadian General Standards Board & Underwriters' Laboratories of Canada.

Other standards referenced include Independent Standards Organizations such as American National Standards Institute and the American Society for Testing and Materials.

The NMS will be including ISO standards if and when they become available and used by the construction industry in Canada. Industry and trade associations standards and practices are referenced in the NMS where applicable.

1.6 Relating Drawings and Specifications

Introduction:

Drawings:
Drawings are the graphic means of showing work to be done, as they depict shape, dimension, location, measurement of material and relationship between building components.

Specifications:
Specifications are written descriptions of materials and construction processes in relation to quality, colour, pattern, performance, characteristics, installation and quality of work requirements.

Use:

Drawings and specifications are complementary. Drawings show the form of construction; they illustrate extent, locale in the project, and quantity. Specifications establish quality; they describe workmanship and installation. Specifications should supplement, but not repeat, information shown on drawings. Duplication of information can lead to differing interpretations.

Contract general conditions normally indicate that in a situation of conflict between drawings and specifications, the specifications take precedence.

The NMS provides opportunities for cross-referencing project specifications with drawings by including, where appropriate, the words **'...as indicated"**. **"...as indicated"** means that the item is shown on the plans, supplemental drawings, or standard drawing sheets included in the project documentation.

It is recommended that drawing numbers, titles and other identifiers of drawings are **not** listed in the specification since any changes to these can lead to confusion and differing interpretations

Co-ordination of information between drawings and specifications is supported in the NMS through consistency of nomenclature and construction terminology. That consistency must extend to the drawing information.

1.7 Methods of Specifying

Introduction:

There are two basic or fundamental methods used in specifying items: performance specifications and prescriptive specifications.

A "performance" specification states the results which are to be achieved, giving the Contractor relative freedom in the choice of means and methods, but includes a method of performance substantiation.

A "prescriptive" specification describes the means and methods for achieving the desired result, but without stating the result.

Prescriptive specifications can be further characterized as having three sub-methods: descriptive specifications, reference to consensus standards, and proprietary specifications.

Non-restrictive specifications, which can be a combination of both performance and prescriptive categories that satisfy criteria, do not permit the use of proprietary or exclusionary specifications but contain requirements which define the product beyond the performance characteristics. The completed project manual will often have a combination of specification methods to best describe the specific product, material or system required.

Use:

Performance Specifications:
The performance specification is a statement of required results, verifiable as meeting stipulated criteria and free of unnecessary process limitations. The NMS supports the use of performance specifications.

Prescriptive Specifications:
Sub-Method 1 - Descriptive Specifications:

Define exact materials or systems and the detailed fabrication and installation processes to be executed, without stating individual trade or manufacturer's names.

A descriptive specification is best suited for describing properties of complicated components or systems that cannot adequately be shown on drawings, notably for mechanical and electrical equipment.

Sub-Method 2 - Consensus Standards:
Industry or consensus standards may also be descriptive specifications. They are referred to in the NMS where appropriate.

A consensus standard is a written accord or agreement on certain materials, testing procedures, or processes that conform to criteria developed and accepted by a recognized public or private authority or agency.

When referenced, the standard in its entirety becomes a part of the specification. The NMS supports the use of consensus standards.

Sub-Method 3 - Proprietary Specifications:

Proprietary specifications identify products by the manufacturer's trade name and model number.

Proprietary specification controls product selection and is deemed desirable only in those instances where there is no practical way to specify a unique product by performance or consensus standard. Where proprietary specifications are necessary, the NMS supports the use of a minimum of three brand or trade names of comparable quality or utility. An approved alternatives clause requires the appropriate Division 1 documentation to describe the process for approval of alternatives and submission of substitutes.

The inclusion of three trade names into a project specification is facilitated in some NMS sections by the use of the phrase "Acceptable Material". The NMS is a generic master specification and does not include manufacturers' trade names.

Non-Restrictive Specifications:
Performance and prescriptive specifications can be combined to best effect the intent of the specifier. Non-restrictive specifications may be developed from the "approved alternative" form of proprietary specifications or a combination of performance and descriptive specification systems.

1.8 Specification Organization

Introduction:

The NMS is based on the 16 Divisions established by the subject-specific document **CSC/CSI *MasterFormat***. Contract forms and documents would normally precede the 16 Divisions in the Project Manual.

Use:

The organizing structure of the NMS offers considerable flexibility through its expandable and contractible number of sections, within a rigid framework of the 16 Divisions.

Each Division is composed of any number of sections expanding each subject category or group.

Divisions are a group sections of similar subject matter, while sections are a complete description of one basic activity or unit of work. The section itself is then subdivided into a simple and logical sequence of information usually arranged to follow the recommendations of **CSC/CSI *SectionFormat***.

The structure of the NMS enables consistent organization of information and enhances cross-referencing. Effective cross-referencing is critical to fully describe certain units of work.

Section 2 - Application and Use

2.1 Introduction

Effective communication through the construction specification is achieved through five fundamental and long-standing principles.
Accuracy - accomplished by the use of correct words to establish exact meaning.
Clarity - accomplished by organizing sentence structure using correct grammar, without ambiguity.
Completeness - accomplished by presenting exact and detailed ideas and explanations.
Brevity - accomplished through concise language eliminating unnecessary words without compromising clarity or correctness.
Consistency - accomplished by maintaining one format for all work and referencing.

The style and format of the NMS have been developed to assist the specifier in fulfilling these basic principles of effective specification writing.

2.2 Standard Formats

Introduction:

Effective communication in the construction industry is reliant on standardization and uniformity. Ease of information retrieval and consistent document preparation are essential elements in the delivery of a project specification.

The NMS is based on *MasterFormat*, which is a standardized system of numbers and titles for organizing construction information into a uniform order with a consistent sequence.

SectionFormat provides a standardized arrangement for the organization, structure and production of each technical specification section.

Note: ***MasterFormat***, ***SectionFormat*** and ***PageFormat*** are North American construction documents produced and published jointly by **Construction Specifications Canada (CSC)** and its United States sister organization the **Construction Specifications Institute (CSI)**.

Use:

MasterFormat

The specification titles and numbers in ***MasterFormat*** are organized into 16 basic groupings of related construction information called "Divisions". Each Division is identified by a fixed number and title. Within each Division, there are sub-levels of numbers. Each covers one specific subject or a small group of associated subjects.

Levels define the hierarchy of subject information. Level 1 is the Division number and title. Level 2 is the middle digit of the five digit number and includes a wide range of related products or activities within a Division (referred to as "broadscope"). Level 3 is more limited, or exclusive, and is intended to cover very limited and specific products or activities (referred to as "mediumscope"). Level 4 numbers are subsets of a level 3 number and cover those products or activities that are the most limited or exclusive (referred to as "narrowscope").

As an example, consider Section 04220 - CONCRETE MASONRY UNITS:
- 04 designates the "Masonry" Division by number (Level 1),
- 2 the middle digit designates the Level 2 title "Masonry Units",
- 20 designates the Level 3 title "Concrete Masonry Units" as a subset of Level 2.

Unused numbers are available between Level 3 numbers to permit assignment of numbers and titles to selected Level 4 and lower levels needed to accommodate individual and task specific requirements. A block of unassigned numbers is usually provided at the beginning of each Division. These unused numbers can be used for filing research, design, and reference information on products and procedures which apply to a number of subjects within that Division.

As an example, consider Section 03100 - CONCRETE FORMS AND ACCESSORIES (Level 2)
- 110 Structural Cast-in-Place Concrete Forms (Level 3)
- 120 Architectural Cast-in-Place Concrete Forms (Level 3)
- 130 Permanent Forms (Level 3)
- Permanent Steel Forms (Level 4)
- Prefabricated Stair Forms (Level 4)

It is important to note that *MasterFormat* titles do not necessarily relate to the work accomplished by a single trade or subcontractor. It is not the intent of ***MasterFormat*** or the NMS to define the scope of work of individual trades.

A specifier may use any Level 2,3, or 4, or a combination of all three levels, in the same project specification dependent on levels of detail required.

SectionFormat

SectionFormat produces a document that has consistent appearance and organization of specification sections. ***SectionFormat*** is sub-divided into three parts as follows:

PART 1 - GENERAL: Defines the specific administrative and procedural requirements unique to a section and complements Division 1 subject content without duplicating statements.

PART 2 - PRODUCTS: Describes, in detail, the description and quality of items that are required for incorporation into the Work under that section.

PART 3 - EXECUTION: Describes, in detail, preparatory actions and how the products are to be incorporated into the Work.

Each part of a specification section is further divided into articles or paragraphs. Article titles are selected from ***SectionFormat*** to be used when required to describe the Work.

Technical specification sections are usually also governed by other portions of the contract documents. The requirements of Division 1 should be considered in the development of each section.

If any PART of ***SectionFormat*** has no information included in a particular sentence, then it is clearly marked in the NMS using the words "Not Used".

Page Layout

The NMS follows a page layout which is characterized by a one-third, two-thirds division of the page. Margins, spacing, arrangement, and placement for page headers, page numbering, section number and name, part title, paragraphs, and an "END OF SECTION" designation are standardized elements of the NMS page layout.

Each new specification section should begin on a right hand facing page and be numbered beginning with Page 1.

The page layout has been designed to work equally well with one-sided or two-sided printing.

Where it is necessary for the text of an article to continue to the next page, the practice of repeating the article title on the following page(s) is discouraged in order to avoid repetition and to conserve space for paragraph text.

The end of each section is designated with "END OF SECTION" fully spelled out in upper case characters.

The NMS page layout is easily adapted to the **CSC/CSI *PageFormat***.

2.3 SPEC NOTES

Introduction:

SPEC NOTES are located throughout the text of the NMS and are addressed to the specifier to assist in the development of the project specification by providing additional information and guidance. With the exception of the SPEC NOTES that occur before PART 1 - GENERAL, SPEC NOTES always occur directly in front of the article, paragraph or sub-paragraph to which they are referring. There are four types of SPEC NOTES. Each type differs with respect to the kind of information provided. and is described as follows:

The **SPEC NOTE DESCRIPTION** is located at the top of the first page before PART 1 of the section and serves to introduce the section and provide a brief overview of the content and recommended usage. It is intended not only to let the user know what is in the section, but also to advise of items that are not in the section but that the section title may lead you to believe would be included. **(See example 2.3.1)**

General **SPEC NOTES** (depicted simply as SPEC NOTE) occur throughout the NMS and can be further defined by the nature and location of the SPEC NOTE. SPEC NOTES advising on other section information or that may assist the specifier in completing a section are located at the top of the first page of the section. SPEC NOTES within the text offer information on the subject and guidance to the specifier on the choices to be made or on the use of the information. **(See example 2.3.2)**

The **SPEC NOTE ENVIRONMENTAL** directs the specifier to the environmentally responsible choices available for materials, handling and installation of materials, and alternative disposal methods for construction waste materials, as well as other environmentally responsible choices. These SPEC NOTES, which may be located within the text or before PART 1of the section, offer information on the environmental choices and guidance on their selection. **(See example 2.3.3)**

The **SPEC NOTE SUPPORT** acknowledges construction industry organizations that have assisted in the review or development of the NMS Section. These SPEC NOTES are located at the top of the first page of written text, directly below the SPEC NOTE DESCRIPTION. **(See example 2.3.4)**

Use:

SPEC NOTES are intended as direction for the specifier. They should not be manipulated by the specifier for inclusion into the project specification.

All SPEC NOTES must be deleted by the specifier in the process of developing a project specification. The NMS locates the SPEC NOTES in a consistent manner designed to provide the information where appropriate to best assist the specifier. All SPEC NOTES precede the text to which they refer.

2.4 Square Brackets

Introduction:

Square brackets are located throughout the text of the NMS and are addressed to the specifier to assist in the development of the project specification by indicating the need for a specific decision by the specifier.

Use:

Square brackets enclose alternative words, phrases, numerical values or blank spaces.

Square brackets are intended as direction for the specifier. They should not be manipulated by the specifier for inclusion in the project specification.

All square brackets must be deleted by the specifier.

Where square brackets indicate several alternatives, they are generally limited to four choices or left blank. The order that choices are listed in should not be assumed to be any order of preference.

Square brackets with a blank space are immediately preceded or followed by words or symbols that clarify the intent of the blank space. The specifier is required to fill the blank. **(See example 2.4.1)**

2.5 Rules of Language

Imperative Mood:
The NMS is written in the directive style in the imperative mood to minimize words and to ease interpretation.

The language is directed to the Prime Contractor.

Phrases such as "shall be" are replaced by a statement in the imperative mood. **(See example 2.5.1)**

Negative Statements:
The NMS avoids the use of negative statements. **(See example 2.5.2)**

Streamlining:
Without loss of force or intent, the NMS reduces verbiage by streamlining. Listing products, materials and reference standards; utilizing a colon(:) instead of "shall be"; using "in accordance with" when an action is implied; and using "to" when referencing, are considered streamlining devices. **(See example 2.5.3)**

Punctuation:
The NMS uses correct punctuation and follows commas, semi-colons and colons with one space. Punctuation ending a sentence, such as the period, is followed by two spaces.

The NMS strives to construct sentences so that misplacing or eliminating a punctuation mark will NOT change the intended meaning. The serial (penultimate) comma is often used to ensure clear and unmistakable separation of statements. **(See example 2.5.4)**

Vocabulary:
Words are the essence of the NMS. They are selected and used in context with their precise meanings. The NMS attempts to use any one word with only one meaning; the same word is used whenever that particular meaning is intended.

The NMS avoids the use of the following words and phrases:

shall	should	wherein
all	must	etc.
any	the	herein
and/or	to be	hereinbefore
as per	to the satisfaction of	hereinafter
in workmanlike manner	in lieu of	in situ

The NMS promotes the use of generic names in referencing construction materials. **(See example 2.5.5)**

Spelling:
Spelling is consistent in the NMS and is based on the "Concise Oxford Dictionary of Current English" which is considered representative of common usage in Canada.. The NMS avoids the use of "Americanisms" such as "thru" instead of "through" and "lite" instead of "light". **(See example 2.5.6)**

2.6 Abbreviations, Acronyms and Symbols

Introduction:

Abbreviations and acronyms:
The NMS makes extensive use of acronyms (words formed from the first, or first few, letters of a series of words). Industry accepted acronyms can be the shorthand that increases understanding and speeds comprehension

Abbreviations are discouraged as they can be misinterpreted.

Comprehension is only realized if the abbreviation or acronym is readily recognized. Abbreviations and acronyms are avoided where doubt exists. The full description of the acronyms should be given once in the text for the first occurrence of the acronym. **(See example 2.6.1)**

Symbols:
The use of symbols is limited by the availability of symbols in word processing software and computer-aided drafting programs.

(See **CSC Constructions Specifications Handbook**, Chapter 13 - Specification Language - "**Symbols and Expressions**")

Use:

NMS Section 01420 - REFERENCES identifies common acronyms of construction organizations used in the NMS.

Abbreviations in text are stated in lower case letters, except when the abbreviation represents a proper noun or nouns.

Abbreviations in the title of a section are stated in upper case letters.

Abbreviations do not use periods.

The NMS avoids the use of parentheses and quotation marks.

The NMS has access to the full ASCII Character Set (ie. IBM PC/windows/MAC characters 32 to 127). **(see Appendix A)**

Like abbreviations and acronyms, symbols are avoided unless they are readily recognized.

Dimensions and standard references appear on one line, not separated onto two lines.

2.7 Capital Letters

Introduction:

The NMS uses capital letters in a consistent manner, in addition to specific capitalization of certain words, to provide clarity to the intent of the document.

Capitalization should be consistent within documents such as the General Conditions or Supplementary Conditions. **(See example 2.7.1)**

Use:

Initial capitals are used to refer to specific nouns and proper names.

Capitals are used as the first letter of all words in a title heading at the top of each page of NMS text (exceptions are small words like "of", "to", and "and").

Capitals are used as the first letter of the first word beginning paragraphs, sub-paragraphs, sentences, headings and sub-headings.

Capitals are used for the first letter of certain words defined in the General Conditions of the CCDC and Federal Government contracts. These same words used in the general sense need not be capitalized.

Words with all letters in capitals are used for the following:

PART 1 - GENERAL
PART 2 - PRODUCTS
PART 3 - EXECUTION

Initials of standards writing organizations are capitalized.

The first letter of names of places, associations, and federal and municipal titles are capitalized.

Directions such as "east" are not capitalized.

Capitals are used for the first letter of each title of columns in chart mode.

2.8 Metric in The NMS

Introduction:

All measurement sensitive descriptions, whether volume, weight, height, length, pressure etc., are based on the International System of Units (SI), generally referred to as metric units.

Use:

The use of metric in the NMS is based on the following references:
- CAN/CSA-Z234.1-89 (R1995) Canadian Metric Practice Guide
- CAN3-A31-M75(R1981) Series of Standards for Metric Dimensional Co-ordination in Building
- CAN/CSA-Z234.3-89 (R1995) Guide for the Selection and Use of Preferred Numbers

2.9 Reference Standards

Introduction:

The NMS contains references to standards such as the Canadian General Standards Board (CGSB), Canadian Standards Association (CSA), American Society for Testing and Materials (ASTM), American National Standards Institute (ANSI), Underwriters' Laboratories of Canada (ULC) and others. These consensus standards are written accords or agreements on certain materials, testing procedures, or processes that conform to criteria developed and accepted by a recognized public or private authority or agency. The term "consensus standard" means that those documents or publications were developed by these agencies, often with public input. They are referred to in a uniform manner. References to these standards are indicated within the text of a section.

Use:

Standards in the NMS text are identified by the initials of that standards writing organization which has published the particular standard.

Capital letters are used to designate the standards writing organization without punctuation (ie. CGSB not C.G.S.B.).

SectionFormat contains an article (to be used where applicable) titled "References". Standards referenced in the text of a section must be listed under the "References" heading and further identified with the applicable heading for the standards writing organization.

The NMS identifies by acronym the standards agency, number, title, and date, with the date enclosed in square brackets. The date and title are included only in the "References" paragraph; they are not included when referencing a standard in the section's text.

As standards are continually being reviewed and updated, the specifier must check the NMS text to establish if the updated standard applies. If the standard still applies, the specifier must change the square bracketed standard's publication date. The specifier must also refer to the text of the revised standard to determine the effect of the information in the standard on the technical text in the section.

Where the standard has changed significantly, the specifier must change the NMS text as required to suit changed standards. **(See example 2.9.1)**

2.10 Division 1 - References

Introduction:

The content of Division 1 sections interrelate directly with the content of all other documents and specification sections. Division 1 sections are unique in their multilateral relationship to all the other documents.

Detailed guidance in the use of Division 1 is provided in the CSC TEK-AID Division 1 documents.

Use:

Section references to Division 1 will include, in square brackets, both the Section number and the full Section title.

Division 1 sections are not listed in the "References" paragraph.

2.11 Related Sections

Introduction:

A "Section" is defined as "one or several physical parts of a facility, viewed as the result of particular skills and techniques applied to particular construction products and/or elements during the production phase". To extend this definition and employ it, a section, when used in context with the NMS, is a part of the project specification covering one portion of the project requirements at a level directly below a Division; it describes particular materials or products and their installation, or particular administrative or procedural requirements.

For ease of use and comprehension, the NMS following ***SectionFormat*** consistently locates similar information in the same place in each section. **"Related Sections"** lists other NMS Sections referred to within that Section (except those only referred to in SPEC NOTES). These contain products or activities that have a direct effect on the Work of the section. These listings help the specifier to find the proper location of subjects and items that might require coordination and cross reference.

Use:

Identify other sections within the Project Manual which affect or are affected by the Work of the section being developed.

Do not use this paragraph to delineate trade responsibility.

SPEC NOTES may precede RELATED SECTIONS to assist the specifier. **(See example 2.11.1)**

2.12 Standard Paragraphs

Introduction:

Standard paragraphs are used in the NMS when workmanship and installation are specified in another Section, but are essential for execution of work under the Section being developed. The NMS provides for cross-referencing to the respective Section. Standard paragraphs may be similarly referenced for extended warranties. They are also used to provide consistency throughout the NMS.

Use:
(See example 2.12.1)

Section 3 - Contract

3.1 Introduction

3.2 Warranties and Guaranties

3.3 Division 1 - General Requirements

3.4 Regulatory Requirements

3.1 Introduction

As a contract document, the specification refers to other documents which affect the legal and administrative aspects of the project. The contract documents normally consist of the Agreement, Definitions, General Conditions of the Contract, Supplementary Conditions if any, Division 1 - General Requirements, technical specifications, drawings, schedules and others. Note: The complete Project Manual may include bidding or tendering requirements but exclude the drawings.

The NMS makes provision for the referencing of other contract documents.

3.2 Warranties & Guaranties

Introduction:

A warranty is defined as a document identifying an obligation of a warrantor (contractor) to a warrantee (owner): a two party obligation.

A guaranty is defined as a document identifying an undertaking of a third part (guarantor) usually a surety, to ensure the contractual responsibilities of the principal obligor (contractor) to the obligee (owner).

Use:

The NMS generally includes statements for one-year warranties only. This standard one-year warranty is further defined in the Federal Government's General Conditions "C", and , CCDC 2 - 1994 General Conditions Part 12 Indemnification - Waiver - Warranty which states that "The warranty period with regard to the *Contract* is one year from the date of *Substantial Performance of the Work* or those periods specified in the *Contract Documents* for certain portions of the *Work* or *Products.*"

The NMS avoids naming specific defects as it is inconsistent with CCDC contract documents which require the contractor to rectify and make good "any defect or fault".

The NMS provides, in a limited number of sections, text for extending the defined warranties. Extended warranties should only be used where experience has shown that serious defects are likely to appear after expiry of the standard one-year warranty period.
Trade practice should be considered in requesting extended warranties. **(See example 3.2.1)**

3.3 Division 1 - General Requirements

Introduction:

Division 1 sections provide the link between the organization and structure of all the documents and specifications sections. **Division 1 - General Requirements** establishes a standard location for specific information that may be common to a number of specification sections. It also provides the requisite link and referencing to other contract documents such as the bidding requirements and the agreement and general conditions of the contract. Division 1 has undergone considerable revision. The Private and Public Sector Division 1 sections have been harmonized. The Division 1 sections align with ***MasterFormat***.

Use:

Division 1 specifies recurring requirements that are either administrative, procedural, or relative to temporary construction facilities. Typically the administrative and procedural items would include defining the type and scope of contract, the process for submissions, schedules, testing and laboratory services, record documents, and contract close-out procedures.

Section references to Division 1 will include, in square brackets, both the section number and the full section title.

Division 1 sections are not referenced in the "Related Sections" paragraph.

Sections referring to a cash allowance for the supply of materials or services should only have their dollar value stipulated in Division 1. That dollar value should not be repeated in the technical section but rather have reference made to the Division 1 section.

Sections specifying products affected by an alternative should refer to that Division 1 section, preferably to the specific alternative by number.

The Division 1 section must then refer to the specific Division 2 through 16 sections affecting the allowance or the alternative. Generally, Division 1 Sections do not make reference to other sections in Divisions 2 through 16, the exception being allowances.

According to CCDC 2, and the Federal Government's General Conditions "C" bidding requirements including an invitation to bid, instructions to bidders and bid forms are NOT part

of the contract documents. Those provisions which are desirable to have become part of the contract can be included in Division 1.

Division 1 specification sections are organized and written in a style similar to the organization of ***SectionFormat***. The administrative and procedural sections logically have no PART 2 - PRODUCTS or PART 3 - EXECUTION paragraphs. All three parts are identified but unused parts are indicated as follows.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

The use of Division 15 Mechanical General Provisions and Division 16 Electrical General Provisions is discouraged by the NMS. Efforts are underway to relocate the general provisions formerly located in 1510 and 1610 into Division 1 and specific items into their relevant sections.

Division 1 takes precedence over any contradictory statements made within any of the technical specification sections. This tenet is supported in the CCDC Contracts which specifically indicate that if there is a conflict within Contract Documents:

".1 the order of priority of documents, from highest to lowest, shall be:

the Agreement between the Owner and the Contractor,
the Definitions,
Supplementary Conditions,
the General Conditions
Division 1 of the specifications
Division 2 through 16 of the specifications,
material and finishing schedules,
drawings,

.2 drawings of larger scale shall govern over those of smaller scale of the same date.
.3 dimensions shown on drawings shall govern over dimensions scaled from drawings.
.4 later dated documents shall govern over earlier documents of the same type."

3.4 Regulatory Requirements

Introduction:

Construction law legislation is the responsibility of the provinces. The provinces, in turn, delegate a rigidly controlled portion to the municipalities. The National Building Code (NBC) and the National Fire Code (NFC) are applicable to most construction in Canada.

Use:

The NMS is based on the NBC and other National Research Council (NRC) related documents. **(See example 3.4.1)**

Although some provincial enactments expressly require use of the NBC, the *Canadian Electrical Code* and others, adoption of the NBC by provincial and territorial governments is not universal. The specifier must refer to provincial and municipal regulations to assure compliance with governing legislation.

"Senior" legislation takes precedence over "junior". The same principle applies to overlapping regulations at the same level; the more stringent applies.

The primary codified law of Quebec differs with regard to the basics of contract law and as such may impact on certain references of the NMS.

The federal government as a facility owner does not have to comply with junior legislation but will voluntarily do so. It is the policy of the Federal government to always comply with the more stringent legislation or regulation.

Planning and zoning matters are generally municipally controlled.

Section 4 - Examples

2.3 SPEC NOTES
- 2.3.1 Spec Note Description
- 2.3.2 General Spec Notes
- 2.3.3 Spec Note Environmental
- 2.3.4 Spec Note Support

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- 2.4.1 Square Brackets

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- 2.5.2 Negative Statements
- 2.5.3 Streamlining
- 2.5.4 Punctuation
- 2.5.5 Vocabulary
- 2.5.6 Spelling

2.6 Abbreviations, Acronyms And Symbols
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2.7 Capital Letters
- 2.7.1 In Contract Documents

2.9 Reference Standards
- 2.9.1 Reference Standards

2.10 Division 1 - References
- 2.10.1 Division 1 References

2.11 Related Sections
- 2.11.1 Related Sections

2.12 Standard Paragraphs
- 2.12.1 Standard Paragraphs

3.2 Warranty
- 3.2.1 Warranty

2.3 SPEC NOTES:

Example: 2.3.1 SPEC NOTE DESCRIPTION

This is located at the top of the first page of the source section. It serves to introduce that section and provide a brief overview of the content and recommended usage.

SPEC NOTE DESCRIPTION: This section specifies aluminum doors, frames, sidelights and transoms used in storefront, entrance, vestibule and interior applications. Check manufacturers literature for recommended hardware and if it is to be provided as part of the door specify in this section; and if not specify in Section 08710 - Door Hardware.

Example: 2.3.2 General SPEC NOTES

When placed at the start of a section, General SPEC NOTES advise on other section information; when found within the text, they offer information on the subject and guidance to the specifier in the choices to be made or use of the information.

SPEC NOTE: The following Sections contain text that may be required to complete this Section: Section 16476-Air Circuit Breakers, Section 16478-Fuses-Low Voltage.

SPEC NOTE: Insert appropriate text from Section 16476-Disconnect Switches - Fused and Non-Fused and Section 16478 Fuses-Low Voltage into this Section.

.1 [_____] .

SPEC NOTE: Residential Service Hardware is based on typical single car garage door minimum rating 3,000 cycles per annum.

SPEC NOTE: Include air seals when heat loss or air infiltration is a factor or when difference in air pressure exists on opposite sides of door. Review manufacturer's literature for additional accessories and specify to suit project requirements.

SPEC NOTE: Review manufacturer's literature for additional hardware options and specify to suit project requirements.

Example: 2.3.3 SPEC NOTE ENVIRONMENTAL

These direct the specifier to the environmentally responsible choices available for materials, handling and installation of materials, and alternative disposal methods for construction waste materials, as well as other environmentally responsible choices.

SPEC NOTE ENVIRONMENTAL: Specify EcoLogo certification in the following paragraph. Check with manufacturer for percentage of recycled content.

.2 [EcoLogo certified] [Cellulose fibre with minimum [75]% recycled content] [Glass fibre with minimum [35]% recycled content].

Example: 2.3.4 SPEC NOTE SUPPORT

This SPEC NOTE acknowledges support from associations or individuals that have assisted in the review or development of the NMS Section.

SPEC NOTE SUPPORT: This Section has been produced jointly by the National Master Specification (NMS) Secretariat and the Canadian Nursery Trades Association (CNTA).

2.4 Square Brackets:

Square brackets enclose alternative words, phrases, numerical values or blank spaces. Blank spaces are immediately preceded or followed by words or symbols that clarify the intent of the blank space.

Example: 2.4.1 Square Brackets

.1 Acoustic units for [suspended ceiling system]: to CAN/CGSB-92.1.
.1 Type [___].
.2 [EcoLogo certified] [Cellulose fibre with minimum [75]% recycled content] [Glass fibre with minimum [35]% recycled content].
.3 Pattern [___].
.4 Flame spread rating of [___] or less.
.5 Smoke developed [___] or less.

2.5 Rules of Language:

Example: 2.5.1 Imperative Mood

Use the directive style in the imperative mood to minimize words and to ease interpretation.

.1 Spread adhesive with a notched trowel.
.2 Install equipment plumb and level.
.3 Apply two coats of paint to exposed surface.

NOTE - The NMS avoids statements like:

.1 Adhesive shall be spread with notched trowel.
.2 Equipment shall be installed plumb and level.
.3 Two coats of paint shall be applied to each exposed surface.

Example: 2.5.2 Negative Statements

.1 Install wall mounted equipment on wall surfaces free of built-in furniture or other equipment.

NOTE - The NMS avoids statements like:

.1 Do not install wall mounted equipment at locations where built-in furniture or other equipment is to be installed.

Example: 2.5.3 Streamlining

Without loss of force or intent, the NMS reduces verbiage by streamlining.

.1 Shop primer: to CGSB 1-GP-40M.
.2 Apply paint in accordance with....

Example: 2.5.4 Punctuation

.1 ..... flexible,black and continuous (the serial (penultimate) comma)

Example: 2.5.5 Vocabulary

NOTE - Common misused trade terms are:

drywall: a slang term; the preferred generic term is "gypsum board".

Firecode C or Type X: both are trade names; the preferred generic term is "fire-rated gypsum board".

Styrofoam: the preferred generic term is "rigid extruded foam insulation".

Example: 2.5.6 Spelling

NOTE - Common spelling inconsistencies are:

advice - is used in Canada as a noun,
advise - is used in Canada as a verb,
calk - should be "caulk",
catalog - should be "catalogue",
color - should be "colour",
database - should be "data base",
defense - should be "defence",
facia - should be "fascia",
labor - should be "labour",
gage - should be "gauge",
lite - should be "light",
molding - should be "moulding",
nite - should be "night",
practice - is used in Canada as a noun,
practise - is used in Canada as a verb,
metre - unit of measurement
meter - a gauge or measuring device
thru - should be "through"
centre - a noun
center - a verb

2.6 Abbreviations, Acronyms And Symbols

Abbreviations are discouraged as they could be misinterpreted.

Example: 2.6.1 Acronyms

(A few of many examples)
American Society for Testing and Materials - ASTM
American National Standards Institute - ANSI
Canadian General Standards Board - CGSB
Canadian Construction Documents Committee - CCDC
Construction Specifications Canada - CSC
Construction Specifications Institute - CSI

2.7 Capital Letters:

Example: 2.7.1 in Contract Documents

(some words that might be capitalized)

Agreement,	Owner,
Architect,	Part,
Consultant,	Place of the Work,
Contract,	Project,
Contracting Officer,	Province,
Contractor,	Room Names: Library, Science Room
Division,	Section
Engineer,	Shop Drawings,Project Data,Samples
General Conditions,	Subconsultant
Government,	Work

2.9 Reference Standards:

Standards in the NMS text are identified by the initials of that standards writing organization. Capital letters are used without punctuation. The date and title are included only in the "References" paragraph. The date is enclosed in square brackets. The standards are identified here and reference to them is made in other articles of the section by their acronym and alpha/numeric designation only. This title may be prefaced by a SPEC NOTE.

Example: 2.9.1 Reference Standards

SPEC NOTE: Edit the following paragraph to suit standards specified in project specification.

.1 Canadian Standards Association (CSA)
- .1 CSA O115-[M1982], Hardwood and Decorative Plywood.
- .2 CAN/CSA O132.2 Series-[90], Wood Flush Doors.
- .3 CAN/CSA-O132.5-[M1992], Stile and Rail Wood Doors.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.19-[M88], Adhesive, Contact, Sprayable.
- .2 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.

Applicable standards writing organization headings are listed in the NMS alphabetically.

.1 American Society for Testing and Materials (ASTM)
- .1 ASTM A653/A653M-95,Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.91-[M88], Adhesives, Contact, Sprayable

.3 Canadian Standards Association (CSA)
- .1 CSA 115-[M1982], Hardwood and Decorative Plywood

Standards are identified here and are referenced in other articles of the section by their acronym and alpha/numeric designation only.

.1 Design precast elements to [CAN3-A23.3] [CAN3-A23.4] [CAN/CSA-S6] and to carry handling stresses.

.2 Tolerance of precast elements to CAN3-A23.4, Section 10.

2.10 Division 1 - References:

The content of Division 1 sections interrelate directly with the content of all other documents and specification sections. Section references to Division 1 will include, in square brackets, both the section number and the full section title.

Example: 2.10.1 Division 1 - References

1.3 Product Data	.1	Submit product data in accordance with Section [01330 - Submittal Procedures].

Some sections will require the inclusion in Product Data of the following paragraph:

	.2	Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section [_____]. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for [_____]. Indicate VOC content.
1.4 Shop Drawings	.1	Submit shop drawings in accordance with Section [01330 - Submittal Procedures].
	.2	Indicate materials, operating mechanisms and hardware required clearances [and electrical connections].
1.5 Samples	.1	Submit samples in accordance with Section [01330 - Submittal Procedures].
1.6 Closeout Submittals		
	.1	Provide operation and maintenance data for overhead door hardware for incorporation into manual specified in Section [1780] - [Closeout Submittals].

1.7 Mock-ups

.1 Construct mock-up in accordance with Section [01450 - Quality Control].

.2 Construct mock-up [_____] sq. m. minimum of [_____].

.3 Construct mock-up where directed.

.4 Allow [24] hours for inspection of mock-up by [Engineer] [Consultant] before proceeding.

.5 When accepted, mock-up will demonstrate minimum standard for Work. Mock-up may [not] remain as part of finished work.

1.10 Environmental Requirements

.1 Temperature

.1 Maintain ambient temperature of not less than [18]deg.C from [7] days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.

.2 Moisture:

.1 Ensure substrate is within moisture limits prescribed by [flooring] manufacturer.

.3 Safety:

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

SPEC NOTE: Use the following paragraph to specify ventilation in occupied buildings using permanent system or by other means, as appropriate.

.4 Ventilation:

.1 [[Engineer][Consultant] will arrange for ventilation system to be operated during installation of [_____]. [Ventilate area of work as directed by [Engineer][Consultant] by use of approved portable supply and exhaust fans].

.2 Ventilate enclosed spaces in accordance with Section [_____].

.3 Provide continuous ventilation during and after coating application.

1.6 Extra Materials

SPEC NOTE: Ensure space available to store parts.

.1 Provide spare parts in accordance with Section [_____] - [_____].

.2 Provide spare parts for overhead doors as follows:

.1 Door panels: [___].

.2 Door rollers: [ ].

.3 Weatherstripping: [___] sets[s].

.4 Springs and cables: [___].

.3 Store where directed. Identify each part and reference to appropriate door.

2.11 Related Sections:

This article identifies sections which affect or are affected by the work of the section being developed. SPEC NOTES may precede Related Sections to assist the specifier.

Example: 2.11.1 Related Sections

1.1 Related Sections	.1	Section [09911 - Interior Painting].
	.2	Section [03300 - Cast-in-Place Concrete]: Installation of anchor bolts.

2.12 Standard Paragraphs:

Quality of work and installation may be specified elsewhere, but are essential for work in another section. Warranties may be similarly referenced.

Example: 2.12.1 Standard Paragraphs

2.1 Caulking	.1	Apply [_____] in accordance with Section [07900 - Joint Sealers].
2.2 Field Quality Control	.1	Inspection and testing of [_____] will be carried out by a Testing Laboratory designated by [Engineer] [Consultant].
	.2	[Engineer] [Consultant] will pay for costs of tests as specified in Section [01293 - Payment Procedures: Testing Laboratory Services].

3.2 Warranty:

The NMS generally includes statements for one-year warranties only, but provides, in a limited number of sections, text for extending the defined warranties. Material warranties and installation warranties may need to be differentiated.

Example: 3.2.1 Warranty

1.7 Warranty	.1	For Work of this Section [07550 - Modified Bituminous Roofing], 12 months warranty period prescribed in subsection GC 32.1 of General Conditions "C" is extended to [24 months] [60 months].
	.2	Contractor hereby warrants that modified bituminous roofing and membrane flashings will stay in place and remain leakproof in accordance with GC24, but for [two years] [five years].
	.1	Warranty: For work of this section [_____] 12 months warranty period prescribed in Part 12 of the General Conditions article 12.3.1 is extended to [_____] months.
	.2	Warranty: For [insulated glass units] 12 months warranty period prescribed in Part 12 of the General Conditions article 12.3.1 is extended to [_____] months.

Appendix "A" - Symbols

There are limiting factors on the availability of symbols for use in developing NMS section text. The NMS has access to the full ASCII Character Set (ie. IBM PC/windows/MAC characters 32 to 127). Also, special language symbol characters are available as a condition of the NMS Distributor Agreement. The following list are the Hexadecimal Character Codes for the NMS files in Machine Readable Format. The combination of characters on the outside of the chart below represents the hexadecimal code of the equivalent print character. The hexadecimal code is the top character followed by the side character, e.g., HEX 61 = the character '/'

	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	
0			0			&	_				-	0				0	0
1	,		1				/		a	j	0	1	A	J			1
2			2						b	k	s	2	B	K	S	2	2
3			3						c	l	t	3	C	L	T	3	3
4			4						d	m	u	4	D	M	U	4	4
5	(		5						e	n	v	5	E	N	V	5	5
6			6						f	o	w	6	F	O	W	6	6
7			7						g	p	x	7	G	P	X	7	7
8			8						h	q	y	8	H	Q	Y	8	8
9			9						i	r	z	9	I	R	Z	9	9
a					¢												a
b					.	$	,	#	{	}	!	4					b
c					<	*	%	@	'		-	!					c
d					(	)	_	'			[	]					d
e					+	;	>	=	+	±		...					e
f					*		?	"	+		'	_					f
	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f	