

## **Project Brief - Appendix N – Guide to Preparation of Construction Documents**

### **1. Purpose**

This document provides direction for the Design Team in the preparation of DPs (i.e. Design Packages: Specifications, Drawings, and addenda) for NCC projects. It is included for the CM's (Construction Manager) information and reference in performing its design management services.

Drawings, Specifications, and addenda are to be complete and clear, so that a contractor can prepare a bid without guesswork. Standard practice for the preparation of DPs includes:

- a) Drawings, which are the graphic means of showing Work to be done, as they depict shape, dimension, location, quantity of materials and relationship between building components; and
- b) Specifications, which are written descriptions of materials and construction processes in relation to quality, colour, pattern, performance and characteristics of materials, installation and quality of Work requirements.

### **2. Principles of DPs for the Contract**

Base DPs on common public procurement principles.

### **3. Quality Assurance**

The Design Team is required to undertake their own quality control process and will review, correct and coordinate (between disciplines) their documents before sending them to the CM.

### **4. Specifications**

#### **4.1 National Master Specification**

The NMS is a bilingual system of master construction specification sections, which is divided into 48 Divisions and used for a wide range of construction and/or renovation projects. In preparing Project Specifications, the Design Team will use the current edition of the NMS in accordance with the NMS User's Guide and format requirements stipulated.

The Design Team retains overriding responsibility for content and must edit, amend and supplement the NMS as deemed necessary to produce an appropriate Project Specification free from conflict and ambiguity.

#### **4.2 Specification Organization**

Narrow scope sections describing single units of Work are preferred for more complex Work; however, broad scope sections may be more suitable for less complex Work. Either the NMS 1/3 - 2/3-page format or the Construction Specifications Canada full-page format can be utilized.

Start each section on a new page and show Project number, section title, six-digit section number and page number on each page. Specification date and Design Team consultant's name are not to be indicated.

### 4.3 Terminology

Use the term CM instead of Engineer, NCC, Owner, Consultant or Architect. CM means the entity designated in the project construction contract, and/or Subcontract, or by written notice to the contractor and/or Subcontractor, to act as the representative for the purposes of the Project construction contract, and includes a person, designated and authorized in writing by the representative to the Contractor.

Notations such as; "verify on site", "as instructed", "to match existing", "example", "equal to" or "equivalent to", "to be determined on site by the CM", must not be indicated in the Specifications as this promotes inaccurate and inflated bids. Specifications must permit bidders to calculate all quantities and bid accurately. If quantities are impossible to identify (i.e. cracks to be repaired) give an estimated quantity for bid purposes (unit prices). Ensure that the terminology used throughout the Specifications is consistent and does not contradict the applicable standard DPs.

### 4.4 Dimensions

Dimensions must be in metric only. Dual dimensioning is forbidden.

### 4.5 Standards

As references in the NMS may not be the most current, it is the responsibility of the Design Team to ensure that Project Specification use the latest applicable edition. The following is a list of Internet websites, which provides the most current publications of standards for reference in the construction Specification document.

CSA standards: <http://www.csa.ca>

CGSB standards: <http://www.pwgsc.gc.ca/cgsb>

ANSI standards: <http://www.ansi.org>

ASTM standards: <http://www.astm.org>

ULC standards: <http://www.ulc.ca>

General reference of standards: <http://www.techstreet.com/>

For the website addresses of other standards organizations and manufacturers associations, refer to the [Canadian National Master Construction Specification \(NMS\):](#)

[http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/nms\\_index.html](http://www.nrc-cnrc.gc.ca/eng/solutions/advisory/nms_index.html).

### 4.6 Specifying Materials

The practice of specifying actual brand names, model numbers, etc., is against NCC policy except for special circumstances. The method of specifying Materials must be by using recognized standards such as those produced by Canadian Gas Association (CGA), Canadian General Standards Board (CGSB), CSA, and Underwriters' Laboratories of Canada (ULC), or by trade associations such as Canadian Roofing Contractors' Association (CRCA) and Terrazzo, Tile, Marble Association of Canada (TTMAC). Canadian standards must be used wherever possible.

If the above method cannot be used and where no standards exist, specify by a non-restrictive, non-trade name "prescription" or "performance" Specifications.

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If no standards exist and when a suitable non-restrictive, non-trade name “prescription” or “performance” Specification cannot be developed, specify by trade name. Include all known materials acceptable for the purpose intended, and in the case of equipment, identify by type and model number.

Acceptable Materials: set up the paragraph format as follows:

Acceptable Materials:

1. ABC Co. Model [\_\_\_\_\_].
2. DEF Co. Model [\_\_\_\_\_].
3. GHI Co. Model [\_\_\_\_\_].

The Design Team is responsible to review and evaluate all requests for approval of alternative Materials.

The term “Acceptable Manufacturers” must not be used, as this restricts competition and does not ensure the actual Material or product will be acceptable. A list of words and phrases that should be avoided is included in the NMS User's Guide.

Sole Sourcing: Sole sourcing for Materials and Work can be used for proprietary systems (i.e. fire alarm systems, EMCS systems).

Wording for the sole source of Work should be in Part 1 as:

“Designated Contractor

- .1 Hire the services of [\_\_\_\_\_] to do the work of this section.”;

Wording for the sole source of EMCS systems should be in Part 1 as

“Designated Contractor

- .1 Hire the services of [\_\_\_\_\_] or its authorized representative to complete the work of all EMCS sections.”;

And in Part 2 as “Materials

- .1 There is an existing [\_\_\_\_\_] system presently installed in the building. All materials will be selected to ensure compatibility with the existing [\_\_\_\_\_] system.

Wording for the sole source of materials (i.e. fire alarm systems) should be in Part 2 as:

“Acceptable materials

- .1 The only acceptable materials are [\_\_\_\_\_].”

Prior to including sole source Materials and/or Work, the Design Team must contact the NCCR to obtain the approval in writing for the sole sourcing.

### 4.7 Unit Prices

Unit prices are used only for unknown Work (i.e. rock removal) and the approval of the NCCR and the CM will be sought in advance of their use.

Use the following wording:

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[The work for this section] or [define the specific work if required, e.g. rock excavation] will be paid based on the actual quantities measured on-Site and the unit prices stated in the CM's Bid and Acceptance Form, or equivalent document.

Replace paragraph title "Measurement for Payment" with "Unit Prices".

Sample of Unit Price Table:

The Unit Price Table designates the Work to which a Unit Price Arrangement applies.

- a) The Price per Unit and the Estimated Total Price will be entered for each Item listed; and
- b) Work included in each item is as described in the referenced Specification section.

Item	Specification Reference	Class of Labour, Plant, or Material	Unit of Measurement	Estimated Quantity	Price per Unit HST extra	Estimated Total Price HST extra
<b>TOTAL ESTIMATED AMOUNT</b> <b>Transfer amount to bid and accept form</b>						

### 4.8 Cash Allowances

DPs will be complete and contain all the requirements for the contractual Work. Cash allowances are to be used only under exceptional circumstances (i.e. utility companies; municipalities), where no other method of specifying is appropriate. The NCCR's approval will be obtained in advance to incorporate cash allowances and the section of the NMS will be used to specify the criteria.

### 4.9 Warranties

This Project will require a minimum 12-month warranty period. When necessary to extend beyond the 12-month warranty period provided for in the General Conditions of the Contract, use the following wording in Part 1 of the applicable technical sections, under the heading "Extended Warranty":

- a) "For the work of this Section [\_\_\_\_], the 12-month warranty period is extended to xx months"; or
- b) Where the extended warranty is intended to apply to a particular part of a Specification section modify the above as follows: "For [\_\_\_\_] the 12-month ... [\_\_\_\_] months."

Delete all references to manufacturer's guarantees.

### 4.10 Scope of Work

Paragraphs must not include statements such as "Scope of Work".

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### **4.11 Summary and Section Includes in Part - 1 of Section**

Delete paragraphs identified as “Summary” and/or “Section Includes”.

### **4.12 Related Sections**

In every section of the Specification at 1.1 “Related Sections”: coordinate the list of related sections and appendices. Ensure co-ordination among the sections of the Specification and ensure not to reference any section or appendices that do not exist.

### **4.13 Index**

List all the Drawings and Specification sections with correct number of pages and correct Drawing titles and section names. The format is to be that presented in ToR Appendix B, Attachment A.

### **4.14 Division 1 Specifications**

The scope and content of the Division 1 Specifications must be assessed by and agreed to between the Design Team and the CM, to the approval of the NCCR. Common sections that apply to the entire Specification will be prepared by the Design Team, such as environmental, sustainability, and commissioning Specifications. Other sections such as health and safety, Work restrictions, etc. will be prepared by the CM.

The CM will combine the Design Team’s and CM’s Specifications to create a common ‘front-end’ document for the CM’s tendering of the Work.

### **4.15 Health and Safety**

It is required that all Project Specifications include “Section 01 35 29.06 - Health and Safety Requirements.” Confirm with the CM to determine if there are any instructions to meet specific Project requirements.

### **4.16 Designated Substances Report**

Include Section 01 14 25 - Designated Substances Report

### **4.17 Borehole logs**

Borehole logs are to be included after Section 01 00 10 and the following paragraph added to Section 01 00 10:

Borehole Logs

- 1 Borehole logs are included in the Specification following this section and are for information only.

### **4.18 Experience and Qualifications**

Remove experience and qualification requirements from Specification sections.

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### **4.19 Prequalification**

Do not include in the Specification any mandatory Supplier and/or Subcontractor prequalification requirements that could become a Subcontract award condition. A prequalification process is required prior to tender of all specialty and major tenders.

There should be no references to certificates, transcripts or license numbers of a trade or Subcontractor being included with the bid.

### **4.20 Contracting Issues**

Specifications describe the workmanship and quality of the Work. Contracting issues must not appear in the Specifications. Division 00 of the NMS is not used for NCC projects.

Remove all references to the following:

- a) General instructions to bidders;
- b) General conditions;
- c) CCDC documents;
- d) Priority of documents;
- e) Security clauses;
- f) Terms of payment or holdback;
- g) Tendering process;
- h) Bonding requirements;
- i) Insurance requirements;
- j) Alternative and separate pricing;
- k) Site visit (Mandatory or Optional); and
- l) Release of Lien and deficiency holdbacks.

### **4.21 Quality Issues**

Ensure that there are no Specification clauses with square brackets “[ ]” or lines “\_\_\_\_\_” indicating that the spec is incomplete or missing information.

## **5. Drawings**

### **5.1 Title Blocks**

Use NCC title block for Drawings and sketches (including addenda).

### **5.2 Dimensions**

Dimensions are to be in metric only (no dual dimensioning).

### **5.3 Trade Names**

Trade names on Drawings are not acceptable.

### **5.4 Specification Notes**

No Specification-type notes are to appear on any Drawing.

### **5.5 Terminology**

Use the term CM instead of Engineer, NCC, Owner, Consultant, or Architect. CM means the entity designated in the Project construction contract, and/or Subcontract, or by written notice to the contractor and/or Subcontractor, to act as the representative for the purposes of the Project construction contract, and includes a person, designated, and authorized in writing by the representative to the Contractor.

Notations such as: "verify on site", "as instructed", "to match existing", "example", "equal to" or "equivalent to", "to be determined on site by the CM", must not be indicated on the Drawings as this promotes inaccurate and inflated bids. Drawings must permit bidders to calculate all quantities and bid accurately.

### **5.6 Information to be included**

Drawings will show the quantity and configuration of the Project Work, the dimensions and details of how it is constructed. There should be no references to future work nor information that will be changed by future addenda. The scope of Work should be clearly detailed and elements not in the scope of the DP should be eliminated or kept to an absolute minimum.

## **6. Addenda**

### **6.1 Format**

Refer to Project Brief Annex A, Attachment B for addenda format. No signature-type information is to appear.

Every page of the addendum (including attachments) must be numbered consecutively. All pages must have the Project number and the appropriate addendum number. Sketches are to appear in the NCC format, stamped and signed.

No Design Team design discipline information (name, address, phone #, consultant project # etc...) must appear in the addendum or its attachments (except on sketches).

### **6.2 Content**

Each item must refer to an existing paragraph of the Specification or note/detail on the Drawings. The clarification-style of note is not acceptable.

## **7. Documentation**

### **7.1 Translation**

When required, all documentation included in the DP must be in both official languages. Obtain clarification of translation requirements from the NCC Representative at the beginning of DP production.

Ensure that English and French documents are equal in all respects. There can be no statement that one version takes precedence over the other.

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The Design Team must provide:

- a) Per DP submission, a completed and signed Checklist for the Submission of Construction Documents, as per Project Brief Annex A, Attachment A;
- b) Specification: provide originals printed one side on 216 mm x 280 mm white bond paper, or in an acceptable format for mass printing;
- c) Index: as per Project Brief Annex A, Attachment B;
- d) Addenda (if required): as per Project Brief Annex A, Attachment C (for issue by the CM);
- e) Drawings: reproducible originals, sealed and signed by the Design Team' design authority; and
- f) Tender information:
  - i. Provide a description of all units and estimated quantities to be included in unit price table(s); and
  - ii. Design Team to provide an electronic true copy of the final documents (Specifications and Drawings) on one or multiple CD-ROM in PDF without password protection and printing restrictions, or as agreed by the CM. The electronic copy of Drawings and Specifications is for bidding purposes only and do not require to be signed and sealed.

The CM must provide:

- a) General and special instructions to bidders;
- b) Bid and acceptance form, or equivalent; and
- c) Construction documents.

### **Attachments**

Attachment A - Checklist for the submission of Construction Documents;

Attachment B - Sample index for Drawings and Specifications; and

Attachment C - Sample addendum format.



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### Attachment A:

#### Checklist for the Submission of Construction Documents

<b>Date:</b>	
<b>Project Title:</b>	<b>Project Location:</b>
<b>Project Number:</b>	<b>NCCR:</b>
<b>Design Team consultant's Name:</b>	<b>CM Representative:</b>
<b>Design Package Review Stage:</b> <div style="text-align: center;"> <b>50%      90%      100%</b> </div>	

Item	Verified by:	Comments
<b>Specifications:</b>		
<b>1</b> The current edition of the NMS has been used.		
<b>2a</b> Either the NMS 1/3 - 2/3-page format or the Construction Specifications Canada full-page format is used.		
<b>2b</b> Each section starts on a new page and the Project number, section title, section number and page number show on each page.		
<b>2c</b> Specification date and consultant's name are not indicated.		
<b>3a</b> The term CM is used instead of Engineer, NCC, Owner, Consultant or Architect.		
<b>3b</b> Notations such as: "verify on site", "as instructed", "to match existing", "example", "equal to", "equivalent to" and "to be determined on site by" are not used.		
<b>4</b> Dimensions are provided in metric only.		
<b>5</b> The latest edition of all references quoted is used.		
<b>6a</b> The method of specifying materials uses recognized standards. Actual brand names and model numbers are not specified.		
<b>6b</b> Identify if non-restrictive, non-trade name		

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“prescription” or “performance” Specifications are used.		
<b>6c</b> Indicate if a list of acceptable materials have been used.		
<b>6d</b> The term “Acceptable Manufacturers” is not used.		
<b>6e</b> Indicate if sole sourcing has been used.		
<b>7</b> Unit prices are used only for unknown Work.		
<b>8</b> Indicate if cash allowances have been used.		
<b>9a</b> Indicate if warranties extend more than 24 months. If so, indicate the extended duration.		
<b>9b</b> Manufacturers guarantees are not indicated.		
<b>10</b> No paragraphs noted as “Scope of Work” are included.		
<b>11</b> In part 1 of section, paragraphs “Summary” and “Section Includes” are not used.		
<b>12</b> The list of related sections and appendices are coordinated.		
<b>13</b> The index shows a complete list of Drawings and Specification sections with the correct number of pages and correct Drawing titles and section names.		
<b>14</b> Section 01 00 10 - General Instructions is included, if agreed by the CM.		
<b>15</b> Section 01 35 29.06 - Health and Safety Requirements is included.		
<b>16</b> Section 01 14 25 - Designated Substances Report is included, if agreed by the CM.		
<b>17</b> Borehole logs are included in Division 31.		
<b>18</b> Experience and qualification requirements do not appear in the Specification sections		
<b>19</b> There are no mandatory contractor and/or Subcontractor pre-qualification requirements or references to certificates, transcripts or license numbers of a trade or Subcontractor being included in the bid.		
<b>20a</b> Contracting issues do not appear in the Specifications.		
<b>20b</b> Division 00 of the NMS is not used.		
<b>21</b> There are no Specification clauses with square brackets “[ ]” or lines “__” indicating that the document is incomplete or missing information.		
<b>Specification Quality Management Verification</b> All previous submission review comments approved/provided by the NCCR are appropriately incorporated in the Specifications and responses to all		

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comments send to the NCCR.		
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Item	Verified by:	Comments
<b>Drawings:</b>		
<b>1</b> The NCC title block is used.		
<b>2</b> Dimensions are provided in metric only.		
<b>3</b> Trade names are not used.		
<b>4</b> There is no Specification-type notes.		
<b>5</b> The term CM is used instead of Engineer, NCC, Owner, Consultant or Architect.		
<b>6</b> Notations such as; “verify on site”, “as instructed”, “to match existing”, “example”, “equal to”, “equivalent to” and “to be determined on site by” are not used.		
<b>7</b> The Project quantity and configuration, dimensions and construction details are included.		
<b>8</b> References to future work and elements not in contract do not appear or are kept to an absolute minimum and clearly marked.		
<b>Drawings Quality Management Verification</b> All previous submission review comments approved/provided by the NCCR are appropriately incorporated in the Specifications and responses to all comments send to the NCCR.		

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### Attachment B:

#### Sample Index for Drawings and Specifications

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Project No: \_\_\_\_\_

Index

Page 1 of \_\_\_\_

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#### DRAWINGS AND SPECIFICATIONS

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##### DRAWINGS:

SPEC NOTE: List all Drawings by number and title.

C-1	Civil
L-1	Landscaping
A-1	Architectural
S-1	Structural
M-1	Mechanical
E-1	Electrical

##### SPECIFICATIONS:

SPEC NOTE: List all divisions, sections (by number and title) and number of pages.

<u>DIVISION</u>	<u>SECTION</u>	<u>NO. OF PAGES</u>
DIVISION 01	01 00 10 - General Requirements.....	.....XX
	01 14 25 - Designated Substances Report.....	.....XX
	01 35 30 - Health and Safety.....	.....XX
DIVISION 23	23 xx xx	
DIVISION 26	26 xx xx	

Attachment C:

Sample Addendum Format

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ADDENDUM No. \_\_\_\_

Project Number: \_\_\_\_\_

The following changes in the bid documents are effective immediately. This addendum will form part of the DPs

**DRAWINGS**

SPEC NOTE: indicate Drawing number and title, then list changes or indicate revision number and date, and re-issue Drawing with addendum.

- 1        A1 Architectural

**SPECIFICATIONS**

SPEC NOTE: indicate section number and title.

- 1        Section 01 00 10 - General Requirements

SPEC NOTE: list all changes (i.e. delete, add or change) by article or paragraph

- .1        Delete article (xx) entirely.
  - .2        Refer to paragraph (xx.x) and change ...
- 
- 2        Section 23 05 00 - Common Work Results - Mechanical
- 
- .1        Add new article (x) as follows: