



**RETURN BIDS TO:  
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**

**11 LaurierSt./ 11, rue Laurier  
Place du Portage, Phase III  
Core 0B2 / Noyau 0B2**

**Gatineau**

**Québec**

**K1A 0S5**

**Bid Fax: (819) 997-9776**

**Request For a Standing Offer  
Demande d'offre à commandes**

Departmental Individual Standing Offer (DISO)

Offre à commandes individuelle du département(OCID)

Canada, as represented by the Minister of Public Works and  
Government Services Canada, hereby requests a Standing Offer  
on behalf of the Identified Users herein.

Le Canada, représenté par le ministre des Travaux Publics et  
Services Gouvernementaux Canada, autorise par la présente,  
une offre à commandes au nom des utilisateurs identifiés  
énumérés ci-après.

**Comments - Commentaires**

**Vendor/Firm Name and Address  
Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Infrastructure Maintenance and Solution Services Division  
(FK)

L'Esplanade Laurier,  
East Tower 4th Floor  
L'Esplanade Laurier,  
Tour est 4e étage

140 O'Connor, Street

Ottawa

Ontario

K1A 0R5

<b>Title - Sujet</b> Building Master Drawings Services	
<b>Solicitation No. - N° de l'invitation</b> EP896-201130/A	<b>Date</b> 2020-07-21
<b>Client Reference No. - N° de référence du client</b> 20201130	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$\$FK-307-78925
<b>File No. - N° de dossier</b> fk307.EP896-201130	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2020-08-31</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>Delivery Required - Livraison exigée</b> See Herein	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Cowell, Philip	<b>Buyer Id - Id de l'acheteur</b> fk307
<b>Telephone No. - N° de téléphone</b> (613)296-1922 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>  Specified Herein Précisé dans les présentes	
<b>Security - Sécurité</b> This request for a Standing Offer includes provisions for security. Cette Demande d'offre à commandes comprend des dispositions en matière de sécurité.	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b>	<b>Facsimile No. - N° de télécopieur</b>
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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Client Ref. No. - N° de réf. du client  
XXXXXX-XXXXXX

Amd. No. - N° de la modif.  
File No. - N° du dossier  
EP896-201130

Buyer ID - Id de l'acheteur  
FK307  
CCC No./N° CCC - FMS No./N° VME

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## **IMPORTANT NOTICE TO OFFERORS**

### **Security**

This notice is to advise ALL interested offerors that in order to be awarded a standing offer which contains a security requirement, all offerors MUST hold a valid Security Clearance granted or approved by PWGSC Canadian Industrial Security Directorate (CISD) at the level indicated in this solicitation document. Should the offeror not currently hold a valid Security Clearance or require the level to be upgraded, PWGSC will sponsor the offeror. Please submit your written request with the following information to Philip Cowell by e-mail to [philip.cowell@tpsgc-pwgsc.gc.ca](mailto:philip.cowell@tpsgc-pwgsc.gc.ca)

- Legal Company Name
- Mailing address
- Surname and given name of contact person
- Telephone number of contact person
- Title of contact person
- Facsimile number
- E-mail address of contact person
- Procurement Business Number
- Preferred Language of correspondence
- Level of Security Required

Additional information on PWGSC security can be found on the following website:  
<http://ssi-iss.tpsgc-pwgsc.gc.ca> or by dialing 1-866-368-4646 (Toll free).

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## **PART 1 - GENERAL INFORMATION**

### **1.1 Introduction**

The Request for Standing Offers (RFSO) is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Offeror Instructions: provides the instructions applicable to the clauses and conditions of the RFSO;
- Part 3 Offer Preparation Instructions: provides offerors with instructions on how to prepare their offer to address the evaluation criteria specified;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria which must be addressed in the offer, and the basis of selection;
- Part 5 Certifications and Additional Information: includes the certifications and additional information to be provided;
- Part 6 Security, Financial and Insurance Requirements: includes specific requirements that must be addressed by offerors; and
- Part 7 7A, Standing Offer, and 7B, Resulting Contract Clauses:
  - 7A, includes the Standing Offer containing the offer from the Offeror and the applicable clauses and conditions;
  - 7B, includes the clauses and conditions which will apply to any contract resulting from a call-up made pursuant to the Standing Offer.

The Annexes include the Statement of Work, the Basis of Payment, the Electronic Payment Instruments, the Federal Contractors Program for Employment Equity - Certification and any other annexes

### **1.2 Summary**

- 1.2.1 This is a solicitation to request Standing Offers (SO). A SO is not a contract and does not commit Public Works and Government Services Canada (PWGSC) to procure or contract for any services. Any resulting SO constitutes an Offer made by an Offeror for the provision of certain Services to Canada at prearranged prices or a prearranged pricing basis, under set terms and conditions, that is open for acceptance by Identified User on behalf of Canada during a specified period of time.

A separate Contract is formed each time a call-up for the provision of Services is made against a SO. Canada's liability will be limited to the actual value of the call-ups made by a duly authorized Identified User within the period specified in the call-up.

- 1.2.2 Public Works and Government Services Canada (PWGSC) invites Interested Offerors to respond to this RFSO for the provision of Building Master Drawing services. The Offeror offers to fulfill the requirement of building master/record drawing services as defined by the requirements in accordance with the Statement of Work and its appendices A to H at Annex A.

These services are required to assist Geomatics Services (a division within the Real Property Branch, PWGSC) with its inventory of Crown assets, leased space, as well as inventories from other government departments in the National Capital Area. As PWGSC is a Common Services provider for the federal government, the services may be needed for wider purpose facilities such as office buildings, utilities plants, laboratories, and other special purpose facilities.

Services are to be provided when required and as requested by the Project Authority, including any or a combination of the following:

- Site measurement, 3D Scanning and data collection of Master/Record for as-found conditions
- Drawing development or update of floor plans using AutoCAD® and Revit Software
- Drawing development or update of building information modeling using an IFC compliant Revit® Architecture
- Drawing development or update of office areas, furniture, equipment and occupancy information.

While the majority of the services and deliverables will be delivered in the English language, from time to time there may be a requirement to provide services and deliverables in the French language.

#### Schedule of Delivery

The successful Offeror will be required to respond to individual call-ups (as determined at the time of each individual call-up) according to the following Schedule of Delivery:

- For normal requirements, the telephone response time for individual call-ups will be a maximum of three (3) business days and the Offeror Firm will be required to visit the site within two (2) business days of the call-up request.
- For urgent requirements, the telephone response time for individual call-ups will be a maximum of three (3) business days and the Offeror Firm will be required to visit the site within one (1) business day of the call-up request.

1.2.3 This RFSO will result in Regional Individual Standing Offers (RISO) valid for five (5) years.

1.2.4 It is PWGSC's intention to enter into two (2) Standing Offers, one highest ranked and one second ranked. In the event that there is only one (1) responsive offer received, one (1) RISO will be awarded.

1.2.5 The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), the Canada-European Union Comprehensive Economic and Trade Agreement (CETA), and the Canadian Free Trade Agreement (CFTA).

1.2.6 This RFSO allows offerors to use the epost Connect service provided by Canada Post Corporation to transmit their offers electronically. Offerors must refer to Part 2 of the RFSO entitled Offeror Instructions and Part 3 of the RFSO entitled Offer Preparation Instructions, for further information on using this method.

1.2.7 The Phased Offer Compliance Process applies to this requirement.

### 1.3 Security Requirements

There are security requirements associated with the requirement of the Standing Offer. For additional information, see Part 6 - Security, Financial and Insurance Requirements, and Part 7 - Standing Offer and Resulting Contract Clauses. For more information on personnel and organization security screening or security clauses, offerors should refer to the [Contract Security Program](http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html) of Public Works and Government Services Canada (<http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html>) website.

### 1.4 Debriefings

Offerors may request a debriefing on the results of the request for standing offers process. Offerors should make the request to the Standing Offer Authority within 15 working days of receipt of the results of the request for standing offers process. The debriefing may be in writing, by telephone or in person.

### 1.5 Anticipated migration to an e-Procurement Solution (EPS)

Canada is currently developing an online EPS for faster and more convenient ordering of goods and services. In support of the anticipated transition to this system and how it may impact any resulting Standing Offer that is issued under this solicitation, refer to 7.15 Transition to an e-Procurement Solution (EPS).

The Government of Canada's [press release](#) provides additional information.

## PART 2 - OFFEROR INSTRUCTIONS

### 2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the Request for Standing Offers (RFSO) by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Offerors who submit an offer agree to be bound by the instructions, clauses and conditions of the RFSO and accept the clauses and conditions of the Standing Offer and resulting contract(s).

The [2006](#) (2020-05-28) Standard Instructions - Request for Standing Offers - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the RFSO.

Subsection 5.4 of [2006](#), Standard Instructions - Request for Standing Offers - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days  
Insert: 180 days

### 2.2 Submission of Offers

Offers must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated in the RFSO.

Note: For offerors choosing to submit using epost Connect for offers closing at the Bid Receiving Unit in the National Capital Region (NCR) the email address is:

[tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca](mailto:tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca)

Note: Offers will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions [2006](#), or to send offers through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

Due to the nature of the Request for Standing Offers, transmission of offers by facsimile to PWGSC will not be accepted.

### 2.3 Former Public Servant

Contracts awarded to former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts awarded to FPS, offerors must provide the information required below before the issuance of a standing offer. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of offers is completed, Canada will inform the Offeror of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the offer non-responsive.

#### Definitions

For the purposes of this clause,

"former public servant" is any former member of a department as defined in the [Financial Administration Act](#) R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means a pension or annual allowance paid under the [Public Service Superannuation Act](#) (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the [Supplementary Retirement Benefits Act](#), R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the [Canadian Forces Superannuation Act](#), R.S., 1985, c. C-17, the [Defence Services Pension Continuation Act](#), 1970, c. D-3, the [Royal Canadian Mounted Police Pension Continuation Act](#), 1970, c. R-10, and the [Royal Canadian Mounted Police Superannuation Act](#), R.S., 1985, c. R-11, the [Members of Parliament Retiring Allowances Act](#), R.S. 1985, c. M-5, and that portion of pension payable to the [Canada Pension Plan Act](#), R.S., 1985, c. C-8.

#### Former Public Servant in Receipt of a Pension

As per the above definitions, is the Offeror a FPS in receipt of a pension? **YES** ( ) **NO** ( )

If so, the Offeror must provide the following information, for all FPS in receipt of a pension, as applicable:

- a. name of former public servant;
- b. date of termination of employment or retirement from the Public Service.

By providing this information, Offerors agree that the successful Offeror's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with [Contracting Policy Notice: 2012-2](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

### **Work Force Adjustment Directive**

Is the Offeror a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? **YES** ( ) **NO** ( )

If so, the Offeror must provide the following information:

- a. name of former public servant;
- b. conditions of the lump sum payment incentive;
- c. date of termination of employment;
- d. amount of lump sum payment;
- e. rate of pay on which lump sum payment is based;
- f. period of lump sum payment including start date, end date and number of weeks;
- g. number and amount (professional fees) of other contracts subject to the restrictions of a work force adjustment program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including Applicable Taxes.

### **2.4 Enquiries - Request for Standing Offers**

All enquiries must be submitted in writing to the Standing Offer Authority no later than ten (10) calendar days before the Request for Standing Offers (RFSO) closing date. Enquiries received after that time may not be answered.

Offerors should reference as accurately as possible the numbered item of the RFSO to which the enquiry relates. Care should be taken by offerors to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that offerors do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all offerors. Enquiries not submitted in a form that can be distributed to all offerors may not be answered by Canada.

## 2.5 Applicable Laws

The Standing Offer and any contract resulting from the Standing Offer must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Offerors may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their offer, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the offerors.

## 2.6 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential offerors to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages offerors to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
  - Office of the Procurement Ombudsman (OPO)
  - Canadian International Trade Tribunal (CITT)
- (c) Offerors should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Offerors should therefore act quickly when they want to challenge any aspect of the procurement process.

## PART 3 - OFFER PREPARATION INSTRUCTIONS

### 3.1 Offer Preparation Instructions

- If the Offeror chooses to submit its offer electronically, Canada requests that the Offeror submits its offer in accordance with section 08 of the 2006 standard instructions. The epost Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation. The offer must be gathered per section and separated as follows:

Section I: Technical Offer  
Section II: Financial Offer  
Section III: Certifications  
Section IV: Additional Information

- If the Offeror chooses to submit its offer in hard copies, Canada requests that the Offeror provides its offer in separately bound sections as follows:

Section I: Technical Offer four (4) hard copies  
Section II: Financial Offer one (1) hard copy  
Section III: Certifications four (4) hard copies  
Section IV: Additional Information one (1) hard copy

If there is a discrepancy between the wording of the soft copy on electronic media and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

- If the Offeror is simultaneously providing copies of its offer using multiple acceptable delivery methods, and if there is a discrepancy between the wording of any of these copies and the electronic

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copy provided through epost Connect service, the wording of the electronic copy provided through epost Connect service will have priority over the wording of the other copies.

Due to the nature of the RFSO, offers transmitted by facsimile will not be accepted.

If there is a discrepancy between the wording of the soft copy on electronic media and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the financial offer only. No prices must be indicated in any other section of the offer.

Canada requests that offerors follow the format instructions described below in the preparation of hard copy of their offer:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the RFSO.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573) (https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573). To assist Canada in reaching its objectives, Offerors should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

### **Section I: Technical Offer**

In their technical offer, offerors should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

### **Section II: Financial Offer**

Offerors must submit their financial offer in accordance with the Annex B, Basis of Payment.

#### **3.1.1 Electronic Payment of Invoices - Offer**

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex "E" Electronic Payment Instruments, to identify which ones are accepted.

If Annex "E" Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

#### **3.1.2 Exchange Rate Fluctuation**

[C3011T](#) (2013-11-06), Exchange Rate Fluctuation,

### **Section III: Certifications**

Offerors must submit the certifications and additional information required under Part 5.

## Section IV: Additional Information

### 3.1.3 Offeror's Proposed Sites or Premises Requiring Safeguarding Measures

- 3.1.3.1 As indicated in Part 6 under Security Requirements, the Offeror must provide the full addresses of the Offeror's and proposed individuals' sites or premises for which safeguarding measures are required for Work Performance:

Street Number / Street Name, Unit / Suite / Apartment Number  
City, Province, Territory / State  
Postal Code / Zip Code  
Country

- 3.1.3.2 The Company Security Officer must ensure through the [Contract Security Program](#) that the Offeror and proposed individual(s) hold a valid security clearance at the required level, as indicated in Part 6 – Security, Financial and Other Requirements.

## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 4.1 Evaluation Procedures

- (a) Offers will be assessed in accordance with the entire requirement of the Request for Standing Offers including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the offers.
- (c) Canada will use the Phased Offer Compliance described below.

#### 4.1.1 Phased Offer Compliance Process

##### 4.1.1.1 (2018-07-19) General

- (a) Canada is conducting the PBCP described below for this requirement.
- (b) Notwithstanding any review by Canada at Phase I or II of the PBCP, Offerors are and will remain solely responsible for the accuracy, consistency and completeness of their Offers and Canada does not undertake, by reason of this review, any obligations or responsibility for identifying any or all errors or omissions in Offers or in responses by a Offeror to any communication from Canada.

THE OFFEROR ACKNOWLEDGES THAT THE REVIEWS IN PHASE I AND II OF THIS PBCP ARE PRELIMINARY AND DO NOT PRECLUDE A FINDING IN PHASE III THAT THE OFFER IS NON-RESPONSIVE, EVEN FOR MANDATORY

REQUIREMENTS WHICH WERE SUBJECT TO REVIEW IN PHASE I OR II AND NOTWITHSTANDING THAT THE OFFER HAD BEEN FOUND RESPONSIVE IN SUCH EARLIER PHASE. CANADA MAY DEEM A OFFER TO BE NON-RESPONSIVE TO A MANDATORY REQUIREMENT AT ANY PHASE.

THE OFFEROR ALSO ACKNOWLEDGES THAT ITS RESPONSE TO A NOTICE OR A COMPLIANCE ASSESSMENT REPORT (CAR) (EACH DEFINED BELOW) IN PHASE I OR II MAY NOT BE SUCCESSFUL IN RENDERING ITS OFFER RESPONSIVE TO THE MANDATORY REQUIREMENTS THAT ARE THE SUBJECT OF THE NOTICE OR CAR, AND

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MAY RENDER ITS OFFER NON-RESPONSIVE TO OTHER MANDATORY REQUIREMENTS.

- (c) Canada may, in its discretion, request and accept at any time from a Offeror and consider as part of the Offer, any information to correct errors or deficiencies in the Offer that are clerical or administrative, such as, without limitation, failure to sign the Offer or any part or to checkmark a box in a form, or other failure of format or form or failure to acknowledge; failure to provide a procurement business number or contact information such as names, addresses and telephone numbers; inadvertent errors in numbers or calculations that do not change the amount the Offeror has specified as the price or of any component thereof that is subject to evaluation. This shall not limit Canada's right to request or accept any information after the offer solicitation closing in circumstances where the offer solicitation expressly provides for this right. The Offeror will have the time period specified in writing by Canada to provide the necessary documentation. Failure to meet this deadline will result in the Offer being declared non-responsive.
- (d) The PBCP does not limit Canada's rights under Standard Acquisition Clauses and Conditions (SACC) 2003 (2019-03-04) Standard Instructions – Goods or Services – Competitive Requirements nor Canada's right to request or accept any information during the solicitation period or after offer solicitation closing in circumstances where the offer solicitation expressly provides for this right, or in the circumstances described in subsection (c).
- (e) Canada will send any Notice or CAR by any method Canada chooses, in its absolute discretion. The Offeror must submit its response by the method stipulated in the Notice or CAR. Responses are deemed to be received by Canada at the date and time they are delivered to Canada by the method and at the address specified in the Notice or CAR. An email response permitted by the Notice or CAR is deemed received by Canada on the date and time it is received in Canada's email inbox at Canada's email address specified in the Notice or CAR. A Notice or CAR sent by Canada to the Offeror at any address provided by the Offeror in or pursuant to the Offer is deemed received by the Offeror on the date it is sent by Canada. Canada is not responsible for late receipt by Canada of a response, however caused.

#### **4.1.1.2 (2018-03-13) Phase I: Financial Offer**

- (a) After the closing date and time of this offer solicitation, Canada will examine the Offer to determine whether it includes a Financial Offer and whether any Financial Offer includes all information required by the solicitation. Canada's review in Phase I will be limited to identifying whether any information that is required under the offer solicitation to be included in the Financial Offer is missing from the Financial Offer. This review will not assess whether the Financial Offer meets any standard or is responsive to all solicitation requirements.
- (b) Canada's review in Phase I will be performed by officials of the Department of Public Works and Government Services.
- (c) If Canada determines, in its absolute discretion that there is no Financial Offer or that the Financial Offer is missing all of the information required by the offer solicitation to be included in the Financial Offer, then the Offer will be considered non-responsive and will be given no further consideration.
- (d) For Offers other than those described in c), Canada will send a written notice to the Offeror ("Notice") identifying where the Financial Offer is missing information. A Offeror, whose Financial Offer has been found responsive to the requirements that are reviewed at Phase I, will not receive a Notice. Such Offerors shall not be entitled to submit any additional information in respect of their Financial Offer.

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- (e) The Offerors who have been sent a Notice shall have the time period specified in the Notice (the "Remedy Period") to remedy the matters identified in the Notice by providing to Canada, in writing, additional information or clarification in response to the Notice. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the Notice.
- (f) In its response to the Notice, the Offeror will be entitled to remedy only that part of its Financial Offer which is identified in the Notice. For instance, where the Notice states that a required line item has been left blank, only the missing information may be added to the Financial Offer, except that, in those instances where the addition of such information will necessarily result in a change to other calculations previously submitted in its Financial Offer, (for example, the calculation to determine a total price), such necessary adjustments shall be identified by the Offeror and only these adjustments shall be made. All submitted information must comply with the requirements of this solicitation.
- (g) Any other changes to the Financial Offer submitted by the Offeror will be considered to be new information and will be disregarded. There will be no change permitted to any other Section of the Offeror's Offer. Information submitted in accordance with the requirements of this solicitation in response to the Notice will replace, in full, **only** that part of the original Financial Offer as is permitted above, and will be used for the remainder of the offer evaluation process.
- (h) Canada will determine whether the Financial Offer is responsive to the requirements reviewed at Phase I, considering such additional information or clarification as may have been provided by the Offeror in accordance with this Section. If the Financial Offer is not found responsive to the requirements reviewed at Phase I to the satisfaction of Canada, then the Offer shall be considered non-responsive and will receive no further consideration.
- (i) Only Offers found responsive to the requirements reviewed in Phase I to the satisfaction of Canada, will receive a Phase II review.

#### 4.1.1.3 (2018-03-13) Phase II: Technical Offer

- (a) Canada's review at Phase II will be limited to a review of the Technical Offer to identify any instances where the Offeror has failed to meet any Eligible Mandatory Criterion. This review will not assess whether the Technical Offer meets any standard or is responsive to all solicitation requirements. Eligible Mandatory Criteria are all mandatory technical criteria that are identified in this solicitation as being subject to the PBCP. Mandatory technical criteria that are not identified in the solicitation as being subject to the PBCP, will not be evaluated until Phase III.
- (b) Canada will send a written notice to the Offeror (Compliance Assessment Report or "CAR") identifying any Eligible Mandatory Criteria that the Offer has failed to meet. A Offeror whose Offer has been found responsive to the requirements that are reviewed at Phase II will receive a CAR that states that its Offer has been found responsive to the requirements reviewed at Phase II. Such Offeror shall not be entitled to submit any response to the CAR.
- (c) A Offeror shall have the period specified in the CAR (the "Remedy Period") to remedy the failure to meet any Eligible Mandatory Criterion identified in the CAR by providing to Canada in writing additional or different information or clarification in response to the CAR. Responses received after the end of the Remedy Period will not be considered by Canada, except in circumstances and on terms expressly provided for in the CAR.
- (d) The Offeror's response must address only the Eligible Mandatory Criteria listed in the

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CAR as not having been achieved, and must include only such information as is necessary to achieve such compliance. Any additional information provided by the Offeror which is not necessary to achieve such compliance will not be considered by Canada, except that, in those instances where such a response to the Eligible Mandatory Criteria specified in the CAR will necessarily result in a consequential change to other parts of the Offer, the Offeror shall identify such additional changes, provided that its response must not include any change to the Financial Offer.

- (e) The Offeror's response to the CAR should identify in each case the Eligible Mandatory Criterion in the CAR to which it is responding, including identifying in the corresponding section of the original Offer, the wording of the proposed change to that section, and the wording and location in the Offer of any other consequential changes that necessarily result from such change. In respect of any such consequential change, the Offeror must include a rationale explaining why such consequential change is a necessary result of the change proposed to meet the Eligible Mandatory Criterion. It is not up to Canada to revise the Offeror's Offer, and failure of the Offeror to do so in accordance with this subparagraph is at the Offeror's own risk. All submitted information must comply with the requirements of this solicitation.
- (f) Any changes to the Offer submitted by the Offeror other than as permitted in this solicitation, will be considered to be new information and will be disregarded. Information submitted in accordance with the requirements of this solicitation in response to the CAR will replace, in full, **only** that part of the original Offer as is permitted in this Section.
- (g) Additional or different information submitted during Phase II permitted by this section will be considered as included in the Offer, but will be considered by Canada in the evaluation of the Offer at Phase II only for the purpose of determining whether the Offer meets the Eligible Mandatory Criteria. It will not be used at any Phase of the evaluation to increase any score that the original Offer would achieve without the benefit of such additional or different information. For instance, an Eligible Mandatory Criterion that requires a mandatory minimum number of points to achieve compliance will be assessed at Phase II to determine whether such mandatory minimum score would be achieved with such additional or different information submitted by the Offeror in response to the CAR. If so, the Offer will be considered responsive in respect of such Eligible Mandatory Criterion, and the additional or different information submitted by the Offeror shall bind the Offeror as part of its Offer, but the Offeror's original score, which was less than the mandatory minimum for such Eligible Mandatory Criterion, will not change, and it will be that original score that is used to calculate any score for the Offer
- (h) Canada will determine whether the Offer is responsive for the requirements reviewed at Phase II, considering such additional or different information or clarification as may have been provided by the Offeror in accordance with this Section. If the Offer is not found responsive for the requirements reviewed at Phase II to the satisfaction of Canada, then the Offer shall be considered non-responsive and will receive no further consideration.
- (i) Only Offers found responsive to the requirements reviewed in Phase II to the satisfaction of Canada, will receive a Phase III evaluation.

#### 4.1.1.4 (2018-03-13) Phase III: Final Evaluation of the Offer

- (a) In Phase III, Canada will complete the evaluation of all Offers found responsive to the requirements reviewed at Phase II. Offers will be assessed in accordance with the entire requirement of the offer solicitation including the technical and financial evaluation criteria.

- (b) An Offer is non-responsive and will receive no further consideration if it does not meet all mandatory evaluation criteria of the solicitation.

#### 4.1.2 Technical Evaluation

##### 4.1.2.1 Mandatory Technical Criteria

	Mandatory Technical Criterion	Bid Preparation Instructions
<p><b>MT1</b></p>	<p>The Offer must demonstrate that in the past three (3) years (as of closing date of the RFSO), the Offeror has completed projects demonstrating they have provided the services in the field of Architectural “As-built” or “Existing Condition”; Computer Aid Design (CAD); Building Information Model (BIM); Computer Aid Facilities Management (CAFM); 3D Scanning services (Point-Cloud Data); as described in Annex A – Statement of Work (SOW) and its appendices A to H.</p> <p>The Offeror must provide:</p> <ul style="list-style-type: none"> <li>i. A brief description of three (3) completed projects over the last three (3) years (as of closing date of the RFSO) by the Offeror.</li> </ul> <p>One project each for: Architectural “As-built or “Existing Condition” (CAD); Building Information Model (BIM) Computer Aid Facilities Management (CAFM) and a brief description of one (1) completed project regarding 3D Scanning services.</p> <ul style="list-style-type: none"> <li>ii. For the above projects, include the names of senior personnel and project personnel who were involved as the project team and their respective responsibilities , as well as the scope, and budget for each work package involved;</li> <li>iii. The start date and completion date the services were provided for the listed projects;</li> <li>iv. Scope and services rendered, project objectives, constraints and deliverables;</li> <li>v. Methodologies and techniques used to provide the required services, and;</li> <li>vi. Client references – name, address, phone number and email of a client contact at the working level per project. Reference checks may be completed if deemed necessary. The reference must confirm that the Offeror has provided the services stated.</li> </ul>	<p>Maximum of three (3) projects will be evaluated. The projects will be evaluated in order of presentation. Projects above the “maximum will not be evaluated.</p> <p>Note: The same project may be used to demonstrate experience in RT3 and RT5.</p>
<p><b>MT2</b></p>	<p>Each proposed CAD and BIM Technical Experts must be certified with a college certificate or a university diploma in the field of architecture, civil engineering or interior design.</p>	<p>The Offeror must submit valid proof of certificate or diploma (for each proposed individual) with its offer as of the closing date of the RFSO.</p>

**The Phased Bid Compliance Process will apply to all mandatory technical criteria.**

#### 4.1.2.2 Point Rated Technical Criteria

Each responsive offer will be evaluated in accordance with the following Point Rated Technical Criteria.

All Offerors are advised that listing experience only, without providing any supporting data to describe when, where and how such experience was obtained, will not be considered to be “demonstrated” for the purpose of evaluation. All professional experience must be fully documented and demonstrated in the offer.

Rated Criteria	Points to be considered by evaluation committee
<p><b>RT1 Comprehension of Annex A - Statement of Work and its appendices (A to H):</b></p> <p>A demonstration that the Offeror understands the overall requirements for the services described in the RFSO, including specific deliverables, expected approaches, technical expectations, and coordination requirements, especially in delivering government projects.</p> <p><b>Maximum 5 points</b></p>	<p>A description of no more than three (3) pages, consisting of:</p> <ul style="list-style-type: none"> <li>• A narrative demonstrating the Offeror's understanding of the statement of services.</li> <li>• A narrative demonstrating the Offeror's understanding of the appendices.</li> <li>• A list of the Offeror's services which correspond with this requirement.</li> </ul>
<p><b>RT2 Offeror's approach and methodology</b></p> <p>How the Offeror will be organized and how their team will fit in the context of the existing structure of the company, and a clear indication of their approach and methodology for the provision of the services.</p> <p><b>Maximum 20 points</b></p>	<p>A description of no more than three (3) pages, consisting of:</p> <ul style="list-style-type: none"> <li>• Company organization, management, staffing approach; and organizational chart</li> <li>• Description of the Offeror's approach to the provision of services for small assignments and large complicated assignments while respecting deadlines;</li> <li>• Methodologies and techniques used to provide the required services.</li> <li>• The Offeror's ability to comply with the PWGSC CAD layering and drafting standard.</li> <li>• The Offeror's ability to comply with the PWGSC ecModel BIM standard.</li> <li>• Description of the Offeror's approach to Quality Assurance / Control of services.</li> <li>• The Offeror's ability to comply with Point-Cloud Data.</li> </ul>
<p><b>RT3 Experience and past performance of the Offeror:</b></p> <p>A demonstration that the Offeror has participated in a range of CAD/BIM projects which required the delivery of services consistent with those in this Standing Offer.</p> <p><b>Maximum 20 points</b></p>	<p>i) Relevant project descriptions, no more than one (1) page per project and one (1) additional page per project for CAD / BIM / 3D scan illustrations; consisting of:</p> <ul style="list-style-type: none"> <li>• A brief description for up to five (*5 maximum) significant projects completed/undertaken within the last three (3) years;</li> <li>• A range of as-built or existing condition or record project from small to large</li> </ul>

	<p>rehabilitations, renovations of a broad variety of building types and work spaces. Projects involving special characteristics, such as difficult site conditions, heritage requirements, or public sector clients should be noted; and</p> <ul style="list-style-type: none"> <li>• A clear demonstration of the Offeror's ability to provide the services.</li> </ul> <p>ii) Team composition:</p> <ul style="list-style-type: none"> <li>• The name, position and role of each team member;</li> <li>• Team members' responsibilities and areas of expertise.</li> </ul> <p><b>*The more projects (5 maximum) references provided, the better chances of obtaining more points.</b></p>
<p><b>RT4 Experience and expertise of proposed personnel</b></p> <p>A demonstration that the Offeror has personnel with the capability, capacity, expertise and relevant experience to provide the services/</p> <p><b>Maximum 10 points</b></p>	<p>i) To carry out the work on this requirement, the Offeror must have a minimum resource of seven (7) personnel as identified below. The Offeror must submit detailed CVs of no more than two (2) pages per person, included in the appendices to the submission. Maximum of ten CVs will be evaluated. Proposed resources can be multi-trained, however, the Offeror must keep a minimum of seven (7) personnel at any given time.</p> <ul style="list-style-type: none"> <li>• A minimum of one (1) Project Manager with a minimum of five (5) years of experience in the provision of the services;</li> <li>• A minimum of one (1) CAD Technical Experts with a minimum of three (3) years' experience in the provision of the services;</li> <li>• A minimum of two (2) BIM Technical Experts with a minimum of one (1) year of experience in the provision of the services;</li> <li>• A minimum of two (2) Building Data Capture technicians with a minimum of one (1) year of experience in building data collection;</li> <li>• A minimum of one (1) 3D Scanner Technician with a minimum of two (2) years of experience in building data collection; and</li> <li>• A clear description of all proposed personnel's educational qualifications, professional affiliations, years of experience in the field and the number of years with the firm.</li> </ul>

<p><b>RT5.1 Knowledge of Architectural As-built or Existing Condition (CAD) Drawings</b></p> <p><i>Maximum 25 points</i></p>	<p>A working knowledge of Architectural As-built or Existing Condition. The Offeror must include with their proposal/submission:</p> <p>The Offeror must provide two (2) examples of the following category:</p> <ul style="list-style-type: none"> <li>• Architectural As-built or Existing Condition (CAD)       <ol style="list-style-type: none"> <li>i. A brief narrative, no more than one (1) page for each example of projects completed by the Offeror during the last three (3) years. Include a description of the specific services provided on the project along with a description of the specific responsibilities of each pf the personnel involved on the project.</li> <li>ii. A hard copy of on-site data collection site notes, site measurements and sketches. ( no more than two (2) pages (11x17)</li> <li>iii. A .DWG file format (no more than two (2) files for each example) of Architectural As-built or Existing Condition project. The .DWG file must conform to the layering requirements as per Appendix D - PWGSC National CAD Standards. It is to be noted that for the purpose of this item that an Offeror may depict the individual drawing elements as per the Offeror's standard office drawing methods (physical transfer format – USB portable drive.)</li> </ol> </li> </ul>
<p><b>RT5.2 Knowledge of Existing Condition Building Information Model (B.I.M.) (ecModel)</b></p> <p><i>Maximum 25 points</i></p>	<p>A working knowledge of Existing Condition (Building Information Model) B.I.M or ecModel</p> <p><i>The offeror must provide two (2) examples of the following category:</i></p> <ul style="list-style-type: none"> <li>• Building Information Model (BIM)       <ol style="list-style-type: none"> <li>i. A brief narrative, (no more than one (1) page) of each examples of the BIM project completed by the Offeror during the last three (3) years. Include a description of the specific services provided on the project along with a description of the specific responsibilities of each of the personnel involved on the project.</li> <li>ii. A file copy of point clouds (*.PTS) on-site data collection records and (site measurements).</li> <li>iii. A .RVT two (2) files format for a BIM project. All content of the .RVT file must conform to the BIM requirements as per Appendix G – ecBIM standard - Requirements (physical transfer format – USB</li> </ol> </li> </ul>

	portable drive).
<p><b>RT5.3 Knowledge of Computer Aid Facilities Management Drawings (CAFM)</b></p> <p><b>Maximum 5 points</b></p>	<p>A working knowledge of Computer Aid Facilities Management Drawings.</p> <p><i>The offeror must provide two (2) examples of the following category:</i></p> <ul style="list-style-type: none"> <li>• Computer Aid Facilities Management (CAFM)</li> </ul> <p>i. A brief narrative, (no more than one (1) page) for each examples of project completed by the Offeror during the last three (3) years. Include a description of the specific services provided on the project along with a description of the specific responsibilities of each of the personnel involved on the project.</p> <p>ii. A hard copy of on-site data collection records of the CAFM site notes, site measurements, sketches and photos. (no more than two (2) pages per project 11x17)</p> <p>iii. A .DWG file format (no more than two (2) files for each example) CAFM. All content of the .DWG file must conform to the layering requirements as per Appendix D - PWGSC National CAD Standards. It is to be noted that for the purpose of this item that an Offeror may depict the individual drawing elements as per the Offeror's standard office drawing methods (physical transfer format – USB portable drive)</p>
<p><b>RT5.4 Knowledge of 3D scanning or Existing Condition point cloud data.</b></p> <p><b>Maximum 25 points</b></p>	<p>A working knowledge of 3D scanning services of Existing Condition buildings and site. The Offeror must include with their proposal/submission:</p> <p><i>The offeror must provide two (2) examples of the following category:</i></p> <ul style="list-style-type: none"> <li>• 3D scanning services of Existing Condition (point-cloud data)</li> </ul> <p>i. A brief narrative, (no more than one (1) page) for each examples of project completed by the Offeror during the last five (5) years. Include a description of the specific services provided on the project along with a description of the specific responsibilities of each of the personnel involved on the project.</p> <p>ii. A .RCP file format (no more than two (2) files for each example) of point-cloud data of Existing Condition project. The .RCP file must conform Appendix G – ecBIM Standards. (physical transfer</p>

	format – USB portable drive.)
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**Offerors MUST achieve a minimum score of ninety four (94) points out of the one hundred and thirty five (135) points available in order to be considered responsive.**

**4.1.2.3 Point Rated Technical Criteria – Rating Grid**

Point Rated Technical Criteria will be rated in accordance with the following table:

<b>RT 1 Comprehension of the Statement of Work and its Appendices (max 5 points)</b>	
0 points	Information not provided
1 point	Insufficient comprehension information provided
2 points	Limited comprehension of the SoW
3 points	Satisfactory comprehension of the SoW
4 points	Good comprehension of the SoW
5 points	Extensive comprehension of the SoW

<b>RT2 Offeror's approach and methodology (max 20 points)</b>	
0 points	Information not provided
3 points	Insufficient information provided
7 points	Limited approach and methodology
10 points	Satisfactory approach and methodology in providing these services
14 points	Good understanding of the approach and methodology in providing these services
17 points	Very good understanding and knowledge of the approach and methodology in providing these services
20 points	Extensive understanding and knowledge of the approach and methodology in providing these services

<b>RT3 Experience and past performance of the offeror (max 20 points)</b>	
0 points	Information not provided
3 points	Insufficient information provided
7 points	Limited Experience and past performance
10 points	Satisfactory Experience and past performance in providing these services
14 points	Good Experience and past performance in providing these services
17 points	Very good Experience and past performance in providing these services
20 points	Extensive Experience and past performance in providing these services

<b>RT4 Experience and expertise of proposed personnel (max 10 points)</b>	
0 points	Information not provided
2 points	Insufficient Experience and expertise of proposed personnel
4 points	Limited Experience and expertise of proposed personnel
6 points	Satisfactory Experience and expertise of proposed personnel
8 points	Good Experience and expertise of proposed personnel
10 points	Extensive Experience and expertise of proposed personnel

<b>RT5.1 Knowledge of Architectural as-built or Existing Condition (CAD) Drawings. (max 25 points)</b>	
0 points	Information not provided
4 points	Insufficient information provided
9 points	Limited Knowledge of Architectural as-built Existing Condition (CAD) Drawings
13 points	Satisfactory Knowledge of Architectural as-built Existing Condition (CAD) Drawings
18 points	Good Knowledge of Architectural as-built Existing Condition (CAD) Drawings
21 points	Very good Knowledge of Architectural as-built Existing Condition (CAD) Drawings
25 points	Extensive Knowledge of Architectural as-built Existing Condition (CAD) Drawings

<b>RT5.2 Knowledge of Existing Condition Building Information Model (B.I.M.) (max 25 points)</b>	
0 points	Information not provided
4 points	Insufficient information provided
9 points	Limited Knowledge of Existing Condition Building Information Model (B.I.M.)
13 points	Satisfactory Knowledge of Existing Condition Building Information Model (B.I.M.)
18 points	Good Knowledge of Existing Condition Building Information Model (B.I.M.)
21 points	Very good Knowledge of Existing Condition Building Information Model (B.I.M.)
25 points	Extensive Knowledge of Existing Condition Building Information Model (B.I.M.)

<b>RT5.3 Knowledge of Computer Aided Facilities Management Drawings (CAFM) (max 5 points)</b>	
0 points	Information not provided
1 point	Insufficient comprehension information provided
2 points	Limited Knowledge of Computer Aid Facilities Management Drawings (CAFM)
3 points	Satisfactory Knowledge of Computer Aid Facilities Management Drawings (CAFM)
4 points	Good Knowledge of Computer Aid Facilities Management Drawings (CAFM)
5 points	Extensive Knowledge of Computer Aid Facilities Management Drawings (CAFM)

<b>RT5.4 Knowledge of 3D scanning or Existing Condition point cloud data. (max 25 points)</b>	
0 points	Information not provided
4 points	Insufficient information provided
9 points	Limited Knowledge of 3D scanning or Existing Condition point cloud data.
13 points	Satisfactory Knowledge of 3D scanning or Existing Condition point cloud data.
18 points	Good Knowledge of 3D scanning or Existing Condition point cloud data.
21 points	Very good Knowledge of 3D scanning or Existing Condition point cloud data.
25 points	Extensive Knowledge of 3D scanning or Existing Condition point cloud data.

#### 4.1.3 Financial Evaluation

- 4.1.3.1 Offerors must complete and submit a Financial Offer attached in response to this RFSO (Refer to Annex B – Basis of Payment). Upon completion of the Technical Evaluation, financial offers of all responsive offers will be evaluated.

SACC Manual Clause [M0220T](#) (2016-01-28), Evaluation of Price-Bid

## 4.2 Basis of Selection

4.2.1 To be declared responsive, an offer must:

- a) Comply with all the requirements of the Request for Standing Offers (RFSO);
  - b) Meet all mandatory technical evaluation criteria; and
  - c) Obtain the required minimum of 70 percent overall of the points for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of 135 points.
- 4.2.2 Offers not meeting (a) or (b) or (c) above will be declared non-responsive. Neither the responsive offer that receives the highest number of points nor the one that proposed the lowest price will necessarily be accepted.
- 4.2.3 The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 70% for the technical merit and 30% for the price.
- 4.2.4 To establish the technical merit score, the overall technical score for each responsive offer will be determined as follows: total number of points obtained multiplied by the ratio of 70%.
- 4.2.5 To establish the pricing score, each responsive offer will be prorated against the lowest evaluated price and the ratio of 30%.
- 4.2.6 For each responsive offer, the technical merit score and the pricing score will be added to determine its total score.
- 4.2.7 Responsive offers will be ranked in order from the highest to the lowest using the total score for two (2) offerors with the highest ranks and will be recommended for issuance of a standing offer.

The table below illustrates an example of evaluation for 70% technical and 30% price:

Technical and Price Evaluation	Offeror A	Offeror B	Offeror C	Offeror D	Offeror E
<b>A) Technical Rating (x/100)</b>	80	50	75	90	95
<b>B) Technical Merit Score = (Technical Rating x 70%)</b>	56	Non-responsive (did not achieve pass mark)	52.5	63	66.5
<b>C) Combined Rate (Project Leader, 3D Scanner Technician, Building Data Capture Technician, BIM Technical Expert and CAD Technical Expert)</b>	\$175	N/A	\$328	\$112	\$600
<b>D) Price Rating = Lowest Combined Rate (based from all responsive offers) divided by the Combined Rate (from each responsive offer) = (112\$/ ) x 100 points</b>	64	N/A	34	100	18
<b>E) Pricing Score = D x 30% (Price Rating x 30%)</b>	19.20	N/A	10.24	30.00	5.4
<b>F) Total Score = B + E</b>	75.20	N/A	62.74	93.00	71.9
<b>G) Rank</b>	2		4	1	3

## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Offerors must provide the required certifications and additional information to be issued a standing offer.

The certifications provided by offerors to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare an offer non-responsive, will have the right to set-aside a standing offer, or will declare a contractor in default if any certification made by the Offeror is found to be untrue whether made knowingly or unknowingly during the offer evaluation period, during the Standing Offer period, or during the contract period.

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The Standing Offer Authority will have the right to ask for additional information to verify the Offeror's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Standing Offer Authority will render the offer non-responsive, result in the setting aside of the Standing Offer or constitute a default under the Contract.

## **5.1 Certifications Required with the Offer**

Offerors must submit the following duly completed certifications as part of their offer.

### **5.1.1 Integrity Provisions - Declaration of Convicted Offences**

In accordance with the Integrity Provisions of the Standard Instructions, all offerors must provide with their offer, **if applicable**, the declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

## **5.2 Certifications Precedent to the Issuance of a Standing Offer and Additional Information**

The certifications and additional information listed below should be submitted with the offer, but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Standing Offer Authority will inform the Offeror of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame provided will render the offer non-responsive.

### **5.2.1 Integrity Provisions – Required Documentation**

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Offeror must provide the required documentation, as applicable, to be given further consideration in the procurement process.

#### **5.2.2 Federal Contractors Program for Employment Equity - Standing Offer Certification**

By submitting an offer, the Offeror certifies that the Offeror, and any of the Offeror's members if the Offeror is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list ) available at the bottom of the page of the [Employment and Social Development Canada-Labour's](https://www.canada.ca/en/employment-social-development/canada-labour's) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#s4>).

Canada will have the right to declare an offer non-responsive, or to set-aside a Standing Offer, if the Offeror, or any member of the Offeror if the Offeror is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of issuing of a Standing Offer or during the period of the Standing Offer.

#### **5.2.3 Additional Certifications Precedent to Issuance of a Standing Offer**

##### **5.2.3.1 Status and Availability of Resources**

The Offeror certifies that, should it be issued a standing offer as a result of the Request for Standing Offer, every individual proposed in its offer will be available to perform the Work resulting from a call-up against the Standing Offer as required by Canada's representatives and at the time specified in a call-up or agreed to with Canada's representatives. If for reasons beyond its control, the Offeror is unable to provide the services of an individual named in its offer, the Offeror may propose a substitute with similar qualifications and experience. The Offeror must advise the Standing Offer Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the

purposes of this clause, only the following reasons will be considered as beyond the control of the Offeror: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Offeror has proposed any individual who is not an employee of the Offeror, the Offeror certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Offeror must, upon request from the Standing Offer Authority, provide a written confirmation, signed by the individual, of the permission given to the Offeror and of his/her availability. Failure to comply with the request may result in the offer being declared non-responsive.

### 5.2.3.3 Education and Experience

The Offeror certifies that all the information provided in the résumés and supporting material submitted with its offer, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Offeror to be true and accurate. Furthermore, the Offeror warrants that every individual offered by the Offeror for the requirement is capable of performing the Work resulting from a call-up against the Standing Offer.

## PART 6 - SECURITY, FINANCIAL AND INSURANCE REQUIREMENTS

### 6.1 Security Requirements

1. Before issuance of a standing offer, the following conditions must be met:
  - (a) the Offeror must hold a valid organization security clearance as indicated in Part 7A - Standing Offer;
  - (b) the Offeror's proposed individuals requiring access to classified or protected information, assets or sensitive work sites must meet the security requirements as indicated in Part 7A - Standing Offer;
  - (c) the Offeror must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites;
  - (d) the Offeror's proposed location of work performance and document safeguarding must meet the security requirements as indicated in Part 7A - Standing Offer;
  - (e) the Offeror must provide the addresses of proposed sites or premises of work performance and document safeguarding as indicated in Part 3 - Section IV Additional Information.
2. Offerors are reminded to obtain the required security clearance promptly. Any delay in the issuance of a standing offer to allow the successful Offeror to obtain the required clearance will be at the entire discretion of the Standing Offer Authority.
3. For additional information on security requirements, offerors should refer to the [Contract Security Program](http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html) of Public Works and Government Services Canada (<http://www.tpsgc-pwgsc.gc.ca/esc-src/introduction-eng.html>) website.

### 6.2 Employee Information for Security

The Offeror should specify the following information regarding employees proposed in Part 4, Technical Evaluation to provide services against any resulting contract.

	LEGAL NAME (First and Last)	DATE OF BIRTH (Day/Month/Year)	LEVEL OF SECURITY CLEARANCE	SECURITY CLEARANCE REFERENCE NUMBER
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

**6.3 Insurance Requirements**

The Offeror must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Offeror, if issued a standing offer as a result of the request for standing offer, can be insured in accordance with the Insurance Requirements specified in Annex D.

If the information is not provided in the offer, the Standing Offer Authority will so inform the Offeror and provide the Offeror with a time frame within which to meet the requirement. Failure to comply with the request of the Standing Offer Authority and meet the requirement within that time period will render the offer non-responsive.

**PART 7 - STANDING OFFER AND RESULTING CONTRACT CLAUSES**

**A. STANDING OFFER**

**7.1 Offer**

7.1.1 The Offeror offers to perform the Work in accordance with the Statement of Work at Annex A and its appendixes (A to H) at Annex A.

**7.2 Security Requirements**

7.2.1 The following security requirements (SRCL and related clauses provided by the Contract Security Program) apply and form part of the Standing Offer.

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid Designated Organization Screening (DOS) with approved Document Safeguarding at the level of PROTECTED A, issued by the Contract Security Program (CSP) of the Industrial Security Sector (ISS), Public Works and Government Services (PWGSC).
2. The Contractor/Offeror personnel requiring access to PROTECTED information, assets or work site(s) must EACH hold a valid RELIABILITY STATUS, granted or approved by the CSP/ISS/PWGSC.
3. The Contractor MUST NOT utilize its Information Technology systems to electronically process, produce or store PROTECTED information until the CSP/ISS/PWGSC has issued written approval. After approval has been granted or approved, these tasks may be performed at the level of PROTECTED A including an IT Link at the level of PROTECTED A.

4. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of the CSP/ISS/PWGSC.
5. The Contractor/Offeror must comply with the provisions of the:
  - (a) Security Requirements Check List and security guide (if applicable), attached at Annex C;
  - (b) Industrial Security Manual (Latest Edition)

### **7.2.2 Offeror's Sites or Premises Requiring Safeguarding**

- 7.2.2.1 Where safeguarding measures are required in the performance of the Work, the Offeror must diligently maintain up-to-date the information related to the Offeror's and proposed individuals' sites or premises for the following addresses:

Street Number / Street Name, Unit / Suite / Apartment Number  
City, Province, Territory / State  
Postal Code / Zip Code  
Country

- 7.2.2.2 The Company Security Officer must ensure through the [Contract Security Program](#) that the Offeror and individual(s) hold a valid security clearance at the required level.

### **7.3 Standard Clauses and Conditions**

All clauses and conditions identified in the Standing Offer and resulting contract(s) by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](#) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

#### **7.3.1 General Conditions**

[2005](#) (2017-06-21) General Conditions - Standing Offers - Goods or Services, apply to and form part of the Standing Offer.

#### **7.3.2 Standing Offers Reporting**

The Offeror must compile and maintain records on its provision of goods and services to Canada under contracts resulting from the Standing Offer. This data must include all purchases done by Canada, including those acquired and paid for by Canada acquisition cards.

The Offeror must provide this data in accordance with the reporting requirements detailed in annex E entitled Quarterly Usage Report. If some data is not available, the reason must be indicated in the report. If no goods or services is provided during a given period, the Offeror must provide a "nil" report.

The data must be submitted on a quarterly basis to the Standing Offer Authority.

The quarterly reporting periods are defined as follows:

- first quarter: April 1 to June 30
- second quarter: July 1 to September 30
- third quarter: October 1 to December 31
- fourth quarter: January 1 to March 31

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The data must be submitted to the Standing Offer Authority no later than fifteen (15) calendar days after the end of the reporting period.

#### **7.4 Term of Standing Offer**

##### **7.4.1 Period of the Standing Offer**

The period for making call-ups against the Standing Offer is from \_\_\_\_\_ to \_\_\_\_\_.

#### **7.5 Authorities**

##### **7.5.1 Standing Offer Authority**

The Standing Offer Authority is:

Name: Philip Cowell  
Title: Supply Specialist  
Public Works and Government Services Canada  
Acquisitions Branch  
Directorate: Real Property Contracting Directorate  
Telephone: 613-296-1922  
E-mail address: philip.cowell@tpsgc-pwgsc.gc.ca

The Standing Offer Authority is responsible for the establishment of the Standing Offer, its administration and its revision, if applicable. Upon the making of a call-up, as Contracting Authority, he is responsible for any contractual issues relating to individual call-ups made against the Standing Offer by any Identified User.

##### **7.5.2 Project Authority**

The Project Authority for the Standing Offer is: (to be determined at issuance of SO)

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Telephone: \_\_\_\_ - \_\_\_\_ - \_\_\_\_\_  
E-mail address: \_\_\_\_\_

The Project Authority is the representative of the department or agency for whom the Work will be carried out pursuant to a call-up under the Standing Offer and is responsible for all the technical content of the Work under the resulting Contract.

##### **7.5.3 Offeror's Representative**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Telephone: \_\_\_\_ - \_\_\_\_ - \_\_\_\_\_  
E-mail address: \_\_\_\_\_

#### **7.6 Proactive Disclosure of Contracts with Former Public Servants**

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be

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reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2012-2](#) of the Treasury Board Secretariat of Canada.

## 7.7 Identified Users

The Identified User authorized to make call-ups against the Standing Offer is: Geomatics Services, Real Property Branch

## 7.8 Call-up Procedures – Right of First Refusal

### *For 2 Standing Offers issued*

The PWGSC Project Authority will establish the Scope of Services to be performed at the time of the Call-up. The highest ranked Offeror shall be given first consideration. Should that Offeror be deemed unable to carry out the proposed services due to the requirement time frame, the next highest ranked Offeror would be approached.

### *For 1 Standing Offer issued*

The PWGSC Project Authority will establish the Scope of Work to be performed under each individual Call-up based on the pre-established rates identified in the Basis of Payment. Once the number of hours are accepted, the amount of the Call-up will be established by multiplying the number of hours by the appropriate firm rates contained in the Standing Offer.

## 7.9 Call-up Instrument

The Work will be authorized or confirmed by the Identified User(s) using the duly completed forms or their equivalents as identified in paragraphs 2 and 3 below, or by using Canada acquisition cards (Visa or MasterCard) for low dollar value requirements.

1. Call-ups must be made by Identified Users' authorized representatives under the Standing Offer and must be for goods or services or combination of goods and services included in the Standing Offer at the prices and in accordance with the terms and conditions specified in the Standing Offer.
2. Any of the following forms could be used which are available through [PWGSC Forms Catalogue](#) website:
  - PWGSC-TPSGC 942 Call-up Against a Standing Offer
  - PWGSC-TPGSC 942-2 Call-up Against a Standing Offer - Multiple Delivery
  - PWGSC-TPSGC 944 Call-up Against Multiple Standing Offers (English version)
  - PWGSC-TPSGC 945 Commande subséquente à plusieurs offres à commandes (French version)

or

3. An equivalent form or electronic call-up document which contains at a minimum the following information:
  - standing offer number;
  - statement that incorporates the terms and conditions of the Standing Offer;
  - description and unit price for each line item;
  - total value of the call-up;
  - point of delivery;
  - confirmation that funds are available under section 32 of the Financial Administration Act;
  - confirmation that the user is an Identified User under the Standing Offer with authority to enter into a contract.

## 7.10 Limitation of Call-ups

Individual call-ups against the Standing Offer must not exceed \$400,000.00 (Applicable Taxes included).

## 7.11 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- a) the call up against the Standing Offer, including any annexes;
- b) the articles of the Standing Offer;
- c) the general conditions 2005 (2017-06-21), General Conditions - Standing Offers - Goods or Services
- e) the general conditions 2035 (2020-05-28), General Conditions - Higher Complexity - Services;
- f) Annex A, Statement of Work;
- g) Annex B, Basis of Payment;
- h) Annex C, Security Requirements Check List;
- i) Annex D, Insurance Requirements;
- j) the Offeror's offer dated \_\_\_\_\_ (*insert date of offer*), (*if the offer was clarified or amended, insert at the time of issuance of the offer: "as clarified on \_\_\_\_\_" or "as amended on \_\_\_\_\_" and insert date(s) of clarification(s) or amendment(s) if applicable*).

## 7.12 Certifications and Additional Information

### 7.12.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Offeror with its offer or precedent to issuance of the Standing Offer (SO), and the ongoing cooperation in providing additional information are conditions of issuance of the SO and failure to comply will constitute the Offeror in default. Certifications are subject to verification by Canada during the entire period of the SO and of any resulting contract that would continue beyond the period of the SO.

### 7.12.2 SACC Manual Clauses

#### M3020C (2016-01-28), Status of Availability of Resources – Standing Offer

If for reasons beyond its control, the Offeror is unable to provide the services of an individual named in its offer, the Offeror may propose a substitute with similar qualifications and experience. The Offeror must advise the Standing Offer Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Offeror: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Offeror is unable to provide a substitute with similar qualifications and experience, Canada may set aside the standing offer.

## 7.13 Applicable Laws

The Standing Offer and any contract resulting from the Standing Offer must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

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## 7.14 Transition to an e-Procurement Solution (EPS)

During the period of the Standing Offer, Canada may transition to an EPS for more efficient processing and management of individual call-ups for any or all of the SO's applicable goods and services. Canada reserves the right, at its sole discretion, to make the use of the new e-procurement solution mandatory.

Canada agrees to provide the Offeror with at least a three-month notice to allow for any measures necessary for the integration of the Offer into the EPS. The notice will include a detailed information package indicating the requirements, as well as any applicable guidance and support.

If the Offeror chooses not to offer their goods or services through the e-procurement solution, the Standing Offer may be set aside by Canada.

## B. RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from a call-up against the Standing Offer.

### 7.1 Statement of Work

The Contractor must perform the Work described in the call-up against the Standing Offer.

### 7.2 Standard Clauses and Conditions

#### 7.2.1 General Conditions

[2035](#) (2020-05-28), General Conditions - Higher Complexity - Services, apply to and form part of the Contract.

Section 17, Interest on Overdue Accounts, of [2035](#) (2020-05-28), General Conditions - Higher Complexity - Services will not apply to payments made by credit cards.

### 7.3 Term of Contract

#### 7.3.1 Period of the Contract

The work must be completed in accordance with the call-up against the Standing Offer.

### 7.4 Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a [Public Service Superannuation Act](#) (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with [Contracting Policy Notice: 2012-2](#) of the Treasury Board Secretariat of Canada.

### 7.5 Payment

#### 7.5.1 Basis of Payment

The Contractor will be paid firm hourly rates specified at Annex B – Basis of Payment for work performed in accordance with the Contract. Applicable taxes are extra.

### 7.5.2 Limitation of Expenditure

1. Canada's total liability to the Contractor under the Contract must not exceed \$ \_\_\_\_\_. (To be determined at issuance of SO). Customs duties are included and Applicable Taxes are extra.
2. No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
  - a. when it is 75% committed, or
  - b. four months before the contract expiry date, or
  - c. as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,

whichever comes first.

3. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

### 7.5.3 Method of Payment

- a) Payment by Canada for the Work will be made following delivery, inspection and acceptance of the Work and upon presentation of invoices and any other substantiating documentation as Canada requires.
- b) Invoices must be submitted in accordance with the instructions contained in the article entitled "Invoicing Instructions"
- c) Travel and Living Expenses – Travel and living expenses must be included in the base fee. No travel outside the National Capital Region is anticipated for this requirement.
- d) Payment to the Contractor:
  - i. Where delivery of services under a call-up will be less than 60 days, two invoices will be accepted; one at seventy-five (75) percent completion, represented by submission of the draft final report and one for the remaining twenty five (25) percent upon completion and receipt of the final report.
  - ii. Where delivery of services under a call-up will be more than 60 days, the Contractor shall be entitled to receive progress payments at monthly or other agreed intervals. Such payments shall be made no later than the due date. The due date shall be the 30<sup>th</sup> day of the following receipt of invoice.

The monthly progress payment shall be calculated based on percentage task completion and/or productive hours performed multiplied by the appropriate hourly rate indicated in Annex B – Basis of Payment. The sum total of progress payments against any call-up shall not exceed 90% of the fixed lump sum established for the call-up.

Upon the satisfactory completion of all Services, the amount due, less any payments already made, shall be paid to the Contractor no later than 30 days after receipt of the invoice.

- iii. Invoice Submission – Invoice shall be delivered to the Project Authority in the agreed format with sufficient detail and information to permit verification and substantiation as requested from time to time. The invoice shall also identify, as separate items:

- (a) The amount of the payment being claimed for Services satisfactorily performed;
- (b) The amount for any tax calculated in accordance with the applicable federal legislation; and
- (c) The total amount which shall be the sum of the amounts referred to in (a) and (b) above.

The amount of the tax shown on the invoice shall be paid by Canada to the Contractor in addition to the amount of the payment for Services satisfactorily performed.

#### **7.5.4 SACC Manual Clauses**

A9117C (2007-11-30) T1204 – Direct Request by Customer Department

#### **7.5.5 Electronic Payment of Invoices – Call-up**

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Visa Acquisition Card;
- b. MasterCard Acquisition Card;
- c. Direct Deposit (Domestic and International);
- d. Electronic Data Interchange (EDI);
- e. Wire Transfer (International Only);
- f. Large Value Transfer System (LVTS) (Over \$25M)

#### **7.6 Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

Each invoice must be supported by:

- a. a copy of time sheets to support the time claimed;
  - b. a copy of the release document and any other documents as specified in the Contract;
2. Invoices must be distributed as follows:
    - a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.

#### **7.7 Insurance – Specific Requirements**

The Contractor must comply with the insurance requirements specified in Annex D . The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. For Canadian-based Contractors, coverage must be placed with an Insurer licensed to carry out business in Canada, however, for Foreign-based Contractors, coverage must be placed with an Insurer with an A.M. Best Rating no less than "A-". The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

## **7.8 Standard of Care**

In performing the services, the Contractor shall provide and exercise the standard of care, skill and diligence required by customarily accepted professional practices and procedures developed by professional bodies in the performance of similar services at the time when and at the location in which the services are provided.

## **7.9 Canadian Forces Site Regulations**

The Contractor must comply with all standing orders or other regulations, instructions and directives in force on the site where the Work is performed.

## **7.10 Government Site Regulations**

The Contractor must comply with all regulations, instructions and directives in force on the site where the Work is performed.

## **7.11 Dispute Resolution**

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.
- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".

## **7.12 Pre-Commencement Meeting**

A pre-commencement meeting is mandatory for the Contractor prior to commencing any work and minutes of the meeting shall be taken. The time and place of this meeting will be determined by the Departmental Representative.

## **1 Background**

PSPC - Geomatics Services partial mandate is to manage spatial information on behalf of Real Property with procedures, processes and computer application technologies that support departmental programs since 1994. The spatial information management program can be credited with advancing project work, creating a faster turnaround of occupancy calculations, reducing duplication, promoting effective internal communication and making the task of tenant Facilities Management services much easier to deliver.

The National Capital Area (NCA) Geomatics "existing condition" base building and update program is responsible for the maintenance and provision of standardized electronic drawing files (CAD/BIM) for the entire PSPC inventory of owned, lease-to-purchase, leased, licensed, and secondary interest assets. The full range of building information covers our owned asset inventory, which is used for architecture, engineering and property management services, while the complete inventory covers architectural elements for office accommodation and leasing activities throughout the life cycle of all assets.

The Contractor will be required to conduct on-site inspections and review activities, measurement and recording of new or revised building and site elements. Additional data may be required during collection such as "hand sketches", cross-section, details, interior and exterior 3D scanning point-clouds, surveyed control network or other type of data capture. The Contractor will also be required to produce and make corrections to existing control network, AutoCAD floor plans and full and partial BIM models in Revit. The data collection method will be identified and explained in writing at project startup meetings.

## **2 Project Information**

### **2.1 Initial Project Meeting and Other Project Meetings**

The Contractor is required to attend an initial project information meeting at which time the Project Authority will provide the Contractor with an instruction or list of facilities and the type of work required as summarized below. The Contractor Project Manager will develop a project schedule with milestones that includes our quality assurance process.

Services are to be provided when required and as requested by the Project Authority, including any or a combination of the following:

- Site verification and measurement data collection activities, stationary and mobile 3D scanning and control networks survey set up.
- Drawing creation or update of "existing condition" floor plans using AutoCAD®.
- Modelling creation or update of "existing condition" Building Information Modelling (ecBIM) using IFC compliant Revit®.
- Drawing creation or update of office areas, furniture, equipment and occupancy information.

#### **2.1.1 Additional Coverage**

The project "Scope of Work" may require a specialized resources to work in collaboration with PSPC team for a special projects or tasks at a government building location. The resource(s) time, disbursement and travel will be paid in accordance with the "*Basis of Payment*."

### **2.1.2 Minutes of Project Meetings**

The PSPC Project Authority will prepare minutes for the initial project meeting, which will be verified by the Contractor's Project Manager. On subsequent project meetings, the party who initiates the meeting will prepare the minutes and the second party will verify the minutes. A sample will be provided.

### **3 Project Standards, Guidelines, Procedures and Other Reference Documentation**

Unless otherwise specifically stated by the Project Authority, all services and deliverables are to be conducted and produced in accordance with the last versions of:

#### **List of Appendix:**

**Appendix A** - Building Data Capture Safety Operating Procedures - (latest version)

**Appendix B** - Building Data Capture - (latest version)

**Appendix C** - Building CAD Plan Requirements - (latest version)

**Appendix D** - PWGSC CAD Standards - <http://www.tpsgc-pwgsc.gc.ca/cdao-cadd/cn-nc/index-eng.html>

**Appendix E** - CAFM Data Capture Requirements - (latest version)

**Appendix F** - CAFM CAD Plan Requirements - (latest version)

**Appendix G** - Building Information Model Requirements - (latest version)

**Appendix H** - BIM Accuracy and LoD Requirements - (latest version)

### **4 Project Plans and Reference Information**

The PSPC Project Authority will provide the Contractor with all existing AutoCAD drawings, explanatory survey plans, existing control networks, Point-clouds or BIM files depending on the type of project required. This information will be made available at or soon after the initial project meeting.

### **5 Project Plans and Reference Information Transfer Form**

The PSPC Project Authority will record all materials provided to the Contractor on a Plan and Reference Information Transfer Form. The Contractor will initial and date the form accepting responsibility for the information received. The Project Authority will similarly initial and date when information is returned at the end of a project.

### **6 Project Status Report**

The Contractor will deliver status reports every 14 days of the project (unless otherwise stated in the SoW) and must include the following information:

#### **Project and Status Report Information**

- Project Name and Call-up number
- Status Report Date
- Project Start Date
- Project Scheduled Completion Date

#### **Data Collection Status**

- Percentage completion of floor data collection (measuring or scan) - by floor or location (Can be shown graphically)
- Percentage completion of floor data collection (reflected ceiling or scan) - by floor (Can be shown graphically)

#### **CAD or BIM Drawing Status**

- Percentage completion of floor drawings or model. (Must provide a screen capture)

#### **Project Hours**

- Total hours expended as of the report date (actual)
- Total hours remaining to project completion (Forecast)

## **7 Project Inquiries Response Time**

The Contractor must respond to project inquiries as expeditiously as possible within three (3) working days of receiving the inquiry.

## **8 Quality Control, Quality Assurance**

The foundation for a successful Quality Assurance program is a quality control process used to assure that all materials submitted for acceptance conform to the contract requirements and appendixes.

The Contractor will maintain control over the project with:

- Building Data Capture with sufficient detail to support precise CAD/BIM/CAFM data in accordance with PSPC Geomatics appendixes (at a minimum).
- Building CAD plans are created with sufficient detail to support precise CAD/BIM/CAFM data in accordance with PSPC Geomatics appendixes (at a minimum).
- Building Revit plans are created with sufficient detail to support precise CAD/BIM/CAFM data in accordance with PSPC Geomatics appendixes (at a minimum).
- Using PWGSC's tools and other equipment to maintain the data to PWGSC's CAD standards
- The Contractor will conduct and record daily laser calibration baseline measurements throughout the duration of all data collection activities.

The PSPC Project Authority will review the contractor's Quality Assurance Report based on the contractor's established QA/QC protocol documentation. This report must also meet or surpass all listed elements in PSPC document Appendix B, C, D, E, F, and G Quality Assurance sections and Appendix H, elements.

The PSPC Project Authority will perform a Quality Assurance and Quality control review of all deliverables and provide a written examination per floor or site. The contractor in return shall correct any deficiencies in the deliverables within three (3) working days (per floor or stated by the PSPC Project Authority) until the Project Authority accepts all deliverables.

## **9 Safety Training/Education/Certification**

All Contractor employees who enter onto a project site for the purposes of conducting data collection activities are required to have undergone all PSPC recognized training /education /certification.

## **10 Language Capability**

While the majority of the services and deliverables will be delivered in the English language, from time to time, there may be a requirement to provide services and deliverables in the French language. The Contractor must meet any and all language requirements as necessary.

## **11 Travel**

When travel is required, the Contractor is responsible for all travel arrangements to perform the work at no additional cost to each call-up within the National Capital Area.

## **12 PROJECT DELIVERABLES – BUILDING RECORD DRAWING SERVICES**

### **12.1 Site measurement and data collection of existing condition (ec) or “as-found” conditions**

On-site reviews of buildings and land elements measurements form the basis for the revision of building existing condition drawings or models. The consultant will be responsible for all access and on-site communications with building representatives and clients for the duration of the project. The Recorded measurements will be of sufficient detail to permit the updating of the existing plans or new buildings (CAD or BIM) to accurately reflect any changes. Additional data may also be requested and required during collection such as "hand sketches," cross-section drawings or other standard architectural details, 3D scan and control network set up. Any additional required data collection will be identified and explained, in writing,

at project meetings. All data is to be recorded, formatted, organized and presented in accordance with PSPC's Building Data Capture Requirements (APPENDIX B).

**12.2 Drawing creation or update of floor plans using AutoCAD® software.**

The Contractor will be required to produce or update existing condition AutoCAD drawings which may consist of visible fixed architectural, mechanical, electrical, structural elements and the interior design furnishings within our building inventory. We may partner with other government departments for similar requirements. The buildings may therefore be of the same office type and/or special purpose space.

**12.3 Modelling or update of building information modelling using IFC compliant BIM - Revit® Architecture**

The Contractor will be required to produce an "existing condition" Building Information Model (BIM), using existing CAD plans or legacy drawings to develop the BIM, however on-site verification will be required. Where on-site measurement and/or verification of volumetric and elevation information is required the Contractor must accurately show all visible surfaces and elements (refer to Appendix G and H documents "Guide to Creating a Building Information Model for PSPC"). The consultant may also be required to update existing PSPC "existing condition model".

**12.4 Drawing creation or update of facilities management related floor plans using AutoCAD®**

For facilities-based information (CAFM/IWMS), the visible elements per project can contain:

- Interior design furnishings
- Electronic office assets (such as but not limited to monitors, projectors, printers, etc.)
- Telecommunication outlets
- Specialized equipment elements (such as but not limited to visible camera, swipe card location, etc)

These visible elements are used by PSPC and OGD Facilities Management operations supporting space inventory, accommodation management, and asset management activities

**12.5 Control Points Network**

The Contractor will be required to produce surveyed control point network using permanent or temporary survey markers, targets and benchmarks at key locations. The Contractor must be certified license land surveyor and follows professional methods and standard practices. The Contractor can outsource this specific portion of the project to a licensed Ontario or Quebec surveyor (depending on the location of the project).

**12.6 Interim Project Deliverables**

To monitor progress, the Contractor may be required to prepare interim deliverables in supplement of the quality control reports on a monthly basis of any of the items described in the table shown below, Format and Quantities. It is understood that an interim deliverable may be deficient in some areas relative to what is required for the final deliverable. The preparation and presentation of an interim deliverable will permit the Project Authority to sufficiently monitor progress and provide constructive and corrective feedback to the Contractor.

Format and Quantities

Item #	Deliverable	# of Copies	Electronic Format	Language
A	Building Data Capture Sheets and Associated Detail ( <i>separated by buildings and by floors</i> )	1 Hard copy Original (11X17 sheet) field notes 1 Scanned Copy	As per Appendix B & E JPEG	E or F
B	Colored, Building Data Capture 3D Scanning ( <i>Unified point clouds</i> ) at 3 mm and 30 mm.	1 Electronic copy	PCG Format	N.A.
C	CAD Building "existing condition" As-Found Drawings ( <i>separated by buildings and by floors</i> )	N.A.	1 electronic file per floor plan for each building in DWG format	English
D	BIM Building and Site "existing condition" As-Found Model ( <i>separated by buildings and site</i> )	N.A.	1 electronic file for each building in RVT formats	English
E	CAD CAFM "existing condition" As-found CAD Drawings ( <i>separated by buildings and by floors</i> )	1 Electronic	1 electronic file per floor plan for each building in DWG format	English
F	Surveyed Control Point Network ( <i>by licensed Ontario or Quebec Surveyor</i> )	1 Electronic	1 Electronic Report and documents. Graphical files (CAD/BIM)	E or F
G	Laser Calibration Sheet	1 Electronic	Microsoft Word	E or F
H	Project Status Reports ( <i>as required or stated in the scope of work</i> )	1 Electronic	Microsoft Word	E or F
I	Minutes from Project Meetings	1 Electronic	Microsoft Word	E or F
J	Signed Quality Assurance Report ( <i>at each deliverables</i> )	1 Hard copy (Original Signed) 1 Electronic	Microsoft Word	E or F

**ANNEX B  
Basis of Payment  
EP896-201130**

**1. Firm Hourly Rates**

In order to ensure that fair and competitive hourly rates are received for each of the positions listed, the following requirement must be strictly adhered to: Offerors must provide an hourly rate for each listed position. The hourly rate provided must be equal to or greater than the hourly rate provided for the position listed below it. The hourly rate for any given category of personnel cannot be \$0 or nil value. Failure to insert an hourly rate for each position listed will render your proposal non-responsive.

Submit a Firm All-inclusive Hourly Rate (including profit, overhead expenses such as administrative support, facsimile, courier, photocopying, mail, word processing, office supplies, other operating costs and travel within the NCA) in Canadian funds. Firm All-inclusive Hourly Rates will be used as the Basis of Payment for each call-up.

The Contractor will be paid firm hourly rates as follows, for work performed in accordance with the Contract. Applicable Taxes are extra.

Resources	Year 1	Year 2	Year 3	Year 4	Year 5
	Hourly Rate				
A) Project Leader	\$	\$	\$	\$	\$
B) 3D Scanner Technician	\$	\$	\$	\$	\$
C) Building Data Capture Technician	\$	\$	\$	\$	\$
D) BIM Technical Expert	\$	\$	\$	\$	\$
E) CAD Technical Expert	\$	\$	\$	\$	\$
Combined price rate (A+B+C+D+E) per year	\$	\$	\$	\$	\$
<b>Total combined price rate for Year 1 to 5</b>				\$	



Contract Number / Numéro du contrat EP896 201130
Security Classification / Classification de sécurité UNCLASSIFIED

**SECURITY REQUIREMENTS CHECK LIST (SRCL)  
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)**

**PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE**

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine Public Works and Government Services Canada	2. Branch or Directorate / Direction générale ou Direction Geomatics
---	---

3. a) Subcontract Number / Numéro du contrat de sous-traitance	3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant
--	---

4. Brief Description of Work / Brève description du travail  
Building Master Drawings Services

5. a) Will the supplier require access to Controlled Goods?  
Le fournisseur aura-t-il accès à des marchandises contrôlées?  No / Non  Yes / Oui

5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations?  
Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques?  No / Non  Yes / Oui

6. Indicate the type of access required / Indiquer le type d'accès requis

6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets?  
Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS?  
(Specify the level of access using the chart in Question 7. c)  
(Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c)  No / Non  Yes / Oui

6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted.  
Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé.  No / Non  Yes / Oui

6. c) Is this a commercial courier or delivery requirement with no overnight storage?  
S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit?  No / Non  Yes / Oui

7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès

Canada <input checked="" type="checkbox"/>	NATO / OTAN <input type="checkbox"/>	Foreign / Étranger <input type="checkbox"/>
--	--------------------------------------	---

7. b) Release restrictions / Restrictions relatives à la diffusion

No release restrictions Aucune restriction relative à la diffusion <input checked="" type="checkbox"/>	All NATO countries Tous les pays de l'OTAN <input type="checkbox"/>	No release restrictions Aucune restriction relative à la diffusion <input type="checkbox"/>
Not releasable À ne pas diffuser <input type="checkbox"/>		
Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:	Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:	Restricted to: / Limité à: <input type="checkbox"/> Specify country(ies): / Préciser le(s) pays:

7. c) Level of information / Niveau d'information

PROTECTED A PROTÉGÉ A <input checked="" type="checkbox"/>	NATO UNCLASSIFIED NATO NON CLASSIFIÉ <input type="checkbox"/>	PROTECTED A PROTÉGÉ A <input type="checkbox"/>
PROTECTED B PROTÉGÉ B <input type="checkbox"/>	NATO RESTRICTED NATO DIFFUSION RESTREINTE <input type="checkbox"/>	PROTECTED B PROTÉGÉ B <input type="checkbox"/>
PROTECTED C PROTÉGÉ C <input type="checkbox"/>	NATO CONFIDENTIAL NATO CONFIDENTIEL <input type="checkbox"/>	PROTECTED C PROTÉGÉ C <input type="checkbox"/>
CONFIDENTIAL CONFIDENTIEL <input type="checkbox"/>	NATO SECRET NATO SECRET <input type="checkbox"/>	CONFIDENTIAL CONFIDENTIEL <input type="checkbox"/>
SECRET SECRET <input type="checkbox"/>	COSMIC TOP SECRET COSMIC TRÈS SECRET <input type="checkbox"/>	SECRET SECRET <input type="checkbox"/>
TOP SECRET TRÈS SECRET <input type="checkbox"/>		TOP SECRET TRÈS SECRET <input type="checkbox"/>
TOP SECRET (SIGINT) TRÈS SECRET (SIGINT) <input type="checkbox"/>		TOP SECRET (SIGINT) TRÈS SECRET (SIGINT) <input type="checkbox"/>



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**PART A (continued) / PARTIE A (suite)**

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?  No / Non  Yes / Oui  
If Yes, indicate the level of sensitivity:  
Dans l'affirmative, indiquer le niveau de sensibilité :

9. Will the supplier require access to extremely sensitive INFOSEC information or assets?  
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?  No / Non  Yes / Oui

Short Title(s) of material / Titre(s) abrégé(s) du matériel :  
Document Number / Numéro du document :

**PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)**

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

- |   |   |   |  |
|---|---|---|--|
| <input checked="" type="checkbox"/> RELIABILITY STATUS<br>COTE DE FIABILITÉ | <input type="checkbox"/> CONFIDENTIAL<br>CONFIDENTIEL           | <input type="checkbox"/> SECRET<br>SECRET           | <input type="checkbox"/> TOP SECRET<br>TRÈS SECRET               |
| <input type="checkbox"/> TOP SECRET- SIGINT<br>TRÈS SECRET - SIGINT         | <input type="checkbox"/> NATO CONFIDENTIAL<br>NATO CONFIDENTIEL | <input type="checkbox"/> NATO SECRET<br>NATO SECRET | <input type="checkbox"/> COSMIC TOP SECRET<br>COSMIC TRÈS SECRET |
| <input type="checkbox"/> SITE ACCESS<br>ACCÈS AUX EMPLACEMENTS              |   |   |  |

Special comments:  
Commentaires spéciaux : \_\_\_\_\_

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.  
REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work?  
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?  No / Non  Yes / Oui  
If Yes, will unscreened personnel be escorted?  
Dans l'affirmative, le personnel en question sera-t-il escorté?  No / Non  Yes / Oui

**PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)**

**INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS**

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises?  
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?  No / Non  Yes / Oui

11. b) Will the supplier be required to safeguard COMSEC information or assets?  
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?  No / Non  Yes / Oui

**PRODUCTION**

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises?  
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?  No / Non  Yes / Oui

**INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)**

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data?  
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?  No / Non  Yes / Oui

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency?  
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?  No / Non  Yes / Oui



Contract Number / Numéro du contrat EP896 201130
Security Classification / Classification de sécurité UNCLASSIFIED

**PART C - (continued) / PARTIE C - (suite)**

For users completing the form **manually** use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.

Les utilisateurs qui remplissent le formulaire **manuellement** doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form **online** (via the Internet), the summary chart is automatically populated by your responses to previous questions.

Dans le cas des utilisateurs qui remplissent le formulaire **en ligne** (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

**SUMMARY CHART / TABLEAU RÉCAPITULATIF**

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL	SECRET	TOP SECRET	NATO RESTRICTED	NATO CONFIDENTIAL	NATO SECRET	COSMIC TOP SECRET	PROTECTED / PROTÉGÉ			CONFIDENTIAL	SECRET	TOP SECRET
				CONFIDENTIEL		TRÈS SECRET	NATO DIFFUSION RESTREINTE	NATO CONFIDENTIEL			A	B	C	CONFIDENTIEL		TRÈS SECRET
Information / Assets / Renseignements / Biens / Production	✓															
IT Media / Support TI	✓															
IT Link / Lien électronique	✓															

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?  No  Yes  
 La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?  Non  Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".  
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?  No  Yes  
 La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?  Non  Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).  
 Dans l'affirmative, classifiez le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquer qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).

## Annex D

### Insurance

#### Commercial General Liability Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
  - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
  - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
  - c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
  - d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
  - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
  - f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
  - g. Employees and, if applicable, Volunteers must be included as Additional Insured.
  - h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
  - i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
  - j. Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.
  - k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
  - l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
  - m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.
  - n. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
  - o. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional

Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

**For the province of Quebec, send to:**

Director Business Law Directorate,  
Quebec Regional Office (Ottawa),  
Department of Justice,  
284 Wellington Street, Room SAT-6042,  
Ottawa, Ontario, K1A 0H8

**For other provinces and territories, send to:**

Senior General Counsel,  
Civil Litigation Section,  
Department of Justice  
234 Wellington Street, East Tower  
Ottawa, Ontario K1A 0H8

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

**Errors and Omissions Liability Insurance**

1. The Contractor must obtain Errors and Omissions Liability (a.k.a. Professional Liability) insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature but for not less than \$1,000,000 per loss and in the annual aggregate, inclusive of defence costs.
2. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
3. The following endorsement must be included:

Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.

**Automobile Liability Insurance**

1. The Contractor must obtain Automobile Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence.
2. The policy must include the following:

- a. Third Party Liability - \$2,000,000 Minimum Limit per Accident or Occurrence
- b. Accident Benefits - all jurisdictional statutes
- c. Uninsured Motorist Protection
- d. Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.

Annex E  
**Quarterly Usage Report**  
 EP896-201130

SO N°: EP896-201130		Period to be covered: _____									
SO Title : Building Master Drawings		PWGSC SO Authority: Philip Cowell									
Call-up No.	Call-up amend't no.	Issuance date of the Call-up or Amend't (YYYY-MM-DD)	Start date of the Call-up (YYYY-MM-DD)	End date of the Call-up (YYYY-MM-DD)	Project Description	Location/Building Name	Client contact information (name, e-mail and tel.#)	Call-up Value or amend't value (taxes included)			
1								\$			
2								\$			
3								\$			
4								\$			
5								\$			
6								\$			
7								\$			
8								\$			
9								\$			
10								\$			
11								\$			
12								\$			
13								\$			
14								\$			
15								\$			
16								\$			
17								\$			
18								\$			
19								\$			
20								\$			
21								\$			
22								\$			
23								\$			
24								\$			
25								\$			
26								\$			
<b>Total value of call-up for this quarter (i)</b>								\$			
<b>Cumulative call-ups for previous periods (ii)</b>								\$			
<b>Total value of call-up to date = (i) + (ii)</b>								\$			

Prepared by: *(Insert company name and individual's name preparing this report)*

**ANNEX F to PART 3 OF THE REQUEST FOR STANDING OFFERS**

**ELECTRONIC PAYMENT INSTRUMENTS**

The Offeror accepts to be paid by any of the following Electronic Payment Instrument(s):

- VISA Acquisition Card;
- MasterCard Acquisition Card;
- Direct Deposit (Domestic and International);
- Electronic Data Interchange (EDI);
- Wire Transfer (International Only);
- Large Value Transfer System (LVTS) (Over \$25M)



Public Services and Procurement Canada

# Appendix A

## Building Data Capture Safety Operating Procedures

### Facilities Technical Services: Geomatics



Version – Aug 2019

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**Revisions**

Date	Revision type	Revision section	Comments
Jan 2014	Issues for DISO	New documents	<ul style="list-style-type: none"> <li>Documents completed for new DISO</li> </ul>
Jan 2018	Major Review	In General	<ul style="list-style-type: none"> <li>Changing government departmental name to PSPC</li> <li>Removed sections ladder and stepladder</li> </ul>
Aug 2019	Template / Update	In General	<ul style="list-style-type: none"> <li>Change of Technical Services to SPAR</li> <li>Update New Template</li> </ul>

## 1. Introduction

The Geomatics Services Safety Operating Procedures Manual is intended to assist in keeping project staff involved in the building data collection activities safe. This manual contains information compiled from PSPC project experiences in conducting Geomatics Services activities and is not intended to cancel or supersede any federal, provincial or industry safety related contractor obligations. Additionally, the contractor must adhere to all safety related sections contained within the PSPC document - General Conditions – Goods or Services.”

## 2. Building Emergency and Safety Procedures

Upon arriving on-site and before beginning any data collection activities, the team is required to become familiar with all building specific emergency, evacuation and other safety procedures and plans including the understanding the building fire orders procedures and alarm stages.

## 3. Personal Protective Equipment (PPE)

In supplement of existing government regular regarding PPE, the data collection team may be required to carry and wear the following PPE equipment during on-site data collection activities.

1. Hard Hat (CSA Standard Z94.1 Glass G)
2. Safety Glasses (CSA Standard Z94.3)
3. Disposal Ear Plugs
4. Dust Mask
5. Coveralls
6. Work Gloves
7. Safety Boots (CSA Z195 Grade 1)
8. Knee Pads
9. Flashlight
10. Portable lights

## 4. Safety Training/Education/Certification

All individuals entering onto a project site for the purposes of conducting on-site data collection activities are required to have undergone all necessary PSPC recognized training /education /certification.

## 5. Safety Control during Data Collection

The following apply to data collection activities conducted in specific situations and in unique areas through the project site.

### 5.1 Data Collection in Hard to Reach Areas

Data collection activities in office environments involve taking many measurements at access points on walls that are out of arm’s length reach. Workstations or shelving against the walls may necessitate the use of alternate access points and methodologies to collect the required data. In these situations the data collection team must use a monopod with an articulating head attached to the laser data collection device to extend his/her reach. A colleague must verify that the laser is hitting the intended target.

### 5.2 Confined Spaces

The data collection team should avoid data collection in confined spaces. The locations of "known" confined spaces should be identified by the Property and Facility Manager. This should be documented and placed on the FTS project file.

### 5.3 Electrical Rooms

The Property & Facilities Manager (PFM) or delegated staff must accompany all data collection team when taking measurements in main electrical rooms, even if the data collection team has taken the Electrical Hazards Awareness training. The data collection team should use extra precautions in electrical rooms with exposed live electrical loads.

### 5.4 Areas Under Construction

The data collection team should wear all required Personal Protection Equipment (PPE) and meet with the construction supervisor to coordinate data collection activity around the work site. The data collection team should receive a briefing as to the possible safety hazards on the job site. The data collection team should also choose safe access points to conduct data collection and work around the construction activity. If working around the construction area proves too hazardous or problematic, the data collection team should arrange to work during off hours or come back after completion of construction.

### 5.5 Service Rooms

The PFM or delegated staff should accompany the data collection team into service rooms to point out all "known" hazards such as exposed steam and hot water pipes, periodical equipment start-ups, electrical hazards, and cat walks.

### 5.6 Non-Illuminated Spaces

The data collection team must ensure the work area is illuminated. In extenuating circumstances, the data collection team may be required to use a flashlight and/or portable lights to conduct the area data collection. Under normal circumstances the data collection team must first illuminate all areas of the room to assess any safety hazards before carrying out the measurement. For larger work areas, the data collection team should arrange for temporary lighting through the Property Manager. If data collection activities cannot be conducted in a safe manner through the use of the above-mentioned procedures, the data collection team should avoid measuring the space.

### 5.7 Holes in the Floor without Safety Barriers

The data collection team should identify hole(s) in the floor where no safety barriers are in place to the Property Manager as a hazard. The data collection team must document this occurrence (including photos) in the FTS project folder with copies to the Project Authority and the building Property Manager. If the problem is isolated, the data collection team should arrange with the Property Manager to cover the holes or install safety barriers. If data collection activities cannot be conducted in a safe manner through the use of the above-mentioned procedures, the data collection team should avoid measuring the space.

### 5.8 Storage Areas

For identified unsafe storage areas, the data collection team should assess the area accompanied by the Property Manager or delegated staff. The data collection team should request that the hazard be removed, or if the hazard cannot be diminished, the data collection team should avoid the area and report the safety hazard to the Property Manager. The data collection team should document the occurrence and place a copy in the Facilities Technical Services (FTS) project folder with copies to the Project Authority and Property Manager.

### 5.9 Procedures Related to Hazard and Hazardous Material Identification

The service provider will conduct an on-site safety review of the project area to verify any possible hazard and/or hazardous material as required. It is recommended that the on-site PSPC property manager be consulted to provide any relevant information that may affect the project.

### 5.10 Toxic Gases, Liquids or Solids

The data collection team should identify and avoid all toxic gases, liquids or solids. If identification of the contents is not possible, the data collection team is to avoid the substance. The data collection team, at all times, should seek out the Property Manager or delegated staff to advise the appropriate persons and assist them in conducting any requisite report. The data collection team should insist on receiving orientation in specialty area containing toxic substances and other related hazards and develop a work schedule accordingly. At all times, the data collection team should use safe access points to conduct data collection.

### 5.11 Elevated Platforms, Ladders and Scaffolds

The data collection team must use safe work procedures when accessing elevated platforms, ladders, stepladders and scaffolds. If the situation appears unsafe, the data collection team should contact the Property Manager or delegated staff to identify the circumstance and develop an appropriate means to address it. The data collection team should document this occurrence and place in the FTS project folder with copies to the Project Authority and Property Manager. If the data collection team must conduct data collection activities around workers on scaffolding, they should coordinate with the supervisor for an appropriate time to conduct data collection activities.



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# Appendix B

## CAD Building Data Capture

### Facilities Technical Services: Geomatics - SPAR



Version – Aug 2019

pspc-spac

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## Revisions

Date	Revision type	Revision section	Comments
Jan 2014	Issues for DISO	New documents	<ul style="list-style-type: none"> <li>Documents completed for new DISO</li> </ul>
Jan 2018	Major Review	All sections	<ul style="list-style-type: none"> <li>Changing official departmental name to PSPC Section</li> </ul>
Aug 2019	Revision for New DISO	All sections	<ul style="list-style-type: none"> <li>Change the direction from Technical Services to SPAR</li> <li>Changing Temples</li> </ul>

## CAD Record Base Plan - Data Collection Activities

### 1. Introduction

This appendix contains general procedural information for Facilities Technical Services (FTS) projects, field work (Data Capture or Data Collection) requirements and listings of Record (or Existing Condition) base plan elements to be collected for the purposes of producing and updating of Master and Record CAD Base Floor Plans of PSPC crown-owned and leased buildings as well as Other Government Department (OGD) crown-owned buildings.

- If PSPC requires 3D scanner data capture, see Appendix G – ecBIM standard requirement for specifications, procedures and guidelines.

### 2. Data Collection Activities

#### 8.1 New Record Base Plan Projects – Data Collection Activities

The data collection activities for new assets may be records in many different ways. The traditional method to capture assets elements may require a hand held laser and tape measurements on-site and depicted on 11X17 paper - data collection sheets. 3D scanners may also be required depending on the type of record required for the project. The Statement of Work (SoW) must define the type of data collection method required for the particular project. If a 3D laser scanner data capture is required of the data capture, see Appendix G – Building Information Model requirement for specifications, procedures and guidelines.

#### 8.2 Update of Record Base Plan Projects - Data Collection Activities

The data collection verification, through project-site inspections and office-based activities of existing Record Base Plan along with the measurement and recording of new (or revised) detailed building floor plan elements and specific attribute data are required. Recorded measurements will be of sufficient detail to facilitate the updating of existing Master or Record Base Plan to accurately reflect any changes to architectural, structural and reflected ceiling elements. A list of requires elements are depicted in the “Elements, Colours and Attributes” section.

#### 8.3 Project Start-Up

The start-up meeting (or Kickoff meeting) is the first meeting between the PSPC project team and the service provider of a specific task or project. Usually, the service provider would already have received the Statement of Work from Geomatics to understand the project

background and goals. The services provider may introduce the team to perform these tasks and have a chance to ask questions regarding the project and resolve any issues.

At the start-up meeting, the service provider may ask to add specific information regarding the project in the Statement of Work or elements to be added to the meeting minutes.

### 8.4 Statement of Work

The Statement of Work (SoW) should define the project description and purpose, project limits, scope of work, activities types, deliverables and timelines at a minimum. The asset contact names should only be given only after the quotation was received and accepted by PSPC.

### 8.5 Reference Data and Plans

PSPC must provide any existing electronic files and reference documentation and plans. These plans can be provided via USB or any type of data transfer method allowed by the Government of Canada and are usually provided during the project start-up meeting. These reference documents must not be distributed by the services provider and must be returned once the project is completed.

### 8.6 Meeting minutes

Meeting minutes are an important step of any project. The organizer of the meeting will be responsible to take all pertinent information related to the project. The Meeting minutes must include the date and time, participant's names, decisions made and the person responsible to gather any additional action or next steps. The organizer will be responsible to record these decisions and forward the meeting minutes for approval by the project technical team. These meeting minutes will then be added to legal documents as part of the contractual agreement between the services provider and PSPC.

### 8.7 On-site Inspection for quotation

The service provider can request a full on-site inspection before providing a quotation to PSPC Geomatics. If an on-site inspection is requested by the services provider, Geomatics services will make all necessary arrangements with PSPC and AFD property manager for the initial site inspection.

### 8.8 Procedures for Notification the Property Manager

If the project is accepted and funded by PSPC, the services provider team will be responsible to notify the property and facilities manager's team as early as possible in any project planning process. At a minimum, the notification must include the following:

- A description of the proposed work and delineation of the affected areas (Project limits)
- Project contact names and phone numbers
- The probable duration, proposed start date, work hours and time schedule
- Name of resources working on the project with security number and date of birth

### 3. Data Collection Sheets

The 11X17 data collection sheets are used to record on-site measurements of modified or new elements and must be developed from existing Geomatics Facilities Technical Services Record Base Plans ONLY. Any other source of drawings must be approved by Geomatics Technical authority manager before the actual work is started.

#### 8.1 Format and Layout Requirements for Data Collection Sheets

1. Drawings must be printed on 11x17 including details and other related data.
2. Data collection sheets must be numbered sequentially per floor (i.e. 1 of 10 through 10 of 10).
3. Standard architectural nomenclature is to be used.
4. A key plan must be provided of all numbered sheets per floor.
5. Each data collection sheet must include the following general information in the top right corner, the name of the building, floor number or name, date of the visual inspection and the resources name.

#### 8.2 Types of Data Collection Sheets

The data collection sheets is composed of Three (3) separate type of sheets and are as followed:

1. Architectural and Structural elements Record Base Plan Information
2. Reflected Ceiling Information
3. Furniture Layouts

### 4. Measuring Technology and Devices

PSPC Technical Authority must approve all lasers measuring devices prior to its use on a project site. Precision laser equipment is required to conduct all measurement activities although steel-measuring tapes will be required and acceptable for shorter distances or irregular spaces.

The general operation and consistency of measurement of laser equipment calibration and must be verified and recorded bi-weekly through an on-site project baseline measurement procedure. Laser equipment must display repeated measurement readings within 3mm relative to the steel tape measured distance over a minimum baseline distance of 10 metres.

### 5. Measurement Units and Area Specific Measurement Procedures

The following basic and area specific procedures are to be observed during FTS data collection activities when using handheld measuring device.

### 8.1 General

1. All hand laser and tape measurements gathered on-site must be depicted on the data collection sheets and must be taken in metric units to the nearest millimetre.
2. Dimensions and texts must be a readable size and following the architectural standard notation procedures (horizontal and readable from the right-hand edge for vertical measurements).
3. All base plan and reflected ceiling elements must be measured and depicted separately on the data collection sheets.
4. Measurements must include the longest horizontal “X” and “Y” distances of each individual room and of the larger overall collection of adjacent or adjoined rooms. The measurements must be taken in all directions (redundancy) to allow CAD technicians to have sufficient measurement to verify the precision of the existing drawing or new location.
5. Measure the height change of raised floor level areas and ramps.
6. Identify and measure wall material types and changes, other than drywall. Walls not specifically identified will be assumed to be of drywall finish.
7. When working in a long room or corridor, multiple lateral measurements must be taken at logical increments along its length.
8. Sloped walls must be measured at both the lowest and highest points of the wall
9. Areas having a floor to ceiling height of less than two metres must be specifically identified as such on the data collection sheets.
10. Indicate the floor finish, room function and door/room number for all rooms and areas.
11. Detail sketches on the side of the data collection sheet are permitted or can be drawn on a separate data collection sheet (11 x 17). Pieces of paper tape or glued to the 11X17 will not be accepted.

## 8.2 Mechanical Rooms

1. Within mechanical rooms only, do not measure or locate any mechanical equipment, associated concrete pads or piping.

## 8.3 Food Service Areas

1. Measure and locate food and display counters, tray slide in food preparation areas. Caterer equipment may need to be measured if the equipment divides or limits their usable space.
2. Do not measure equipment belonging to the caterer other than elements mentioned above.

## 8.4 Retail Areas

In Retail Areas, only base building elements from the list below will be required.

- 1.10.1 – General Elements
- 1.10.3 – Structural Elements
- 1.10.4 – Windows, Doors and Walls Elements
- 1.10.7 – Security Elements
- 1.10.8 – Mechanical Elements (wall-mounted only)
- 1.10.11 – Exteriors Elements

In Retail Areas, ceiling elements and others types of element designed for the retailer will not be captured with the exception of life safety equipment and wall-mounted mechanical systems (i.e. thermostats).

## 6. Dimensions and Leaders

Dimensions, leaders and other similar information captured on data collection sheets are to adhere to the following:

1. Depict the information using the appropriate colour as per the table below.

<b>BLACK</b>	- Modifications of and additions to initial data collection sheet information.
<b>RED</b>	- Measurements - Dimension lines - Arrowheads - Leaders
<b>GREEN</b>	- Clarification of measurements in high detail areas - Plumbing and Mechanical elements
<b>BLUE</b>	- Room names - Bathroom stalls and measurements

2. Use arrowheads to start and end dimension lines ensuring that the arrowheads point specifically to the object/element/item surface.
3. Use a slash instead of an arrowhead to indicate a measurement taken from a glass surface or from the centre of an object.

4. Measurement values are to be followed by a decimal point to avoid confusion between distance values and numerical identifiers (i.e. 669 (room) vs. 669. (Distance value)). Note that measurements depicted on the data collection sheets must be expressed in millimetres only.
5. When a measurement is physically impossible to obtain, denote this on the data collection sheet by using the Non-Obtainable symbol: (N.O.).
6. During an update of existing record CAD drawing, a checkmark on the data collection sheet must be noted in every verified rooms to certify the room was verified but no modifications was required. This only apply to rooms without any modifications.

## 7. Digital Photos

The services provider must verify with property manager and clients to obtain permission to take any photograph of the interior and exterior of the building.

1. The PSPC may require exterior and interior digital photos if specified in the Statement of Work to provide clarity for specific details.
2. The PSPC may require photos supporting window and wall profile sketches provide more information to discern the window to wall interface, calculate the dominant surface and ultimately the gross interior line along exterior walls.

## 8. Elements, Colours and Attributes

This section lists the standard FTS elements and associated attribute information to manually be captured on-site and depicted on the appropriate data collection sheet during the creation of the Record Base Plan and Update of data collection projects. The colour in which the captured information is to be depicted on the data collection sheets is also indicated. Although the lists contain all standard FTS elements, supplemental project specific elements and attributes may be added on an individual building-by-building basis. All information captured will be depicted on data collection sheets.

For clarity, the following definitions are provided of the key element attributes listed in this section.

## 8.1 Attributes

Attributes	Description
Position:	The relative location or arrangement of an element within a defined architectural environment (i.e. sprinkler heads within a ceiling tile or ceiling grid).
Dimensions:	The set of horizontal measurements from fixed or definable surfaces or building elements that establish the location and size of an element within a defined architectural environment.
Detail:	Any drawing made to aid in the visualization, exploration or understanding of the construction of an element. The drawings are represented in isolation (i.e. special doorframe, close-up of dense area).
Note:	A word, a symbol, short phrase or description identifying the element or relevant information about the element (i.e. Up and Dn in a staircase).
Construction Material:	The material used to frame or build a structure i.e. block, concrete, steel.
Finish:	The thickness of and the material used to cover a frame or built structure (i.e. drywall, plywood, tile and brick).
Height:	The measurement from base to top (finish ceiling, clear window glazing).

## 8.2 General Elements

Element	Colour	Attributes
Interior walls	Black	- Dimension - Construction Material - Finish
Exterior walls	Black	- Dimension - Construction Material - Finish
Interior fixed partitions	Black	- Dimension - Construction Material - Finish
Low walls	Black	- Dimension - Construction Material - Finish - Note
Horizontal conveyors and moving sidewalks	Black	- Dimension - Detail - Note
Elevators	Black	- Dimension - Detail - Note - Quantity
Escalators	Black	- Dimension - Detail - Note
Dumbwaiters	Black	- Dimension - Detail - Note
Lifts and lift platforms	Black	- Dimension - Detail - Note
Stairwells	Black	- Dimension - Finish
Staircases	Black	- Dimension
Staircase treads	Black	- Dimension - Detail - Note - Quantity
Staircase landings	Black	- Dimension
Staircase handrails and guardrails	Black	- Dimension - Detail - Note

Barrier free ramps	Black	- Dimension - Detail
UP or DN Symbol and Arrow	Black	- Note
Railings	Green	- Dimension - Detail - Note
Floor (general)	Green	- Note
Floor openings	Black	- Dimension - Note
Floor (raised areas)	Blue	- Dimension - Note
Rooms (general)	Green	- Note

### 8.3 Miscellaneous Interior Floor Elements

Element	Colour	Attributes
Benches	Blue	- Dimension - Note
Lockers	Blue	- Dimension - Quantity
Planters	Blue	- Dimension
Public phones	Blue	- Position
Vending machines	Blue	- Dimension - Note
Bank machines	Blue	- Dimension - Note
Shelving	Green	- Dimension - Note
Cabinets	Green	- Dimension
Ladders	Green	- Dimension - Detail
Video projectors	Blue	- Position
Barrier Free Sign	Red	- Position - Note
Barrier Push Button	Red	- Position - Note

## 8.4 Structural Elements

Element	Colour	Attributes
Ceiling beams	Blue	- Dimension
Bearing walls	Black	- Dimension
Expansion joint	Blue	- Dimension
Retaining wall	Black	- Dimension - Construction Material - Finish
Floor beams (basement excluded)	Blue	- Dimension
Interior columns	Black	- Dimension - Construction Material - Finish
Exterior columns	Black	- Dimension - Construction Material - Finish
Floors above and overhangs	Green	- Dimension - Note

## 8.5 Windows, Doors and Walls Elements

Element	Colour	Attributes
Frame width	Black	- Dimension - Detail
Mullion width	Black	- Dimension - Detail
Typical mullion	Black	- Dimension - Detail
Controlled joint mullion	Black	- Dimension - Detail
Window (Glazing)	Black	- Dimension - Detail - Height
Doors - interior and exterior	Black	- Dimension - Detail
Door swing	Black	- Note
Window sill	Black	- Dimension - Detail
Wall opening	Black	- Dimension

## 8.6 Electrical Elements

Element	Colour	Attributes
Clocks	Blue	- Position
Luminaries	Blue	- Position - Note
Track lights	Blue	- Position - Note
Sound equipment including a P.A. systems	Red	- Position
Video conference systems	Blue	- Position
Electrical panels	Blue	- Dimension - Note
Ceiling fans	Green	- Position
Switch and outlet	Blue	- Position - Note

## 8.7 Plumbing Elements

Element	Colour	Attributes
Urinals	Green	- Dimension to centre
Bidets	Green	- Dimension to centre
Sinks	Green	- Dimension to centre
Tubs	Green	- Dimension
Janitorial tubs	Green	- Dimension
Showers stalls	Green	- Dimension
Drinking fountains	Green	- Dimension
Counter tops	Green	- Dimension
Handicap seating in showers	Green	- Dimension
Grab-bars	Green	- Position
Washroom partitions	Black	- Dimension
Washroom partitions door and swings	Black	- Dimension

## 8.8 Life Safety Elements

Element	Colour	Attributes
Exit signs	Red	- Position
Annunciation panels	Red	- Dimension
Buzzers and bells	Red	- Position
Emergency lights and battery packs	Red	- Position
Emergency fire light	Red	- Position
Pull stations	Red	- Position
Heat/Smoke detectors	Red	- Position
Emergency voice communication systems	Red	- Position
Motion detectors	Blue	- Position
Surveillance cameras	Blue	- Position
Sprinklers	Red	- Position
Sprinkler pipes	Red	- Dimension
Fire extinguishers	Red	- Position
Fire hose cabinets	Red	- Dimension
Stand pipes	Red	- Dimension
Emergency eye wash	Red	- Position - Note
Emergency shower	Red	- Position - Note
First Aid Kit	Red	- Position - Note

## 8.9 Mechanical Elements

Element	Colour	Attributes
Supply and return vents	Green	- Position - Note
Outside air grills	Green	- Dimension - Note
Mechanical shafts	Green	- Dimension
Mechanical equipment (excluding mechanical rooms/areas)	Green	- Dimension - Note
Thermostats	Blue	- Position
Air conditioning equipment	Green	- Dimension
Floor drains	Green	- Dimension - Note
Hot and cold water tanks	Blue	- Position
Refrigerant equipment	Green	- Dimension
Heater	Green	- Position - Note
Convectors	Green	- Dimension
Pipes	Black	- Dimension - Note

## 8.10 Ceiling Elements

Element	Colour	Attributes
Ceiling (general)	Blue	- Height - Finish
Visible Ceiling beams (Office floors only)	Blue	- Dimension
Ceiling grid	Black	- Dimension
Planning grid	Black	- Dimension
Bulkheads	Red	- Dimension
Overhead openings and skylights	Black	- Dimension
Access door	Green	- Position - Note

## 8.11 Parking Elements

Element	Colour	Attributes
Vehicle ramps	Black	- Dimension
Curbs	Black	- Dimension
Gates	Black	- Dimension
Pay booths	Black	- Dimension
Sidewalks	Black	- Dimension
Parking lines	Black	- Position
Parking space	Black	- Position - Quantity
Accessible or Barrier Free Parking spaces	Black	- Position - Quantity
No-parking areas	Black	- Position
Motorcycle parking spaces	Black	- Position - Quantity
Bicycle stalls	Black	- Dimension

## 8.12 Exterior Site Elements

Only exterior site elements attached to the construction of the building are captured.

Element	Colour	Attributes
Exterior porches	Black	- Dimension
Exterior staircases	Black	- Dimension
Retaining walls	Black	- Dimension - Finish
Terrasses	Black	- Dimension
Court yards	Black	- Dimension
Patios	Black	- Dimension
Guide posts and bollards	Black	- Dimension
Vehicle ramps	Black	- Dimension

### 8.13 Areas under Construction

Clearly depict and indicate on the data collection sheets those areas under construction where data collection activities cannot be undertaken. If access is not granted in certain areas at any time during the project, the service provider project leader must clearly depict and indicate on the data collection sheets those under construction. The project leader must show in writing to the PSPC project authority communications from the building access approver specifying rooms or areas not accessible and note the date of completion.

### 8.14 Roof Elements

Access to the roof is often restricted and can only be granted by the property manager or delegated staff. If access is permitted, measure all standard rooms, elevators and other building elements. Should access not be permitted; collect information from existing architectural plans only indicating the data source on the data collection sheet. In such cases the location and dimensions of elements such as overhangs and canopies are to be estimated.

## 9. Non-Accessible Areas

Access may be restricted in areas of a building for reasons of privacy, commercial sensitivity, Health and Safety or other compliance requirements. Any restriction must be agreed upon between the appropriate building access approver and the consultant project leader. If access is not granted in certain areas at any time during the project, the service provider project leader must clearly depict and indicate on the data collection sheets those areas that are access-restricted or non-accessible. The project leader must show in writing to the PSPC project authority communications from the building access approver specifying rooms or areas not accessible.

## 10. Quality Assurance

It is essential that final data collection sheet be subject to quality assurance quality control process to ensure adherence to *PSPC Standards*. The following quality assurance elements shall form part of the Quality Assurance checklist that shall be completed for all final data collection of Base Plans elements produced within a project.

<b>Colour Assignment:</b>
<ul style="list-style-type: none"> <li>• PSPC Colour assignments</li> </ul>
<b>Standard:</b>
<ul style="list-style-type: none"> <li>• All elements are measure and located as per PSPC standards.</li> <li>• All Building Data Capture is created on 11X17 sheets including details.</li> <li>• Cover sheet includes key plan identifying data sheets numbers and locations.</li> <li>• All sheets are numbered and labelled.</li> <li>• All measurements are verified and calculated and totaled.</li> <li>• All ceiling elements is on a separate data collection sheet.</li> <li>• All floor and wall finishes are label for each room.</li> <li>• All communications from PFM for none-accessible to be inserted with the data collection sheets.</li> </ul>
<b>Text:</b>
<ul style="list-style-type: none"> <li>• All text to be readable.</li> <li>• All dimension numbers end with a point.</li> <li>• All room &amp; door numbers are noted.</li> </ul>
<b>Dimension:</b>
<ul style="list-style-type: none"> <li>• Verify if all arrowheads point in the right directions.</li> <li>• Ceiling heights are identified.</li> <li>• Wall thicknesses are identified.</li> <li>• Exterior section is detailed and measured (At window).</li> <li>• All new wall can be located from existing elements (X,Y) to be able to verify it proper location.</li> </ul>
<b>External References:</b>
<ul style="list-style-type: none"> <li>• External references (PSPC) drawings and CD are returned.</li> </ul>

## 11. Abbreviations

The following table identifies standardized abbreviations to be used within a project for both data collections sheets and on the final Architectural Base Plans. A legend that includes applicable standardized abbreviations in addition to project specific abbreviations must be provided with data collections sheets and depicted on the final Architectural Base Plans.

NAME	ABBREVIATION
Air Conditioning Unit	A.C.
Concrete block	Bl.
Column	Col.
Concrete	Conc.
Convactor	Cnv
Door size	D or Dr
Down	Dn
Drywall	Dry.
Drinking fountain	D.F.
Elevator	Elev.
Handrail	Hand.
Frame Thickness	Ft or Fr.
Fire Hose Cabinet	F.H.C.
Hot water tank	H.W.T.
Janitor closet	Jan. or J/C
Mechanical	Mech.
Opening	Op.
Slop sink	S. Sink
Typical	Typ.
Window	W
Wall Thickness	W.T.
Washroom	Wshrm.

The following lists represent typical floor finishes and room standard descriptions that apply most often to FTS projects. Standardized abbreviations do not yet exist for these elements and must be developed for use with data collection sheets and Architectural Base Plans. A legend that includes applicable standardized abbreviations in addition to project specific abbreviations must be provided with data collections sheets and depicted on the final Architectural Base Plans.

## 12. Floor Finishes

- Asphalt
- Carpet
- Ceramic, Vinyl and Terrazzo Floor Tile
- Floor Control Joints
- Floor Expansion Joints
- Granite Floor
- Hardwood Floor
- Linoleum or Sheet Vinyl Floor
- Marble Floor

- Masonry & Stone Flooring
- Painted Concrete Floor
- Parquet Floor Tile
- Porcelain Floor Tile
- Raised Floor System
- Rubber Floor

## 13. Room Standard Descriptions

Room Standard descriptions include:

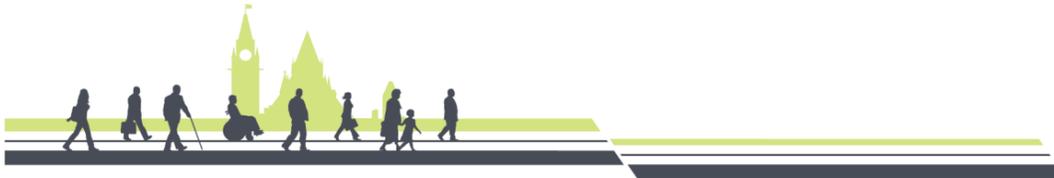
- Workstation
- Office and Office Area
- Enclosed Office
- Hotel/Private Rooms
- Meeting Room/Conference Room/Boardroom
- LAN/Telecom Rooms
- Washroom
- Janitors Closet
- Photocopy Room/Area
- Waiting Area/Reception Area
- Mechanical Room
- Storage Room
- Filing Room/Area
- Process Area
- Cafeteria
- Kitchen
- Laboratory
- Lobby
- Security Desk/Area
- Staircase
- Main Entrance Lobby
- Special Purpose (provide description)

## 14. Record Architectural Base Plan Data Collection Symbol Legend

The following legend identifies the symbology to be used to represent specific elements on data collection sheets.

ARCHITECTURAL BASE PLAN SYMBOL LEGEND		
<b>ELECTRICAL SYMBOLS</b>		Yes/No (O.R. On Request)
	THERMOSTAT	Yes
	PUBLIC TELEPHONE - (PAY PHONE)	Yes
	MOTION DETECTOR	Yes
	SURVEILLANCE CAMERA	Yes
	INCANDESCENT LIGHT FIXTURE - CEILING MOUNTED	Yes
	INCANDESCENT LIGHT FIXTURE - WALL MOUNTED	Yes
	FLUORESCENT LIGHT FIXTURE - 610 X 1220	Yes
	FLUORESCENT LIGHT FIXTURE - 610 X 610	Yes
	FLUORESCENT LIGHT FIXTURE - 305 X 1220	Yes
	FLUORESCENT LIGHT FIXTURE - 100 X 1200	Yes
	SPOT LIGHT - FIXED MOUNT	Yes
	SPOT LIGHT - THEATRE STYLE	Yes
	TRACK LIGHTING	Yes
	CHANDELIER	Yes
	CHANDELIER	Yes
	POWER \ CABLE POLE	Yes
	SWITCH - 1 WAY	O.R.
	SWITCH - 2 WAY	O.R.
	SWITCH - 3 WAY	O.R.
	SWITCH - 4 WAY	O.R.
	ELECTRICAL OUTLET - SINGLE	O.R.
	ELECTRICAL OUTLET - DUPLEX	O.R.
	ELECTRICAL OUTLET - 220	O.R.
	TELEPHONE OUTLET	O.R.
	CLOCK	Yes
	CEILING MOUNTED PROJECTOR	Yes
	CEILING FAN	Yes
	AIR CONDITIONING UNIT	Yes
<b>GAS SYMBOLS</b>		Yes/No (O.R. On Request)
	GAS ENTRANCE	O.R.
	DIESEL GENERATOR	O.R.
	GAS GENERATOR	O.R.
<b>MECHANICAL SYMBOLS</b>		Yes/No (O.R. On Request)
	SUPPLY AIR DIFFUSER - DIAMETER VARIES	Yes
	SUPPLY AIR DIFFUSER - SIZE VARIES	Yes
	SUPPLY AIR DIFFUSER - SIZE VARIES	Yes
	RETURN AIR GRILL - 305 X 305	Yes
	RETURN AIR GRILL - 305 X 610	Yes
	RETURN AIR GRILL - 610 X 610	Yes
	RETURN AIR GRILL - 610 X 1220	Yes
<b>LIFE SAFETY SYMBOLS</b>		Yes/No (O.R. On Request)
	LIFE SAFETY - STANDPIPE CABINET C/W FIRE HOSE	Yes
	LIFE SAFETY - FIRE EXTINGUISHER	Yes
	LIFE SAFETY - SPRINKLER HEAD	Yes
	LIFE SAFETY - SPRINKLER HEAD (HIDDEN)	Yes
	LIFE SAFETY - HALON FIRE EXT. SYSTEM	Yes
	LIFE SAFETY - FIRE ALARM PULL STATION	Yes
	LIFE SAFETY - FIRE BELL \ BUZZER	Yes
	LIFE SAFETY - FIRE LIGHT (FLASHING)	Yes
	LIFE SAFETY - HEAT DETECTOR	Yes
	LIFE SAFETY - SMOKE DETECTOR	Yes
	LIFE SAFETY - FIRE ANNUNCIATOR PANEL	Yes
	LIFE SAFETY - FIRE FIGHTER'S HAND PHONE	Yes
	LIFE SAFETY - EMERGENCY EVACUATION SPEAKER	Yes
	LIFE SAFETY - EMERGENCY LIGHT (BATTERY PACK)	Yes
	LIFE SAFETY - EMERGENCY LIGHT	Yes
	LIFE SAFETY - EMERGENCY EXIT SIGN	Yes
	LIFE SAFETY - EMERGENCY EYE WASH	Yes
	LIFE SAFETY - EMERGENCY SHOWER STATION	Yes
	LIFE SAFETY - STANDPIPE	Yes
	LIFE SAFETY - EMERGENCY PLANS	O.R.
	LIFE SAFETY - EMERGENCY MAIN SPRINKLER VALVES	O.R.
	LIFE SAFETY - EMERGENCY MAIN WATER ENTRANCE	O.R.
	LIFE SAFETY - FIRE LANE	O.R.

15.



Public Services and Procurement Canada

# Appendix C

## Building CAD Plan Requirement

### Facilities Technical Services: Geomatics



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## Record CAD Base Plans

### 1. Introduction

The production of a new “Existing Condition (ec)” Record Base plan involves depicting of existing drawings including construction, renovation project and the on-site dimensional measurements (data sheets) of building elements and point clouds data, obtained through a data collection process. The final ecRecord Base plan must be orthogonally correct for subsequent use by other professionals such as architects, interior designers, and mechanical engineers and others. Acknowledging that a building cannot be built absolutely square, it is essential, however, that the appropriate processes be undertaken to model the crucial building elements within an orthogonally correct floor plan template.

### 2. Project Research

#### 2.1 Available Architectural, Structural or/and Project Plans

Before starting any project, verification of the existence of architectural drawings, structural, furniture layout plans or other such measurements must be done. PSPC project manager will perform all necessary research and provided all pertinent information before the start-up meeting. These architectural reference plans and drawings will assist in identifying how and when the building was constructed. In addition to the structural grid and shafts information, the reference plans may often provide valuable information about the construction materials that may be more difficult to determine through strictly visual inspection during the data collection activities.

### 3. CAD Naming Conventions

#### 3.1 Digital File Name

- The three first letters of the file are the abbreviated name of the building:  
**XXXxxxxx**: TAMGRB01.dwg
  - **TAM**: Building Name: Thomas D’Arcy McGee
- The fourth and fifth letters or numbers are the floor name or number:  
**xxxXXxxx**: TAMGRB01.dwg
  - **GR** Ground Floor
  - **B1** First Basement
  - **02** Second Floor
- The sixth letter is the description type of drawing:  
**xxxxxXxx**: TAMGRB01.dwg
  - **B** Base Building
  - **T** Area Measurement
  - **F** Fire Evacuation Plan
  - **P** Preliminary
  - **U** Unofficial
- The seventh and eighth numbers are the revision numbers.  
**xxxxxxXX**: TAMGRB01.dwg
  - **01** First Revision

## 4. CAD Blocks

The layering requirement for Facilities Technical Services (FTS) Architectural Base plans shall conform to the latest published PSPC National CADD Standards document (APPENDIX D)

### 4.1 General

AutoCAD dynamic blocks and blocks and group entities shall not be exploded or nested. As a rule symbols should be created with linetype and colour “byblock” thus allowing maximum control and flexibility over its’ appearance. By applying the rule the symbol will take on the properties of the layer it is placed on along with permitting it to be changed to suit requirements independent of the layer settings.

### 4.2 PSPC – Facilities Technical Services (FTS) Symbol Block Library

The PSPC – FTS Symbol Block Library consists of a set of AutoCAD files that represent accepted Real Block Objects, Common Block Objects, Symbol Block Objects, Dynamic Block and Specific Block Objects. These files are maintained on CD executable file format and are available on a project-by-project basis. The AutoCAD menu of the PSPC CADD Block Library and Symbol Legends created specifically for Architectural Base Plans must be used for all projects.

### 4.3 Developing New Block Object for Facilities Technical Services

Block objects are to be developed in accordance with the PSPC National CADD Standards document (APPENDIX D). Only real blocks will be accepted as a specific drawing to a project. All real block objects developed within a project shall be approved by PSPC prior to their use on Architectural Base plans.

### 4.4 Real Block Objects

They are AutoCAD blocks that are dimensionally accurate pictorial representations of real objects. A real object block may be a simplified representation of a building element. Basic rules for the creation of real block must be followed:

1. Objects must be created full size
2. Blocks must be inserted with 1 to 1 scale into model space.
3. Block name is composed 10 characters XXX-XX-XXX  
    **XXX-xx-xxx**: Project Name  
    Xxx-**XX**-xxx: Layer Fields  
    Xxx-xx-**XXX**: Real block description

Example: NPB-DR-FR1 (National Printing Bureau Special Door Frame).

### 4.5 Specific Block Objects

Specific object are blocks or other type of entities that PSPC uses consistently in their Architectural Base plans.

1. Interior windows are shown as a single line and in the middle of the frame for the glass location.
2. Exterior windows are shown as a double line with a thickness and located as per the measurements. Note that windows are composed of two real blocks for the frame and double line for headers.

3. Wall and finish type thickness must be consistent throughout the entire project.

## 5. Beginning a Drawing Project

Architectural and structural plans, in conjunction with data collection activity measurement, are used to create the base for a building floor plan template for each project. Only common building elements are used to develop the consistent floor plan template to which additional building elements will be referenced.

### 5.1 General Procedures

1. Measurements values depicted on the Architectural Base plan must be metric units by expressed in millimetres only.
2. Layering standards must be in accordance with the latest publish *PSPC National CADD Standards* (APPENDIX D)
3. All architectural base plans must include FTS title block, key plan, north arrow, general floor title, scale symbols legend and street names.
4. The title block must be inserted at 0,0 if the drawing is not “georeferenced”.

### 5.2 Creating a Floor Plan Template with Reference Architectural or Structural Plans

The overriding intent of this process is to model all structural building elements into a floor plan template that weighs and balances the reality of building construction with a desire to create an orthogonally correct, normalized floor plan template. This is achieved through the analysis; comparison and adjustment of reference plan measurements relative to field-based measurements between like structural building elements.

Throughout the development of the floor plan template within projects that span multiple floors, consistent field-based measurements are achieved by averaging the measurements of and between building structural elements such as columns, structural walls, exterior walls, shear walls, elevator shafts, mechanical shafts and stairwells that exist on all applicable project floors and that were designed to vertically align as per the original building design layout. The average measurements are to be used within locating, sizing and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.

Comparisons, analysis and adjustment to the location of building elements are to be applied individually in both the X and Y coordinate planes.

The following standard procedures are recommended to produce a floor plan template.

1. Create a metric structural grid and locate all structural building elements, such as bearing walls and columns, as per their location and measurements on the reference architectural or structural plans.
2. Compare the measurements between adjacent structural elements on the reference plans with the measurements captured during data collection activities on data collection sheets.
3. If the compared difference is within the 30mm/100 metres acceptable tolerance limit relative to the plan distance, the reference plan location of the structural elements within the structural grid will be adopted (i.e. a reference plan inverse distance between structural column centres of 20 metres has an acceptable tolerance limit of 6 mm).

4. If the compared difference is greater than the 30mm/100 metres acceptable tolerance limit relative to the plan distance, the structural element will be adjusted within the structural grid to reflect the measurement captured during data collection activities on data collection sheets.
5. Add the additional structural elements such as structural walls, exterior walls, shear walls, elevator shafts and stairwells that are present on the project floor. For those projects that span multiple floors, the additional structural elements must include those elements that exist on all applicable project floors and that were designed to vertically align as per the original building design layout. The average measurements are to be used within locating and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.
6. Undertake a similar comparison process for these building elements as for the located structural building columns. Adopt or adjust their location within the structural grid as required.
7. Add and identify the consistent finishes around structural elements other than concrete or steel.
8. Identify the construction of building core walls for those other than concrete or concrete blocks
9. Complete the floor plan template by analyzing the alignment of the structural grid relative to all structural elements located within the structural grid. Shift the structural grid as may be required to achieve a result whereby the maximum quantity of structural elements located on and aligned with the structural grid.

### 5.3 Creating a Floor Plan Template without Reference Architectural or Structural Plans

The overriding intent of this process is to model all structural building elements into a floor plan template that weighs and balances the reality of building construction with a desire to create an orthogonally correct, normalized floor plan template. This is achieved through the analysis; comparison and adjustment of reference plan measurements relative to field-based measurements between like structural building elements.

Throughout the development of the floor plan template within projects that span multiple floors, consistent field-based measurements are achieved by averaging the measurements of and between building structural elements such as columns, structural walls, exterior walls, shear walls, elevator shafts, mechanical shafts and stairwells that exist on all applicable project floors and that were designed to vertically align as per the original building design layout. The average measurements are to be used within locating, sizing and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.

Comparisons, analysis and adjustment to the location of building elements are to be applied individually in both the X and Y coordinate planes.

The following standard procedures are recommended to produce a floor plan template.

1. Create a structural grid based on the original building design units, imperial or metric. The year of construction can assist in establishing if the original design units.
2. Locate the structural building columns within the structural grid as per the measurements captured during data collection activities on data collection sheets.
3. Compare the data collection sheet measurements between adjacent structural columns centres relative to their intended layout measurement distances (i.e. 50 feet column centres for imperial designs, 20 metres column centres for metric designs).

4. If the compared difference is within the 30 mm/100 metres acceptable tolerance limit relative to the intended design distance, adjust the location of the structural column element in the required direction to align it with the established structural grid.

As an example, within a building designed in imperial units the measured distance between two adjacent column centres is measured at 15244 mm (50.013 feet). It is logical to assume that the original design was intended to be 50 feet column centres (15240 mm). The acceptable tolerance limit relative to the intended design distance is calculated as 5 mm. In this case the distance is to be adjusted to 15240 mm to reflect the intended design of 50 feet column centres. The 4 mm adjustment in this example is within the 30 mm/100 metres acceptable tolerance limit.

5. If the compared difference is greater than the 30mm/100 metres acceptable tolerance limit, the structural building column will not be adjusted and will be located as per measurement captured during data collection activities on data collection sheets.
6. Add the additional structural elements such as structural walls, exterior walls, shear walls, elevator shafts and stairwells that are present on the project floor. For those projects that span multiple floors, the additional structural elements must include only those elements that exist on all applicable project floors and that were designed to align vertically as per the original building design layout. The average measurements are to be used during locating and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.
7. Undertake a similar comparison process for these structural building elements as for the located structural building columns. Adopt or adjust their location within the structural grid as required.
8. Add and identify the consistent finishes as required around structural elements other than concrete or steel.
9. Identify the construction of building core walls for those other than concrete or concrete blocks.
10. Complete the floor plan template by analyzing the alignment of the structural grid relative to all structural elements located within the structural grid. Shift the structural grid as may be required to achieve a result whereby the maximum quantity of structural elements located on and aligned with the structural grid.

## 6. Completing the Architectural Base Plan

Complete the Architectural Base plan by adding the following elements and information, if present within the project area, to the finalized floor plan template. The lists of elements identified below correspond with the lists of elements and attribute information captured during on-site data collection activities as per earlier in this document. The elements are to be drawn or inserted as indicated in the lists below and are to be placed on their respective layer as per the *PSPC National CADD Standards document (APPENDIX D)*. Observe the described methodology for analyzing and averaging measurements of building area layout and elements.

Note that some of the elements indicated here may have been located or identified previously during the development of the floor plan template.

### 6.1 Analyzing and Averaging Measurements of Building Area Layout and Elements

If the longest and shortest measurements of the length, width or height of a defined building area or individual building element differ by less than 30 mm (i.e. opposite walls of a room, beginning and end width of a corridor, varying ceiling heights within an open area), an average of the measurements must be calculated and used to

## PSPC – Geomatics “Existing Condition Modelling”

depict element(s) on the Architectural Base plan (i.e. opposite walls adjusted to the average length, ceiling height normalized vertically). Adjustments, as in the case of rooms, are to be made in a manner that will, where applicable and logical, preserve an orthogonal representation of the area layout or element. If the longest and shortest measurements of the length, width or height of defined building area or individual building element differ by greater than 30 mm the area layout and element(s) shall be depicted as per the measurements captured during data collection activities on data collection sheets.

## 6.2 General Elements

Element	Drawn
Interior walls	- Closed lines
Exterior walls	- Closed lines
Exterior wall outlines	- Lines
Interior fixed partitions	- Closed lines
Low walls	- Closed lines
Wall finish	- Closed lines
Horizontal conveyors and moving sidewalks	- Closed lines
Elevators	- Closed lines
Escalators	- Closed lines
Dumbwaiters	- Closed lines
Lifts and lift platforms	- Closed lines
Stairwells	- Closed lines
Staircases	- Closed lines
Staircase treads	- Closed lines
Staircase landings	- Closed lines
Staircase handrails and guardrails	- Closed lines
Barrier free ramps	- Closed lines
UP or DN Symbol and Arrow	- Exploded blocks
Stair cut	- Exploded block
Railings	- Closed lines
Floor description	- Block
Floor openings	- Lines
Floor (raised areas)	- Lines
Rooms description	- Block

### 6.3 Miscellaneous Interior Floor Elements

Elements	Drawn
Benches	- Closed lines
Lockers	- Closed lines
Planters	- Closed lines - Blocks
Public phones	- Block
Vending machines	- Plines
Bank Machine	- Closed Pline
Shelving	- Closed lines
Cabinets	- Closed lines
Ladders	- Closed lines
Video projectors	- Block
Barrier Free Sign	- Block
Barrier Free push button	- Block

### 6.4 Structural Elements

Add and identify the consistent finishes around structural elements other than concrete or steel.

Elements	Drawn
Ceiling beams (basement excluded)	- Lines
Bearing walls	- Closed lines
Retaining walls	- Closed lines
Floor beams (basement excluded)	- Lines
Interior columns	- Closed Plines
Exterior columns	- Closed Plines
Structural columns grids	- Centre lines
Structural grid bubbles	- Block
Structural grid dimensions	- (Dim)
Expansion joint and steal covers	- Lines
Floors above and overhangs	- Hidden lines

## 6.5 Exterior Window, Door and Wall Profiles Elements

Elements	Drawn
Frame width	- Real block
Mullion width	- Real block
Typical mullion	- Real block
Controlled joint mullion	- Real block
Interior window (Glazing)	- Single Line
Exterior window (Glazing)	- Double lines
Doors - Interior and exterior	- Block
Door Header	- Lines
Door Swing	- Block
Window sill	- Lines
Window Header	- Lines
Overhead window	- Hidden lines

## 6.6 Electrical Elements

Elements	Drawn
Clocks	- Block
Luminaries	- Block
Track Lights	- Block
Sound equipment including a P.A. systems	- Block
Video conference systems	- Block
Electrical panels	- Block
Switch and outlets	- Block
Ceiling fans	- Block

## 6.7 Plumbing Elements

Elements	Drawn
Urinals	- Block
Bidets	- Block
Sinks	- Block
Tubs	- Block
Janitorial tubs	- Block
Showers stalls	- Block
Drinking fountains	- Block
Counter tops	- Closed plines
Handicap seating in showers	- Closed plines
Lockers	- Closed lines
Grab-bars	- Block
Washroom partitions	- Plines w/ Thickness 32
Washroom partitions door and swings	- Block

## 6.8 Life Safety Elements

Elements	Drawn
Exit signs	- Block
Annunciation panels	- Block
B buzzers and bells	- Block
Emergency fire light	- Block
Emergency lights and battery packs	- Block
Pull stations	- Block
Heat detectors	- Block
Smoke detectors	- Block
Emergency voice communication systems	- Block
Motion detectors	- Block
Surveillance cameras	- Block
Sprinklers	- Block
Sprinkler pipes	- Lines
Fire extinguishers	- Block
Fire hose cabinets	- Block
Stand pipes	- Block
Emergency Eye Wash	- Block
Emergency shower	- Block
First Aid Kit	- Block

## 6.9 Mechanical Elements

Elements	Drawn
Supply and return vents	- Block
Outside air grills	- Closed lines
Pipes (excluding mechanical rooms/areas)	- Circles
Mechanical shafts	- Closed Lines
Mechanical equipment (excluding mechanical rooms/areas)	- Closed Lines
Thermostats	- Block
Air conditioning equipment	- Block
Heater	- Block
Refrigerant equipment	- Closed lines
Convectors	- Closed plines
Floor drains	- Block
Hot and cold water tanks	- Block

## 6.10 Ceiling Elements

Elements	Drawn
Ceiling beams – (excluding basement)	- Lines
Ceiling grid	- Closed lines
Planning grid	- Closed lines
Bulkheads	- Lines
Overhead openings and skylights	- Closed lines
Access door	- Block

## 6.11 Parking Elements

Elements	Drawn
Vehicle ramps	- Closed lines
Curbs	- Lines
Gates	- Closed lines
Pay booths	- Closed lines
Sidewalks	- Closed lines
Parking lines	- Lines
Parking space	- Lines
Parking Number	- Block
Accessible or Barrier Free Parking spaces	- Lines
No-parking areas	- Lines
Motorcycle parking spaces	- Lines
Bicycle stalls	- Lines
Street Name	- Text

## 6.12 Exterior Site Elements

Only exterior site elements that are attached to the construction of the building are captured.

Elements	Drawn
Exterior porches	- Closed lines
Exterior staircases	- Closed lines
Retaining walls	- Closed lines
Terraces	- Lines
Court yards	- Lines
Patios	- Closed lines
Guide posts and bollards	- Circles or closed lines
Vehicle ramps	- Closed lines

### 6.13 Areas under Construction

Clearly depict and indicate on the final Architectural Base plan those areas where data collection activities cannot be undertaken. If available, determine and note the date of completion of the construction.

### 6.14 Roof Elements

Roof information is collected from existing Architectural Base plans only. Access to the roof is restricted and can only be granted by the property manager. In such cases the location and dimensions of elements such as overhangs and canopies are to be estimated.

### 6.15 Non-Accessible Areas

Clearly depict and indicate on the final Architectural Base plan those areas that are access-restricted or non-accessible.

### 6.16 Parking Elements - Outside Stalls

Exterior parking stalls include parking spaces available within an outside parking lot. Unless requested, no outside parking elements are to be drawn on the final Architectural Base plan.

### 6.17 Title Block Information Elements

Elements	Depicted by
Project name and address	- Project Leader
Drawing name: building name and floor number	- Project Leader
Name of measurers and date	- Project Leader
Name of draftsman and date	- Project Leader
Name of reviewer and date	- Project Leader
Name of approver and date	- Project Leader
Project number	- Project Leader
Drawing number	- Project Leader
Name of reviser and date	- Project Leader
Insertion of the key plan appropriate for the building	- Project Leader
Legend	- Created by LISP
North Arrow	- Block
Key plan	- Project Leader

## 7. Quality Assurance

It is essential that final Architectural Base plans drawings be subject to quality assurance and quality control process to ensure adherence to the Building CAD Plan Requirements and *PSPC National CAD Standards document (APPENDIX D)*. The following quality assurance elements shall form part of the Quality Assurance checklist that shall be completed for all final Architectural Base plans produced within a project.

<b>Colour Assignment:</b>
<ul style="list-style-type: none"> <li>• PSPC Colour/Line-Weight assignments</li> </ul>
<b>Layer Standard:</b>
<ul style="list-style-type: none"> <li>• PSPC layering standard applied</li> </ul>
<ul style="list-style-type: none"> <li>• Standard layer naming convention applied</li> </ul>
<ul style="list-style-type: none"> <li>• Inventory elements on correct layer</li> </ul>
<b>Text Style Standard:</b>
<ul style="list-style-type: none"> <li>• Only standard AutoCAD or PSPC fonts applied</li> </ul>
<b>Dimension Style Standard:</b>
<ul style="list-style-type: none"> <li>• PSPC dimension styles applied</li> </ul>
<ul style="list-style-type: none"> <li>• Associatives dimensions identified</li> </ul>
<ul style="list-style-type: none"> <li>• PSPC naming conventions applied</li> </ul>
<b>Line Type Standard:</b>
<ul style="list-style-type: none"> <li>• Standard AutoCAD or PSPC line types applied</li> </ul>
<ul style="list-style-type: none"> <li>• Standard line types applied</li> </ul>
<ul style="list-style-type: none"> <li>• Line type display variables correctly applied</li> </ul>
<b>External References:</b>
<ul style="list-style-type: none"> <li>• No external references on final drawings</li> </ul>
<b>PSPC Title Blocks and Graphic:</b>
<ul style="list-style-type: none"> <li>• PSPC title blocks inserted in Paper Space and filled correctly with North Arrow</li> </ul>
<ul style="list-style-type: none"> <li>• Title block is properly labelled and numbered</li> </ul>
<ul style="list-style-type: none"> <li>• Legend match symbol used in drawing</li> </ul>
<ul style="list-style-type: none"> <li>• Key plan is properly identified</li> </ul>
<ul style="list-style-type: none"> <li>• All graphic elements are closed and properly located (Walls, Ceiling grid...)</li> </ul>
<ul style="list-style-type: none"> <li>• All drawings stacks</li> </ul>
<ul style="list-style-type: none"> <li>• Verify for overlap lines, crooked lines, none fillet lines</li> </ul>
<b>1:1 Metric model:</b>
<ul style="list-style-type: none"> <li>• Drawing modeled at full-size using metric units.</li> </ul>
<b>Real World Co-ordinate System:</b>
<ul style="list-style-type: none"> <li>• Co-ordinate system integrity maintained</li> </ul>

## 8. General Information

### 8.1 Standardized names and abbreviations

The following lists represent typical floor finishes and room name standard descriptions that apply most often to FTS projects.

### 8.2 Floor Finishes (abbreviations)

- Asphalt
- Carpet
- Ceramic (Cera.)
- Floor Expansion Joints
- Hardwood Floor
- Marble Floor
- Masonry & Stone Flooring
- Concrete Floor (Conc.)
- Rubber Floor
- Vinyl, or Vinyl Tile (V.T.)
- Terrazzo Floor Tile
- Floor Control Joints
- Granite Floor
- Linoleum or Sheet Vinyl Floor (Lino.)
- Parquet Floor Tile
- Porcelain Floor Tile
- Raised Floor System

### 8.3 Room Standard Descriptions (abbreviations)

- Workstation
- Office and Office area
- Enclosed Office
- Hotel / Private Rooms
- Photocopy Room / Area
- Waiting Area / Reception Area
- Filing Room / Area
- Cafeteria
- Laboratory (Lab.)
- Security Desk / Area
- Main Entrance Lobby
- Elevator (Elev.)
- Meeting Room
- Conference Room Boardroom
- Washroom
- Janitors Closet, (J.C.)
- Mechanical Room (Mech. Rm)
- Storage Room
- Process Area
- Kitchen
- Lobby
- Staircase (Stair)
- Special Purpose (provide description)
- LAN / Telecom Rooms

## **Annex D**

### **Public Services and Procurement Canada – National Computer Aided Design and Drafting Standard**

<https://www.tpsgc-pwgsc.gc.ca/biens-property/cdao-cadd/index-eng.html>

## Appendix E

### Facilities Information Management: CAFM - Data Capture Requirements



Public Works and Government Services  
Real Property Branch  
Professional and Technical Services  
Geomatics Services

**Revised – Jan 2018**



Public Works and  
Government Services  
Canada

Travaux publics et  
Services gouvernementaux  
Canada

Canada



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## SECTION 1: Data Collection Activities - CAFM

### 1.0 Introduction

This document contains general procedural information, field work requirements and listings of facilities elements to be collected for the purposes of producing Facilities Management Plans of PWGSC crown-owned and leased buildings as well as other Government Department (OGD) buildings.

### 1.1 Data Collection

#### 1.1.1 Data Collection Activities for Facilities Management Plan Projects

This section covers on-site surveying, data capture and data collection requirements that will be associated with the production of Facilities Management (FM) Plans of federal crown-owned and leased buildings as well as Other Government Department (OGD) crown-owned buildings. The recorded information will be of sufficient detail to facilitate the updating of existing or creation of new FM Plans.

### 1.2 Project Start-Up

During an initial project start-up meeting, project stakeholders will discuss and resolve any issues including the following.

#### 1.2.1 General Project Information

Project description and detailed requirements along with project contact information.

#### 1.2.2 Reference Data and Plans

Identification and provision of existing reference documentation and plans.

#### 1.2.3 Procedures to Notify the Property Manager

The project leader must notify the property manager as early as possible in any project planning process. At a minimum, the notification must include the following:

- Project contact names and phone numbers
- A description of the proposed work
- The probable duration of the work
- The project's proposed start date
- A delineation of the affected areas

#### 1.2.4 On-site Inspection

Depending on the complexity of a project, an on-site inspection could be conducted with the approval of the property manager.



### 1.2.5 Procedures Related to Hazard and Hazardous Material Identification

Refer to: *“Building Data Capture Safety Operating Procedures (APPENDIX A)”*.

### 1.2.6 Project Procedures Related To Safety and Safety Plan

The Project Leader or their delegates will conduct an on-site safety review of the project area to verify any possible hazard and/or hazardous material as required. It is recommended that the on-site PWGSC property manager be consulted to provide any relevant information that may affect the project.

Should the Project Leader or data collection staff identify a new hazard during project work; the safety plan will be amended accordingly.

### 1.2.7 Safety Training/Education/Certification

All individuals entering onto a project site for the purposes of conducting on-site data collection activities are required to have undergone PWGSC recognized training /education /certification in each of the areas described below:

- Confined Space Awareness
- Fall Protection Worker
- WHMIS (Workplace Hazardous Materials Information System)
- Standard First Aid

## 1.3 Data Collection Sheets

Data collection sheets are used to record on-site measurements of elements and specific attribute data and may be developed from existing Facilities Management Plans **ONLY**.

### 1.3.1 Format and Layout Requirements for Data Collection Sheets

- Drawings must be printed on 11x17 including details and other related data.
- Data collection sheets must be numbered sequentially (i.e. 1 of 10 through 10 of 10).
- Standard architectural nomenclature is to be used.
- A key plan must be provided of all numbered sheets.

Each data collection sheet must include the following general information in the top right corner:

<b>Project Name</b>	
<b>Building Name</b>	
<b>Floor Number</b>	
<b>Date</b>	
<b>Project Team Names</b>	



### 1.3.2 Types of Data Collection Sheets

Individual sets of data collection sheets are required for each of the following:

- Furniture Layouts and Office Equipment (ID Office Vacancy)
- Telecommunications and Electrical Equipment
- Informatics Equipment
- Security Equipment
- Specialized Equipment

## 1.4 Measuring Equipment

PWGSC Project Authority must approve all lasers measuring device prior to its use on a project site. Precision laser equipment is required to conduct all measurement activities although steel-measuring tapes will be required and acceptable for shorter distances or irregular spaces.

The general operation and consistency of measurement of laser equipment must be verified and recorded daily through an on-site project baseline measurement procedure. Laser equipment must display repeated measurement readings within 3 mm relative to the steel tape measured distance over a minimum baseline distance of 15 metres.

## 1.5 Measurement Units and Area Specific Measurement Procedures

The following basic and area specific procedures are to be observed during **data** collection activities.

### 1.5.1 General

- All measurements taken and information gathered on-site must be depicted on the data collection sheets.
- All measurements must be shown in metric units and to the nearest millimetre.
- Measurements depicted on the data collection sheets must be expressed in millimetres.
- Measure the longest horizontal “X” and “Y” distances of each room area/ individual workstation and the larger overall collection of adjacent or joined room areas and/or workstations.
- Measure each workstation grouping to columns, interior/exterior walls & to other workstation groupings.



- Measurements (length, width, depth, height) for all furniture items i.e. furniture screens, work surfaces and cabinets etc. shall be identified and depicted on the data collection sheets. Screens/panels thickness should be checked at regular intervals and reported as a side note on the data collection sheet. Any thickness deviation should be noted near the screen/panel itself. Imperial conversions can be used for example:
  - o Screens/panels 6642: where 66 is equal to the height of the screen/panel & 42 is the length;
  - o Work Surfaces 2436: where 24 is the width & 36 is the length;
  - o Cabinets 1836: where 18 is the depth & 36 is the length;
- Identify and provide a room number for all room areas/ individual workstations.
- Refer to specific project details for any other information/measurement instruction needed.

## 1.6 Dimensions and Leaders

Dimensions, leaders and other similar information captured on data collection sheets **are** to adhere to the following:

Depict the information using the appropriate colour as per the table below.

<b>RED</b>	<ul style="list-style-type: none"> <li>• Measurements</li> <li>• Dimension lines</li> <li>• Arrowheads</li> <li>• Leaders</li> </ul>
------------	--

- Use arrowheads to start and end dimension lines ensuring that the arrowheads point specifically to the object/element/item surface.
- Use a slash instead of an arrowhead to indicate a measurement taken from a glass surface or from the centre of an object.
- Measurement values are followed by a decimal point to avoid confusion between distance values and numerical identifiers (i.e. 669 (room) vs. 669. (Distance value)) Note that measurements depicted on the data collection sheets must be expressed in millimetres only.
- Include detail sketches on the side of the data collection sheet or on a separate data collection sheet (11 x 17).
- When a measurement is physically impossible to obtain, denote this on the data collection sheet by using the Non-Obtainable symbol: (N.O).



## 1.7 CAFM Base Elements to Be Captured On-Site

The following lists identify the FM inventory elements and associated attribute information to be captured on-site and depicted on the appropriate data collection sheets. Although the lists contain standard inventory elements, supplemental project specific inventory elements and attributes may be added on individual project-by-project basis.

**Note:** Unless indicated, the location-based layout measurements must be depicted on the data collection sheets for all inventory elements.

For clarity, the following definitions are provided of the key element attributes listed in this section.

Attributes	Description
Dimensions:	The set of horizontal measurements from fixed or definable surfaces or building elements that establish the location and size of an element.
Height:	This refers to the overall measurement from top to bottom of any object.
Length:	This refers to the overall measurement from end to end of any object.
Depth:	The overall measurement from front to back of any object.
Thickness:	The dimension between two surfaces of an object, usually the dimension of smallest measure.
Width:	This refers to the overall measurement from left to right of any object.
Diameter:	The length of a straight line passing through the center of a circle and connecting two points on the circumference.



### 1.7.1 Furniture Layout and Office Equipment Information

Inventory Elements	Colour	Attributes Captured
Systems furniture, freestanding furniture, work surfaces ( <i>includes but not limited to bullet tops, corners, p-tops, piano tops, quarter moons, angled corners, curved corners, curved ends, rounded corners, transitions, transaction tops etc.</i> )	RED	Dimensions, <i>length, depth, diameter</i>
Dividing partitions / divider screens	BLUE	Dimensions, <i>height, length, thickness</i> Attributes: <i>Identify glazed panels, Sliding Door Panels, Powered / Non Powered, Fabric Pattern, Manufacturer</i>
Pedestals	BLUE	Dimensions, <i>length, depth</i> Attributes: <i># of bins, # of files</i>
Overhead storage bins, hutches, shelves and display cases	GREEN	Dimensions, <i>length, depth</i>
Filing cabinets, storage cabinets, mapping cabinets, safes, closets, DASCO	RED	Dimensions, <i>length, depth, height</i> Attributes: <i># of drawers, # of doors</i>
Credenzas, standalone shelving units	RED	Dimensions, <i>length, width, height</i>
Mobile Shelving System	RED	Dimension of Ends: <i>length, width, height</i> Attributes: <i>Dimension (length, width) and # of middle unit</i>
Bookcases	RED	Dimensions, <i>length, depth, height</i>
Tables ( <i>includes but not limited too round, rectangular, curved, oval, racetrack, mobile etc.</i> )	RED	Dimensions, <i>length, width, diameter</i>
Standalone Desks	RED	Dimensions. <i>length, width</i> Attributes: <i>Built-in drawer locations</i>



Inventory Elements	Colour	Attributes Captured
Office and guest chairs	<b>BLACK</b>	Project dependant
Sofas, beds, work benches, whiteboards, coat racks	<b>RED</b>	Size: <i>length, width, diameter</i>
<i>Accessories (includes but not limited too keyboard trays, mobile carts, recycle stations, vending machines, flipcharts, plants etc.)</i>	<b>BLACK</b>	Mobile cart dimensions: <i>length, width</i>
Computers, monitors, laptops, keyboards	<b>BLACK</b>	Project dependant
Power poles, faceplates, jacks, screen cable connections	<b>GREEN</b>	Project dependant
Scanners, printers, photocopiers, plotters, faxes and televisions	<b>BLACK</b>	Project dependant
Microwaves, refrigerators, ovens/ stoves, water coolers and water racks	<b>BLACK</b>	Project dependant
ATM machines, Information centres	<b>BLACK</b>	Project dependant
Over-head projectors, projector screens, and sound systems	<b>BLACK</b>	Project dependant
Rooms or workstations	<b>GREEN</b>	Name/Number
Room Standard Description	<b>GREEN</b>	As per "Room Standard Description Table"
Photos and/or 3D sketch with dimensions illustrating a typical workstation layout	N/A	Project dependant



### 1.7.2 Telecommunications Equipment Information

Inventory Element	Colour	Attributes Captured
Phones	RED	Phone #
Fax Machines	RED	Phone #
Faceplates	GREEN	Faceplate ID Number
Voice Jacks	BLUE	Jack ID Number
Cable poles / Panel outlets	RED	Project dependant
Cable Distribution Trays / Pipes	RED	Project dependant
Telecom Panels	RED	Panel ID Number
Telecom Switches	BLUE	Project dependant

### 1.7.3 Informatics Equipment Information

Inventory Element	Colour	Attributes Captured
Computer	BLUE	Asset Number
Laptop	BLUE	Asset Number
Printer / Plotter	BLUE	Asset Number or Identification Number
Scanner	BLUE	Asset Number or Identification Number
Photocopier	BLUE	Asset Number or Identification Number
Monitor	BLUE	Asset Number
Projector	BLUE	Asset Number or Identification Number
Projector Screen / Board	BLUE	<b>Dimensions:</b> length x width
Faceplate	GREEN	Faceplate ID Number
Data Jack	BLUE	Jack ID Number
Cable poles / Panel outlets	RED	Project dependant
Cable Distribution Trays / Pipes	RED	Project dependant
Server	BLUE	Project dependant



Inventory Element	Colour	Attributes Captured
Network Panel	<b>RED</b>	Panel ID Number
Network Switch	<b>RED</b>	Project dependant

#### 1.7.4 Electrical Equipment Information

Inventory Element	Colour	Attributes Captured
Electrical Receptacles / Outlets	<b>BLUE</b>	Project dependant
Electrical Switches	<b>BLUE</b>	Project dependant
Electrical Floor Monuments	<b>BLUE</b>	Project dependant
Electrical Panels	<b>BLUE</b>	Project dependant
Electrical Breakers	<b>RED</b>	Project dependant
Electrical Furniture Screen Poles	<b>RED</b>	Project dependant

#### 1.7.5 Security Equipment Information

Inventory Element	Colour	Attributes Captured
Card swipe devices	<b>RED</b>	Project dependant
Access Pads	<b>RED</b>	Project dependant
Security Gates	<b>BLACK</b>	Project dependant
Security Cameras	<b>RED</b>	Project dependant
Motion Detectors	<b>RED</b>	Project dependant
Security Intercoms / Telephones	<b>RED</b>	Project dependant
Security Access Panels	<b>RED</b>	Project dependant
Security Alarms	<b>RED</b>	Project dependant



### 1.7.6 Specialized Equipment Information

Inventory Element	Colour	Attributes Captured
Laboratory Equipment	BLUE	Project dependant
Military Equipment	BLUE	Project dependant
Marine Equipment	BLUE	Project dependant
Vehicles	BLUE	Project dependant
Exhibits	BLACK	Project dependant

### 1.7.7 Other Data Collection Sheet Drawing Items

Drawing Item	Colour	Attributes Captured
All measurements, dimension lines, arrows, leaders	RED	N/A

### 1.7.8 Areas under Construction

Clearly depict and indicate on the data collection sheets those areas where data collection activities cannot be undertaken. If available, determine and note the date of completion of the construction.

### 1.7.9 Non-Accessible Areas

Access may be restricted to areas in building for reasons of privacy, commercial sensitivity, Health and Safety or other compliance requirements. Any restriction must be agreed between the appropriate building access approver and the project leader. If access is not granted in certain areas, the project leader must clearly depict and indicate on the data collection sheets those areas that are access-restricted or non-accessible. The project leader must show in writing to the PWGSC project authority communications from the building access approver specifying rooms or areas not accessible.

## 1.8 Project Material Filing and Storage Requirements - Data Collection

### 1.8.1 Storage

Project information is to be submitted in natural coloured expanding project file folders (type E-22). A printed label (approximately 1"X4") identifying the building name, building address and applicable project identifiers is to be placed on the right top corner of each expanding file folder.



### 1.8.2 Filing

Standard project file folders must be natural coloured, legal size and placed inside expanding project file folders. A printed label (approximately 1"X4") identifying the building name, building address, floor number and applicable project identifiers is to be placed on the right top corner of each standard file folder.

### 1.8.3 Folders

Each unique floor or level requires a separate standard file folder. On-site data collection sheets and site notes shall be folded and placed in standard file folders.

## 1.9 Quality Assurance

It is essential that final data collection sheet be subject to quality assurance quality control process to ensure adherence to *PWGSC Standards*. The following quality assurance elements shall form part of the Quality Assurance checklist that shall be completed for all final Facilities related plans produced within a project.

<b>Colour Assignment:</b>
<ul style="list-style-type: none"> <li>• PWGSC Colour assignments</li> </ul>
<b>Standard:</b>
<ul style="list-style-type: none"> <li>• All new elements are measure and located from an existing PWGSC Drawings.</li> <li>• All facilities related data captured is created on 11X17 sheets including details.</li> <li>• Cover sheet include key plan identifying data sheets numbers and locations.</li> <li>• All sheets are numbered and labelled.</li> <li>• All measurements are verified and calculated and totalled.</li> </ul>
<b>Text:</b>
<ul style="list-style-type: none"> <li>• All text to be readable</li> <li>• All dimension number end by a point.</li> <li>• All room &amp; door numbers are labelled.</li> </ul>
<b>Dimension:</b>
<ul style="list-style-type: none"> <li>• Verify if all arrowheads point in the right directions</li> <li>• New or updated wall thicknesses are identified.</li> </ul>
<b>External References:</b>



- External references (PWGSC) drawings and CD are return

## SECTION 2: General Information

### 2.0 Abbreviations

The following table identifies standardized abbreviations used within a project for both data collections sheets and on the final Facilities Management Plans. A legend that includes applicable standardized abbreviations in addition to project specific abbreviations must be provided with data collections sheets and depicted on the final Facilities Management Plans.

NAME	ABBREVIATION
Bookcases	<b>BC</b>
Closets	<b>CL</b>
Credenzas	<b>CR</b>
Filing Cabinets	# of Drawers
Hutches	<b>HUT</b>
Overhead Bins	<b>SB</b>
Overhead Shelves	<b>OSH</b>
Pedestals	<b>B = Bin or F = File (i.e. BBF or FF)</b>
Safes	<b>SF</b>
Shelving Units	<b>SH</b>
Storage Cabinets	<b>SC &amp; H = High or L = Low</b>
Tables	<b>T</b>

### 2.1 Room Standard Descriptions

The following table lists the typical room standard descriptions found that apply most often to FM projects. Standardized abbreviations do not yet exist for these elements and must be developed for use with data collection sheets and Facilities Management Plans. A legend that includes applicable standardized abbreviations in addition to project specific abbreviations must be provided with data collections sheets and on the final Facilities Management Plans.

Room Standards descriptions may include but not limited to:

- Workstation
- Office and Office area
- Enclosed Office
- Hoteling / Private Rooms
- Meeting Room / Conference Room / Boardroom
- LAN / Telecom Rooms
- Washroom
- Janitors Closet
- Photocopy Room / Area
- Waiting Area / Reception Area
- Mechanical Room
- Storage Room
- Filing Room / Area
- Process Area
- Cafeteria
- Kitchen
- Laboratory
- Lobby
- Security Desk / Area
- Staircase
- Main Entrance Lobby
- Special Purpose (provide description)



## 2.2 Data Collection Symbol Legend for Facilities Information

The following legend contains a sample of commonly used furniture symbols recorded on data collection sheets. Furniture elements may vary on-site, therefore, the attribute information and actual hand drawn likeness of the element (i.e. “piano top” shaped desk) must be recorded.

FURNITURE PLAN SYMBOL LEGEND			
	COAT TREE		DOUBLE SEAT SOFA
	COAT RACK		TRIPLE SEAT SOFA
	FLIPCHART		SIDE CHAIR
	PULL DOWN SCREEN		LOUNGE CHAIR
	PLANT		LOUNGE CHAIR WITH ARM TABLE
	RECYCLE CENTRE BIN		MAGAZINE LIBRARY SHELVING UNIT
	TELEVISION MONITOR		DASCO CABINET
	VENDING MACHINE		BOOKCASE
	WHITE BOARD		BOOKCASE WITH DOORS
	WHITE BOARD WITH DOORS		SINGLE-DOOR STORAGE CABINET
	SMART BOARD		DOUBLE-DOOR STORAGE CABINET
	WATER DISPENSER		FOUR-DOOR STORAGE CABINET
	WATER BOTTLE RACK		CLOSET CABINET
	COFFEE MACHINE		LATERAL FILING CABINET
	REFRIDGERATOR		VERTICAL FILING CABINET
	MICROWAVE		TABLETOP HUTCH
	MOBILE CART		MAILBOX SYSTEM SHELVING
	COMPUTER WITH 1 MONITOR		SINGLE-OVERHEAD STORAGE BINS
	COMPUTER WITH 2 MONITORS		DOUBLE-OVERHEAD STORAGE BINS
	PHOTOCOPIER		OVERHEAD SHELVING
	FAX MACHINE		PEDESTALS
	LARGE EQUIPMENT		SAFES
	PLOTTER		STAND ALONE SHELVING UNITS
	SCANNER		NON-POWERED SCREENS / PANELS
	SHREDDER		POWERED SCREENS / PANELS
	SMALL EQUIPMENT (PRINTERS)		ROUNDED SCREENS / PANELS
	BED		STAND ALONE SCREENS / PANELS
	OFFICE CHAIR WITH ARMS		SYSTEM FURNITURE POCKET DOORS
	GUEST CHAIR		FURNITURE MOUNTED PRIVACY SCREENS
	STOOL		POWER POLES

**Appendix F**  
**Facilities Information Management:**  
**CAFM - CAD Plan Requirements**



Public Works and Government Services  
Real Property Branch  
Professional and Technical Programs  
Geomatics Services Directorate

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## SECTION 1: Facilities CAFM CAD Plans

### 1.1 Introduction

The production of Facilities Management (FM) CAD Plans involves depicting the dimensional measurements and FM related elements such as furniture layouts; telecommunications and informatics devices etc., obtained through the facilities data collection process, within a facilities floor plan template. Final Facilities Plans must be orthogonally correct for subsequent use by other professionals such as interior designers, architects, and engineers in the same way the Architectural Base Plans are. Acknowledging that a building cannot be built absolutely square, it is essential that the appropriate processes be undertaken to ensure crucial building elements are orthogonally correct. Only two dimensional (2D) drawings and drawing objects will be accepted.

### 1.2 Project Research

#### 1.2.1 Available Source Plans

Before starting any project, the verification of the existence of furniture layout plans, architectural drawings, and/or other facilities related drawing information must be done. Other possible sources of reference material may include but not limited to:

- PWGSC (Interior Design Drawings, CAD Master Files, Base Building, Tech2)
- Other Government Departments (OGD)
- Building Owners
- Original Tendered/ As-Built Drawings
- Canada Archives

### 1.3 Naming Conventions

All CAD information submitted must be using the convention listed below. This standard provides the framework of the storage and retrieval of drawing information over its lifecycle.

#### 1.3.1 Digital File Name

- the three **first** letters of the file are the abbreviated name of the building;  
**XXXxxxxx: TAMGRB01.dwg**
- the **fourth** and **fifth** letters or numbers are the floor name or number;  
**xxxXXxxx: TAMGRB01.dwg**
- the **sixth** letter lists the drawing type identifier;  
**xxxxxXxx: TAMGRB01.dwg**
- the **seventh** and **eighth** numbers represents the revision number. These numbers are changed only when the calculated "Plines" are modified.  
**xxxxxxXX: TAMGRB01.dwg**
- **Example:** TAMGRB01.dwg  
**TAM:** Thomas D'Arcy McGee - (Building Name)  
**GR:** Ground Floor  
**B:** Base Building  
**01:** Revision 01



### 1.3.2 Drawing Type Identifier

<b>B</b>	Base Building
<b>C</b>	CAFM
<b>F</b>	Fire Evacuation Plan
<b>G</b>	Graph
<b>L</b>	Leasing
<b>O</b>	Other
<b>P</b>	Preliminary
<b>S</b>	Single line
<b>T</b>	TECH2
<b>U</b>	Unofficial

### 1.3.3 Floor Name Identifier

#### 1.3.4

For the floor numbers, use the same button code as those indicated on the elevator panel of the building.

<b>B2</b>	Basement Level Two
<b>B1</b>	Basement Level One
<b>P2</b>	Parking Level Two
<b>P1</b>	Parking Level One
<b>M1</b>	Mezzanine Level One
<b>GR</b>	Ground Floor
<b>01</b>	First Floor
<b>02</b>	Second Floor
<b>PH</b>	Penthouse

## 1.4 CAD Blocks

The layering requirements for Facilities CAD Blocks shall conform to the latest *PWGSC National CADD Standards document (APPENDIX D)*.

### 1.4.1 General

AutoCAD blocks group entities and shall not be exploded or nested. As a rule symbols should be created with linetype and colour “byblock” thus allowing maximum control and flexibility over its appearance. By applying the rule the symbol will take on the properties of the layer it is placed on along with permitting it to be changed to suit requirements independent of the layer settings. Mirrored blocks will not be accepted.

### 1.4.2 PWGSC – Facilities Information Management (FIM) Symbol Block Library

The PWGSC – FIM Symbol Block Library consists of a set of AutoCAD files that represent accepted Real Block Objects, Symbol Block Objects, and Common Block Objects. These files are maintained on CD executable file format and are available on a project-by-project basis. The AutoCAD menu of the PWGSC CAD Block Library and Symbol Legends created specifically for FM CAD Plans must be used for all projects.



### 1.4.3 Developing New Block Objects for FIM

Block objects are to be developed in accordance with the latest *PWGSC National CADD Standards document (APPENDIX D)*. All block objects developed within a project shall be approved by PWGSC prior to their use on FM CAD Plans.

### 1.4.4 Real Block Objects

They are AutoCAD blocks that are dimensionally accurate pictorial representations of real objects. A real object block may be a simplified representation of a piece of furniture or equipment. Basic rules for the creation of real block must be followed:

1. Objects must be created full size.
2. Blocks must be inserted with 1 to 1 scale into model space.
3. Block name is typically composed 8 characters X-XX-XXX\*  
X-xx-xxx: Article Type  
x-XX-xxx: Group Name  
x-xx-XXX: Real block description

Example: **F-WS-BUL** (Furniture – Work Surfaces – Bullet Top)

\* Additional information such as size, left /right hand setups will be required for some furnishing types: tables, work surfaces, screens etc.

### 1.4.5 Symbol Block Objects

Symbols blocks are AutoCAD blocks that are pictorial representations of objects not drawn to scale, such as computers, faxes, electrical outlets etc. Basic rules for the creation of symbols must be followed:

1. Symbols should be drawn at actual plotted size and not smaller than 2.5 mm.
2. Symbols should be inserted using the plotted scale if they are inserted in model space and 1 if they are inserted in paper space (layout).

### 1.4.6 Common Block Objects

They are AutoCAD blocks that also represent real objects but they could be scaled to represent different size objects such doors, round tables etc. Basic rules for the creation of common block must be followed:

1. Objects must be created inside a 1 x 1 square.
2. Blocks must be inserted using the real dimensions of the objects they represent into model space.

## 1.5 CAD Polylines

The area measurement and data transposition of all room/workstation areas shall conform to the latest *PWGSC Area Measurement Policy (APPENDIX H)*.

The layering requirements for Facilities CAD Polylines shall conform to the latest PWGSC National *CADD Standards document (APPENDIX D)*.



### 1.5.1 General

Polylines in the Facilities CAD drawings are used to calculate room areas in the CAFM Application. To ensure a remaining area calculation of 0.00m<sup>2</sup> (square metres):

- Abutting polylines shall **not** show gaps or overlapping segments
- Polylines **must** be closed and splines will not be permitted

**Note:** The entity type must be a “2DPOLYLINE” to adjoin angular and curved polylines. The colour and linetype are set to “Bylayer” and created with a linetype scale of “1.0”.

### 1.5.2 Solid Walls

Polylines for interior walls are drawn from the wall’s centerline to the intersecting centerline until the polyline is closed. Consult the documents referenced in Section 1.5 to determine when the polylines must be drawn flush to the wall.

### 1.5.3 Dividing Partitions / Divider Screens

In general, polylines for a workstation are drawn from the centerline to centerline of each screen. When a screen is against a wall, the polyline should extend to the centerline of the wall or adjoin the nearest polyline of that wall.

### 1.5.4 Columns

Where columns exist within a room or workstation, the polyline must be drawn continuously to exclude the area of the column from the area calculation. This exclusion is to ensure the room or workstation area represents the actual usable space.

## 1.6 Creating a Base for a Facilities Floor Plan Project

The Source Drawings, in conjunction with the fieldwork findings are used to create the base for a Facilities Floor Plan template for each project. Only common building elements are used to develop the consistent floor plan template to which additional facilities elements will be added. For more information on creating/updating common building elements please refer to APPENDIX C – Building CAD Plan Requirements.

### 1.6.1 General Procedures

1. Measurement values depicted on the Facilities Floor plans must be metric units expressed in millimetres (mm) only.
2. Layering standards must be in accordance with the latest *PWGSC National CADD Standards document* (APPENDIX D)
3. All Facilities Floor plans must include a title block, key plan, north arrow, general floor title, scale symbols legend and street.
4. The title block must be inserted at 0,0,0 if the drawing is not “georeferenced”.



## 1.7 Completing the Facilities CAD Plans

Complete the Facilities CAD Plan by adding the following elements and information, if present within the project area to the finalized floor plan template. The lists of elements identified below correspond with the lists of elements and attribute information captured during on-site data collection activities as per earlier in this document. The elements are to be inserted as indicated in the lists below and are to be placed on their respective layer as per the *PWGSC National CADD Standards document (APPENDIX D)*. Observe the described methodology for analyzing and averaging measurements of building area layout and elements.

**Note:** Some of the elements indicated here may have been located or previously identified during the development of the floor plan template.

### 1.7.1 Analyzing and Averaging Measurements of Building Area Layout and Elements

The length or width of a defined building area or individual building element may differ in dimensions during the data collection activities. Measurements (*i.e. length of opposite walls of a room or the start and end width of a corridor*) may be averaged or depicted as per the dimensions captured on the data collection sheets under the following situations:

1. If the longest and shortest measurements differ by **less** than 30mm, an average of the measurements must be calculated (*i.e. opposite walls adjusted to the average length*) and used to depict element(s) on the Facilities CAD Plan.
2. If the longest and shortest measurements differ by **greater** than 30mm, the area layout and element(s) shall be depicted as per the measurements captured during data collection activities on data collection sheets.

**Note:** Adjustments, as in the case of rooms, are to be made in a manner that will, where applicable and logical, preserve an orthogonal representation of the area layout or element.

### 1.7.2 General Elements

Element	Drawn
Interior walls	Closed lines
Exterior walls	Closed lines
Exterior wall outlines	Lines
Interior fixed partitions	Closed lines
Low walls	Closed lines
Wall finish	Closed lines
Rooms description	Block



### 1.7.3 Furniture Layout and Office Equipment

All furniture layout and office equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Room / Office / Workstation name and number	Single line text
Dividing partitions / divider screens	Real block with Attributes
Power poles, faceplates, jacks	Symbol block
Screen cable connections, electrical receptacles	Symbol block
Work surfaces ( <i>includes but not limited to bullet tops, corners, p-tops, piano tops, quartermoons, angled corners, curved corners, curved ends, rounded corners, transitions, transaction tops etc.</i> )	Real block with Attributes
Freestanding furniture ( <i>includes but not limited to desks, credenzas, hutches, etc.</i> )	Real block with Attributes
Tables ( <i>includes but not limited to round, rectangular, curved, oval, racetrack, mobile etc.</i> )	Real block with Attributes
Storage ( <i>includes but not limited to overhead storage bins, hutches, shelves, pedestals, filing cabinets, storage cabinets, mapping cabinets, bookcases, display case, etc.</i> )	Real block with Attributes
Mobile shelving system	Scalable symbol block
Office and guest chairs	Symbol block
Sofas, beds, work benches, coat racks	Symbol block with Attributes
Scanners, printers, photocopiers, plotters, faxes, televisions	Symbol block with Attributes
Computers, monitors, laptops, keyboards	Symbol block
Over-head projectors, projector screens	Symbol block
Accessories ( <i>includes but not limited to keyboard trays, mobile carts, recycle stations, vending machines, whiteboards, flipcharts, plants, etc.</i> )	Symbol and Real block with Attributes
Microwaves, refrigerators, ovens/stoves, dishwasher, water coolers and water racks	Real block



Inventory Element	Block Object Type
Sound systems	Closed Polyline
ATM machines, Information centres	Closed Polyline

#### 1.7.4 Telecommunications

All telecommunications equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Phone and Fax Machines	Symbol block with Attributes
Faceplates	Symbol block with Attributes
Voice Jacks	Symbol block with Attributes
Cable poles / Panel outlets	Symbol block
Cable Distribution Trays / Pipes	Closed polyline
Telecom Panels	Symbol block with Attributes
Telecom Switches	Symbol block with Attributes

#### 1.7.5 Informatics Equipment Information

All informatics equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Computers	Symbol block with Attributes
Laptops	Symbol block with Attributes
Printers / Plotters	Symbol block with Attributes
Scanners	Symbol block with Attributes
Photocopiers	Symbol block with Attributes
Monitors	Symbol block with Attributes



Inventory Element	Block Object Type
Projectors	Symbol block with Attributes
Projector Screens / Boards	Symbol block with Attributes
Data Jacks	Symbol block with Attributes
Cable poles / Panel outlets	Symbol block
Cable Distribution Trays / Pipes	Closed polyline
Servers	Symbol block with Attributes
Network Panel Code and Switches	Symbol block with Attributes

### 1.7.6 Electrical Equipment Elements

All electrical equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Electrical receptacles / outlets	Symbol block with Attributes
Electrical Switches	Symbol block with Attributes
Electrical Floor Mounts	Symbol block with Attributes
Electrical Panels	Symbol block with Attributes
Electrical Breakers	Symbol block with Attributes
Electrical Furniture Screen Poles	Symbol block with Attributes

### 1.7.7 Security Equipment Elements

All security equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Card Swipe Devices	Symbol block with Attributes
Access Pads	Symbol block with Attributes
Security Gates	Symbol block with Attributes
Security Cameras	Symbol block with Attributes



Inventory Element	Block Object Type
Motion Detectors	Symbol block with Attributes
Security Intercoms / Telephones	Symbol block with Attributes
Security Access Panels	Symbol block with Attributes
Security Alarms	Symbol block with Attributes

### 1.7.8 Specialized Equipment

All security equipment information captured during project data collection activities shall be inserted as block objects on the appropriate drawing layers. The attribute information associated with the block objects are to be completed as required.

Inventory Element	Block Object Type
Laboratory Equipment	Real block with Attributes
Military Equipment	Real block with Attributes
Marine Equipment	Real block with Attributes
Vehicles	Real block with Attributes
Exhibits	Real block with Attributes

### 1.7.9 Areas Under Construction

Clearly depict and indicate on the final Facilities CAD Plan those areas where data collection activities cannot be undertaken. If available, determine and note the date of completion of the construction.

### 1.7.10 Non-Accessible Areas

Clearly depict and indicate on the final Facilities CAD Plan those areas that are access-restricted or non-accessible.



### 1.7.11 Title Block Information Elements

Elements	Depicted by
Project name and address	Project Leader
Drawing name: building name and floor number	Project Leader
Name of measurers and date	Project Leader
Name of draftsman and date	Project Leader
Name of reviewer and date	Project Leader
Name of approver and date	Project Leader
Project number	Project Leader
Drawing number	Project Leader
Name of reviser and date	Project Leader
Insertion of the key plan appropriate for the building	Project Leader
Legend	Created by LISP
North Arrow	Block
Key plan	Project Leader



## 1.8 Quality Assurance

It is essential that final Facilities CAD Plan drawings be subject to quality assurance and quality control process to ensure adherence to the Facilities CAD Plan Requirements and the latest *PWGSC National CADD Standards (APPENDIX D)*. The following quality assurance elements shall form part of the Quality Assurance checklist that shall be completed for all final Facilities CAD Plans produced within a project.

<b>Colour Assignment:</b>
<ul style="list-style-type: none"> <li>• PWGSC Colour / Line-Weight assignments</li> </ul>
<b>Layer Standard:</b>
<ul style="list-style-type: none"> <li>• PWGSC layering standard applied</li> <li>• Standard layer naming convention applied</li> <li>• Inventory elements on correct layer</li> </ul>
<b>Text Style Standard:</b>
<ul style="list-style-type: none"> <li>• Only standard AutoCAD or PWGSC fonts applied</li> </ul>
<b>Dimension Style Standard:</b>
<ul style="list-style-type: none"> <li>• PWGSC dimension styles applied</li> <li>• Associative dimensions identified</li> <li>• PWGSC naming conventions applied</li> </ul>
<b>Line Type Standard:</b>
<ul style="list-style-type: none"> <li>• Standard AutoCAD or PWGSC line types applied</li> <li>• Standard line types applied</li> <li>• Line type display variables correctly applied</li> </ul>
<b>External References:</b>
<ul style="list-style-type: none"> <li>• No external references on final drawings</li> </ul>
<b>PWGSC Title Blocks and Graphic:</b>
<ul style="list-style-type: none"> <li>• PWGSC title blocks inserted in Paper Space and filled correctly with North Arrow</li> <li>• Title block is properly labelled and numbered</li> <li>• Legend match symbol used in drawing</li> <li>• Key plan is properly identified</li> <li>• All graphic elements are closed and properly located (Walls, Room Area Polygons etc.)</li> <li>• Verify for overlap lines, crooked lines, none fillet lines</li> </ul>
<b>1:1 Metric model:</b>
<ul style="list-style-type: none"> <li>• Drawing modeled at full-size using metric units</li> </ul>
<b>Real World Co-ordinate System:</b>
<ul style="list-style-type: none"> <li>• Co-ordinate system integrity maintained</li> </ul>



## SECTION 2: General Information

### 2.1 Abbreviations

The following table identifies standardized abbreviations used within a project for both data collections sheets and on the final Facilities Management Plans. A legend that includes applicable standardized abbreviations in addition to project specific abbreviations must be depicted on the final Facilities CAD Plans.

NAME	ABBREVIATION
Bookcases	BC
Closets	CL
Credenzas	CR
Filing Cabinets	# of Drawers
Hutches	HUT
Overhead Bins	SB
Overhead Shelves	OSH
Pedestals	B = Bin or F = File (i.e. BBF or FF)
Safes	SF
Shelving Units	SH
Storage Cabinets	SC & H = High or L = Low
Tables	T

#### 2.1.1 Room Standard Descriptions (abbreviations)

- Workstation
- Office and Office area
- Enclosed Office
- Hotel / Private Rooms
- Photocopy Room / Area
- Waiting Area / Reception Area
- Filing Room / Area
- Cafeteria
- Laboratory (Lab.)
- Security Desk / Area
- Main Entrance Lobby
- Elevator (Elev.)
- Meeting Room
- Conference Room Boardroom
- Washroom
- Janitors Closet, (J.C.)
- Mechanical Room (Mech. Rm)
- Storage Room
- Process Area
- Kitchen
- Lobby
- Staircase (Stair)
- Special Purpose (provide description)
- LAN / Telecom Rooms



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# Appendix G

## Existing Condition Modelling

### Facilities Technical Services: Geomatics



Version – Aug 2019

pspc-spac

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## 1. Introduction

This document supports the “3D Data Capture” and “Existing Condition Model” or “Measured BIM” base building program of work using an approved BIM platform.

PSPC definition of “Existing Condition Model” or “Measured BIM” refers to the amalgamation of all graphical available information of an asset, including CAD, models, existing digital documents, legacy documents, photographic references, survey points, 3D point-cloud data and on-site measurements.

The production of a “Measured BIM” uses associated data to accurately represent all visible surfaces and elements with reference to dimensional measurements of building elements. This includes volumetric and elevational accuracy, obtained through the data collection process. Once created, the BIM becomes the authoritative source of information about the building.

The final record models must be orthogonally correct in plan view for subsequent use by other professionals such as architects, interior designers, and mechanical engineers. Considering that a building cannot be built absolutely square, it is essential that the appropriate processes be followed to model the crucial building elements within an orthogonally correct floor plan and elevation views.

## 2. General

### 2.1 Interoperability Software

Models must be created using a BIM parametric objects and interoperability software to exchange data seamlessly with PSPC diverse applications. The use of other discipline specialty 3D software or “Open BIM Software” and version must be approved by the regional PSPC BIM Technical Authority before the modelling process is started.

### 2.2 Federated and Integrated Models

A federated model is a collaborative model containing several single models, usually amalgamated (imported) by different disciplines. Divisions of a model by another classification is entirely acceptable and anticipated in light of technology limits or ownership/organization of work. Each separate model must share a common coordinate system and geo-referenced and campus / the aggregate of which results in the building/asset/project viewed and analyzed in totality. Links must be kept in the federated model or single BIM including point clouds. The regional PSPC BIM Authority may set a BIM Protocol and designate a BIM coordinator for this type of arrangement to ensure the procedures are followed as per industry standards. Before the final deliverable, the modeller must integrate and synchronize all model into one model before final deliverable.

### 2.3 Simulations

The model must be fabricated to permit various basic simulation and testing. The model integrity must be transferable to other third party simulation software to perform these tasks including:

- Energy calculations and consumption
- Shadow analysis
- Renderings
- Schedules (Quantity takeoff)

### 2.4 Exporting to IFC Mapping

All objects must be correctly mapped to Industry Foundation Classes (IFC) categories or “container” in conjunction with the version defined by the PSPC Regional BIM Technical Authority. If a version is not defined in the Statement of Work (SoW) by the BIM Technical Authority, the default IFC settings will suffice so long as

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properties, attributes and objects are correctly placed. Refer to the IFC export settings within the authoring software.

### 2.5 Exporting to DWG

The DWG export functionality shall follow the layering requirement for PSPC “Base Building” or Record DWG” plans in conformance with the latest version of the PSPC National CAD Standards document. The .TXT file to accommodate this conversion has been developed and is available for standard use, should export to DWG formats be required.

### 2.6 File Size

The modeller is responsible for managing file size. If the file(s) becomes too large and unworkable, the modeller is expected to perform a few basic commands like purging unused families, material, unload CAD, etc. If the file size is still too large, splitting disciplines and point-clouds into multiple federated model linked files may be necessary and the organization of models content across multiple files must be communicated to the Technical Authority.

### 2.7 Digital File Name

The digital file must be named in a logical easily depicted format to be easily recognised and accessible by users. This proposed naming convention provides the minimum digits framework to enable different stages of the model and operation of the facility over its life cycle.

- The first modifier is the abbreviated name of the building:  
XXX-xxxx-xx: TAM-ARCH-01.rvt
- The second modifier is the description type of the model:  
xxx-XXXX-xx: TAM-ARCH-01.rvt

Model Type Identifiers:

BASE	Architectural, Structural, MEP (combined)
ARCH	Architectural
STRU	Structural
MECH	Mechanical
ELEC	Electrical
PLUM	Plumbing
MEP	Mechanical, Electrical, Plumbing (combined)
SITE	Civil

Any other division, scope or other discipline should follow the same naming convention, where four (4) letters capitalized are used to logically and intuitively represent the content. Any use of a Model Type Identifier not on this list and/or created by the user must be communicated in writing to the PSPC Technical Authority for approval.

- The third modifier is for a revision number. □  
xxx-xxxx-**XX**: TAM-ARCH-**01**.rvt
- Should work sharing be enabled, the file name must reflect its status by adding add the modifier “-CENTRAL” to the end of the name.  
  
E.g.: TAM-ARCH-01-**CENTRAL**.rvt
- When submitting or archiving a copy of the model, the file should be renamed to include a modifier that reflects the purpose of its submission or archive. If it is a routine archive, it is to include the generic modifier “-Archive” and then the date in the form of “-YYYYMMDD”.

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E.g.: TAM-ARCH-01-CENTRAL-**Schematic Design-20090131**.rvt (at a submission)

E.g.: TAM-ARCH-01-**Archive-20090131**.rvt (during regular intervals while under development)

### 2.8 Warnings Management

The modeller is responsible for managing warnings, which adversely affect file size and performance. Modellers are encouraged to review warnings as they occur, and are required to eliminate the majority of warnings prior to delivering the model. The modeller must document in writing an itemized list of warnings with reason for why they remain in the model file.

### 2.9 Worksharing and ownership

The federated model stores the current ownership information for all workset and element in the project, and acts as the distribution point for multiple team members to work on the same project model at the same time. The Modeller must synchronize with the federated model to publish changes and remove all ownership before deliverable and provide an integrated model.

### 2.10 BIM elements exclusions

Exclusion elements or project limitations must be depicted in the Statement of Work by the Technical Authority (TA). These exclusions elements are often used to:

- Limits the capturing of a zone in a building
- Limits a boundaries on a building, campus or site
- Limits elements if in “shadow” during the capturing
- Limits modeling elements not required in the model

## 3. Control Points Network

### 3.1 General

Control point network are permanent or temporary survey markers, targets and benchmarks specifically and marks key locations. These control points can also be key fixed architecture or site elements that serves as reference.

Control point network are used as a precise substructure whose horizontal and vertical position is located. In complex or rehabilitation projects, the control point network is essential to establish know elevation and coordinates for location and establish permanent and temporary of equipment or markers. These markers are then used to guaranty the precision and help in the registration and location of the 3D scanner point clouds.

These control point network must be performed by a certified licence land surveyor and follows professional methods and standard practises. The consultant can outsource this specific portion of the project to a licenced Ontario or Quebec surveyor (depending on the location of the project).

PSPC Technical Authority must approve all survey devices and the registration software prior to its use on a project site.

PSPC Technical Authority will clearly depict in the SoW if a control point network is required.

### 3.2 Geo references

The point-cloud may be required to be geo-referenced in position and elevation. In the NCA, the service provider must reference to MTM NAD 83 (Original), Zone 9. Canadian Geodetic Vertical Datum of 1928 (CGVD28). A clear and consistent control network is to be established and maintained for the length of the scanning process, and documentation recording this network shall be submitted as a deliverable for future use in re-scanning.

## 4 Data Capture – 3D Capture

### 4.1 General notes

The consultant must obtain all permission by the project manager to use 3D laser scanners of the interior and exterior prior to beginning of the project.

PSPC Technical Authority must approve all laser scanner equipment, drone technology devices and registration software before the beginning of the project. The laser scanners must be properly calibrated and capable of collecting asset interior and exterior elements within the PSPC tolerance. For more accuracy, target-based methodology is expected to be used at the registration phase. The 3D laser scanner device must provide photo mapping “overlaid” on top of the point clouds. If photo mapping is not required, the PSPC Technical Authority must specifically exclude this services in writing in the statement of work.

The data collector must adhere to all federal, provincial, municipal, laser manufacturer and industry safety related obligations.

The data collector must provide point-cloud scans of all visible elements inside the project limits if not otherwise written in the statement of work. If an elements is “in shadow” of the laser scanner must be able to be reasonably inferred. The BIM Technical Authority reserves the right to ask for areas lacking sufficient information to be accurately modeled to be re-scanned.

### 4.2 Registration

The point-cloud individual files must be organized and named to properly understand the location, level and version. The point-cloud should be cropped to exclude any “noise” or points outside the project limit for all deliverable files. The registered point-cloud files must be compatible to Revit or AutoCAD format.

### 4.3 Office access and occupants

The data collector will make all necessary effort to minimize the disturbance to the building occupants by coordinating site visit, keeping noise to a minimum and include all of the data capturing activities when accessing a specific area of the building.

Access to some spaces should be planned in advance in conjunction with the proper security personnel. Security clearance might be required for site access.

### 4.4 Terrestrial and drone scanning

The capture of three dimensional point cloud data must use the terrestrial technology (tripod) for the interior spaces and exterior has much as possible. If the terrestrial scanner is not able to capture complex building details or exterior elements, then a drone with photogrammetry can be used. The scans must be referenced with all other metric data using the project coordinate system.

The services provider may use paper or sphere targets (temporary control points) within the scanner range. The intent of targets is to provide common points (5 recommended) to reference locations but if the targets are increase

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the accuracy will also increase at the final registered scan. Targets should be placed in the space with different elevations and angles to the scanner to permit a higher level of precision during the registration.

### 4.5 Point-Cloud Density

Point cloud density may vary depending on the complexity of the element (object) being captured. PSPC will require “Single scan or Raw data” to a point density sufficiently compliant with our precision tolerance for every element captured.

### 4.6 Point-Cloud Tolerance

The precision tolerance is the permitted dimensional deviation in the deliverable from the true distances or measurements of physical asset/object. During scanning process and post-treatment, it's preferable to utilize an established control points network. If control point network is not available, the acceptable tolerance will be not greater than the relative dimension of +/- 6 mm (per station) for inside elements and +/- 13 mm for exterior elements.

### 4.7 Point-Cloud Colour

All point-cloud scans must be captured and delivered using the “colour mapping - RGB” sometimes referred to as original scan colours or true color. Lighting condition must be adequate to capture “true colour” of existing elements. If existing lighting is not sufficient, the 3D technician surveyor must provide portable lighting to the affected area.

All Black and white point-cloud data capture will not be accepted and will be re-captured at the services provider's cost.

### 4.8 Partial Point-cloud Data Capture

The service provider may be required to provide partial point-cloud data of areas modified by new construction or fit-up. The service provider may require to take “Raw Data” from a previous point-cloud project and remove and replace points of the affected area with new point-cloud data to produce a new unified point-cloud.

### 4.9 Manual Building Data Capture Requirements

The Statement of Work may require manual handheld laser building Data Capture for areas where the 3D scanner is not financially advantageous or the area too small. The service provider must have written acceptance using the manual building data capture before starting this process by the PSPC technical authority. If the service provider receive the written authority, the service provider must provide the following:

a)	Height values are required for all major elements such as windows, doors, ceilings, low-high walls, etc.
b)	Components that are placed in elevation are to be dimensioned from centreline in both directions. For example, when measuring to place a fire exit sign or a wall sconce, measure from the finish floor the centreline of components and from a parallel and nearby object as an offset to locate it in elevation.
c)	For component creation, take enough measurements with photos to be able to create the component of a level of geometric correctness that displays its existence and function, should a standard component not already exist in the library.
d)	The list of all elements required for a new or updated record models are depicted in the Appendix B - Building Data Capture document.

#### 4.10 Point-Cloud Quality Assurance

The final 3D point-cloud data must be subject to quality assurance quality control process to ensure adherence to PSPC Standards. The following quality assurance elements shall form part of the Quality Assurance checklist that shall be completed for all Point-cloud data produced within a project.

<b>Colour Assignment:</b>
<ul style="list-style-type: none"> <li>Point-Cloud scan captured using the “colour mapping - RGB”</li> </ul>
<b>Standard:</b>
<ul style="list-style-type: none"> <li>95% of each elements within the project limit captured</li> <li>Point-Cloud is Geo-referenced and to the proper elevation</li> <li>Point-Cloud individual files organized and named to properly</li> <li>Point-Cloud cropped of all “noise” and points outside the project limit</li> <li>Unified and single file point-cloud is properly registered</li> <li>Unified Point-Cloud is provided in two formats (low – High resolution)</li> <li>None-accessible room within a project limits must be accompanied with the PFM written communication stating these rooms can’t be granted access.</li> </ul>
<b>Partial Scan: (If required)</b>
<ul style="list-style-type: none"> <li>New Point-cloud inserted in existing unified data</li> </ul>
<b>Manuel Capture: (If approved by PSPC Technical Authority)</b>
<ul style="list-style-type: none"> <li>All elements from Appendix B- Building Data Capture document was taken.</li> <li>X,Y,Z of all elements are dimensions and properly noted</li> <li>All photographs properly label and measured with key plans for location.</li> </ul>
<b>External References:</b>
<ul style="list-style-type: none"> <li>Deliverables match the All DISO Appendixes and the Statement of Work</li> </ul>

### 4.11 Point-Cloud Deliverables

The final files (registration) must be converted to an \*.rcp indexed format and geo-referenced. The service provider must also provide two (2) unified \*.rcp or \*. rcs (unified format) per building or otherwise noted in the statement of work.

- a. The first unified \*.rcp point-cloud density file (High) level for details.
- b. The second unified \*.rcp point-cloud density file will be diminished for file size and manipulation issues reason.

The final unified point-cloud and single scan files must be at the correct elevation height. If more than one building existing on the same site, the consultant must be able to provide relative coordinates and positions for each building on the campus.

If a geo-reference is required, a documented control network must be submitted that provides exact coordinates of each of the scanner positions used throughout the Scanning Process. This may take the form of a PDF site plan with positions labelled for use in a legend, wherein the exact coordinates are listed.

## 5 Project Research

### 5.1 Available Graphical information

Reference drawings will assist in identifying how and when the building was constructed. In addition to the structural grid and shafts information, the reference plans will often provide valuable information about the construction materials that may be more difficult to determine through strictly visual inspection during the data collection activities.

PSPC is to provide all “found” graphical information (paper - PDF or native electronic) pertinent to the type of project. The service provider must use this information with extreme caution and shall evaluate the worthiness and precision of those architectural, structural and record drawings before using them. The service provider will be using those drawings at their own risk and for reference purposes.

## 6 Modelling Settings

### 6.1 General notes

The Modelling setting section refers to the settings used in Revit for organisation, best practice, formatting and management of digital representation using a common practice. This improves quality and consistency of PSPC “Existing Condition models.”

### 6.2 PSPC Templates

The PSPC templates must be loaded before the modelling start and provide an insight into the department BIM organization. These templates give a general modelling process, workflow and structure to ensure consistency to all record models within PSPC. The templates establish the project browser, sheet structure and titles, levels, work set and naming convention standards.

### 6.3 Project Browser Organization

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The service provider must use the PSPC templates to set the project browser. If additional sheets set or Floor Plans are required, the service provider must create these elements following the same naming convention principal.

### 6.4 Objects association to correct level

Objects on a particular level must be associated with it respectively (i.e., a wall at level 1 is to be drawn/placed at level 1, with element properties indicating its association to level 1, plus or minus an offset, if required).

### 6.5 Phasing

All objects must exist within the correct building phase. For example, when developing a model from existing conditions, the active phase should be set to “Existing” before starting to model or place objects. Linked Revit files must set phases to match the phases of the host model.

### 6.6 Units

Measurement values depicted on the Record Base Plan must be in metric units and expressed in millimeters only.

### 6.7 Work Set Naming

Work set should be named according to their function. Preliminary review of work set organization for the PSPC standard application has resulted in the following:

<b>01</b>	<b>Levels and Grids</b>
<b>02</b>	<b>Shell</b>
<b>03</b>	<b>Core</b>
<b>04</b>	<b>Structure</b>
<b>05</b>	<b>Site</b>
<b>06</b>	<b>Life-Safety</b>
<b>07</b>	<b>Mechanical</b>
<b>08</b>	<b>Electrical</b>
<b>09</b>	<b>Plumbing</b>
<b>10</b>	<b>Interiors</b> (including partitions, millwork and rooms)
<b>11</b>	<b>Furniture</b> (optional; based on need)
<b>12</b>	<b>Heritage</b> (optional; based on need)
<b>13</b>	<b>Mass</b> (optional; based on need)

It is understood that the proponent company work set standard may differ from the above suggested methodology. As such, work set organization and naming should be agreed upon in writing between the proponent and the PSPC Project Manager before commencement of modeling.

In general, a workset should be used for each linked model file or discipline.

### 6.8 Digital File Name

- The first modifier is the abbreviated name of the building:  
**XXX-xxxx-xx**: TAM-ARCH-01.rvt
- The second modifier is the description type of the model:  
**xxx-XXXX-xx**: TAM-ARCH-01.rvt

#### **Model Type Identifiers:**

<b>BASE</b>	<b>Architectural, Structural, MEP (combined)</b>
<b>ARCH</b>	<b>Architectural</b>
<b>STRU</b>	<b>Structural</b>
<b>MECH</b>	<b>Mechanical</b>
<b>ELEC</b>	<b>Electrical</b>
<b>PLUM</b>	<b>Plumbing</b>
<b>MEP</b>	<b>Mechanical, Electrical, Plumbing (combined)</b>
<b>SITE</b>	<b>Civil</b>

Any other division, scope or other discipline should follow the same naming convention, where four (4) letters capitalized are used to logically and intuitively represent the content. Any use of a Model Type Identifier not on this list and/or created by the user must be communicated in writing to the PSPC Technical Authority for approval.

- The third modifier is for a revision number.  
xxx-xxxx-**XX**: TAM-ARCH-**01**.rvt
- Should work sharing be enabled, the file name must reflect its status by adding add the modifier “–CENTRAL” to the end of the name.  
E.g.: TAM-ARCH-01-**CENTRAL**.rvt
- When submitting or archiving a copy of the model, the file should be renamed to include a modifier that reflects the purpose of its submission or archive. If it is a routine archive, it is to include the generic modifier “-Archive” and then the date in the form of “-YYYYMMDD”.  
E.g.: TAM-ARCH-01-CENTRAL-**Schematic Design-20090131**.rvt (at a submission)  
E.g.: TAM-ARCH-01-**Archive-20090131**.rvt (during regular intervals while under development)

## 7 Components and Families

Components are usually elements usually pre-constructed or manufacture and delivered and installed on site *such as plumbing and electrical fixtures, furniture and many others* and can be placed in the model by simply inserting the element directly from the Revit library or load a component directly from the manufacturer. A generic component can also be inserted in the record model as a place holder (example: a special electrical fixture).

Families are non-standard or custom elements repeated in a model. These non-standard custom elements must be created within the software and exported to a library.

### 7.1 Families Type

Families are to be dimensionally accurate representations of real objects. They may be a simplified representation of an element and may consist of varying levels of 3D geometry and 2D symbology, and may or may not be hosted or nested.

Revit families can be created using several different methods.

1. System Families. (Revit Elements)

*System families are the proponent families available in a Revit project environment. These elements are included in Revit software and include assemblies like walls, floors, roofs, ceilings, stairs, etc. System families cannot be created but can be modified in a project to indicate what was found on site and represent the properties of these elements (material, composition and colour).*

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### 2. Loadable Families (Library Elements)

Loadable families are usually created using the family editor outside of the project file to create a library of elements. These files are saved with an .rfa extension and can be inserted by dragging and dropping them from a folder or using load.

### 3. In-Place Families (Custom Elements)

In-place elements are unique elements created for specific to the current project. In-place geometry can be references to other project geometry, resizing or adjusting accordingly.

Creating an in-place element involves many of the same Family Editor tools as creating a loadable family”. When using, modifying, or creating Families, the user must keep in mind the following and basic rules for the creation of families must be followed:

- a) Importance of the insertion point
- b) Reference planes for dimensioning in the project
- c) Use of symbolic lines
- d) Parametric functionality
- e) 3D geometry vs. 2D level of detail
- f) Visibility & Graphics (i.e., does it fulfill graphic drawing requirements as well as volumetric or elevational definition?)
- g) Use of correct family type
- h) Use of metric units
- i) Use correct material and color
- j) Objects must be created as full size.
- k) Families must be created using the correct family template.

## 7.2 In-Place Families, Generic Model Usage, Placeholders & Workarounds

In-place families should be used only in cases where a component or system family lacks sufficient functionality for the given situation. Generic model families should be used only when there does not exist an appropriate object category, or the element is functioning as a placeholder. Where a workaround or placeholder is required, those elements must be clearly labelled within the native file as such. Anyone reviewing or working in the model must be able to easily identify objects with placeholder or workaround status, thus affecting the level of detail or offsetting schedules and quantities. See component and families section for more detail.

### 7.3 Families naming convention

1. Families name is composed of 3 or 4 modifiers

**XXX-xx-xxx:** Project Name  
**Xxx-XX-xxx:** Object Category  
**Xxx-xx-XXX:** Type Description (user defined)  
**xxx-xx-xxx-XX:** Optional Modifier (only if existing)

Example: NPB-DR-FR1 (National Printing Bureau Door Type Frame 1).

2. Existing parameters should be used where possible. Creation of new parameters must be named according to its function in a logical way. Follow default naming conventions and avoid using special characters (e.g., “/” or “-”) that could affect parameter usage in the formula.

OBJECT CATEGORY		OPTIONAL MODIFIER	
<b>BL</b>	Baluster	<b>PL</b>	Panel
<b>CS</b>	Casework	<b>PT</b>	Post
<b>CM</b>	Column	<b>WB</b>	Wall-Based
<b>CP</b>	Curtain Wall Panel	<b>CB</b>	Ceiling-Based
<b>DC</b>	Detail Component	<b>RB</b>	Roof-Based
<b>DR</b>	Door	<b>FB</b>	Floor-Based
<b>EE</b>	Electrical Equipment	<b>LB</b>	Line-Based
<b>EF</b>	Electrical Fixture	<b>FC</b>	Face-Based
<b>EN</b>	Entourage	<b>HS</b>	Hosted
<b>FS</b>	Furniture System	<b>ML</b>	Mullion
<b>FN</b>	Furniture	<b>RL</b>	Rail
<b>GM</b>	Generic Model	<b>RV</b>	Reveal
<b>LF</b>	Lighting Fixture	<b>SN</b>	Stair Nosing
<b>LL</b>	Linear Lighting Fixture	<b>BB</b>	Beams and Braces
<b>MS</b>	Mass	<b>CT</b>	Complex and Trusses
<b>ME</b>	Mechanical Equipment	<b>CW</b>	Curtain Wall
<b>PK</b>	Parking	<b>TR</b>	With Trim
<b>PL</b>	Planting		
<b>PF</b>	Plumbing Fixture		
<b>PR</b>	Profile		
<b>RP</b>	RPC		
<b>SI</b>	Site		
<b>SE</b>	Specialty Equipment		
<b>SL</b>	Spot Lighting Fixture		
<b>SC</b>	Structural Column		
<b>SN</b>	Structural Foundation		
<b>SF</b>	Structural Framing		
<b>WD</b>	Window		

### 7.4 Specific Families Requirements

1. Within families, the glass must be properly located in relation to existing conditions for the purposes of accurate area measurement practice.
2. Wall and finish type thickness must be consistent throughout the entire project.
3. If type or instance information is known for assemblies or components, then it should be added and the element(s) tagged to show this information in the appropriate view.
4. The use of in-place families must be for special case scenarios only, and should not exist for elements that could be made from component or system families.

### 7.5 Folder Location

Users created content should be saved in a folder named “Families” within the project folder. This folder will serve the purpose of storing these project-specific families during model creation, as well as providing a method by which user-created content can be reviewed by PSPC for upload to the standard library.

## 8 Modelling “existing condition model”

### 8.1 General notes

Multiple sources of graphical information (ex. architectural and structural plans), in conjunction with on-site data collection activity measurement and photos, are used to create the “Record” base building model. The modellers should start with setting up the templates, phasing, levels and grids (3D workspace), and proceed to common building elements and stacking. This might include cores and shell, for example, to which additional building elements are to be referenced. The modellers must verify that any major discrepancies from stacking elements of the floors are addressed and remedied early on in the modeling process.

### 8.2 Levels of Development (LoD) and Accuracy (LoA)

Levels of development (LOD) reference to the amount of detail and information required for each individual element in a PSPC – Record base plan model. Unlike a model created for a new building, the record model does not increase the LOD during the project phase. Geomatics as set the LOD required at the conception of the Record model has a base and all elements are depicted in the model element table.

All LOD/LOA requirements specified reflect on new or original modelling content within the scope of the project this Table is used. In cases where an element has not been listed, the average category requirements shall be used until such time as a change to this Table has been approved by the Departmental Representative.\*

#### Definitions (LoD)

- **100 2D Graphical elements**

The graphical element may be presented in the model with a symbol or 2D block. The elements can be derived from CAD or simply elements not model like north arrow, titles or grid lines.

- **200 Conceptual areas and volumes**

Model elements are geometrically represented in the model as a volume, generic system, object, or simple assemblies, size, shape, location, and orientation. Information may be attached to this modelled elements to further elaborate design intent for the generic representation.

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- **300 Element Development**

Model elements are geometrically represented in the model as a specific system, object, or assembly, and may indicate material, quantity, size, shape, location and orientation. Information may be attached to this modelled elements to further elaborate design intent for the generic representation.

- **400 Construction Documentations**

Model element is geometrically represented in the model as a specific system, object, or assembly, with design intent and detailed depiction of interfaced systems and details. Parts necessary for coordination of the element with nearby, attached, or future-planned elements are modelled. This permits exact information and constructability analysis to be drawn directly from the model, and should include non-geometric information such as further detailed design intent for the additionally modelled parts, and performance-based specifications to be used for exact selection of the as-built component.

- **500 Detailed Asset Preservation Activities**

Model element is graphically represented within the model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation, with detailing, fabrication, assembly, installation, and heritage preservation (for identified heritage character elements) information attributed to the Model Element. This permits off- or on-site fabrication or assembly of the represented component without referring to non-modelled or additional information.

- **600 Record**

Model elements are a field verified representation of LOD 500 in terms of size, shape, location, quantity, and orientation, with detailing, fabrication, assembly, installation, and heritage preservation (for identified heritage character elements) information attributed to the model elements. Non-geometric information related to operation, maintenance, and heritage character, may also be attached to the model elements.

### 8.3 Levels of Detail

BIM, as a single file or as an aggregate of discipline files, must represent all known building information, unless otherwise stated in the scope of work. In general, the modeller is NOT to assume anything about the construction. If there is no visual or documented information to support the accuracy or detail of an object, assembly or system, then that information will not exist in the model. Creating a Record BIM represents all available information with no assumptions, and acts as the “latest and greatest,” or most up-to-date compilation of building information about an asset. Any and all questions regarding accurate virtual construction should be directed to the PSPC Technical Authority.

The finishes of walls will be known through visual inspection, but the composition of those walls may not be known, and therefore are to be shown as generic. Should the wall composition be documented on existing drawings or by other means, then the model should reflect that level of known information (i.e., wall object has layers defined as such). In this way, Record BIMs will consist of varying levels of detail, but will overall represent the most up-to-date, accurate building information per asset.

In special cases, should information about assemblies and systems be assumed based on the modeller’s experience and approved by the PSPC Project Manager, the element properties must show its “assumed” status in the comments parameter cell.

### 8.4 Levels of Integrity

All models elements must be authored to a level of integrity that will allow for modification or dimensional movement to accommodate on-site measurement. For example, a wall or floor must be created as one element and edited to created voids or profiles. This wall or floor should not be created with multiple small sections that will not behave as a whole, or contain all the information pertinent to that object. This must be done without causing any inconsistencies or anomalies from such fine-tuning of element geometry and location. All parameters and elements must function as they are intended and be named correctly.

- Materials, colours, sizes and other attributes must be selected to reflect the physical elements being modelled.
- None visible elements “assemblies” components must be depicted as per construction documentation.
- Building elements are to use the appropriate object category (intended object types).

### 8.5 Level, View and Sheet Names

Levels should be named according to any naming convention on existing drawings. They should be capitalized so that when the view is added to a sheet, no additional modification will be needed for the view title.

If no existing information exists for the floor numbers, refer to the same button code as those indicated on the elevator panel of the building.

Views on Sheets should have titles that are fully uppercase letters. For example: FLOOR PLAN – GROUND LEVEL. The PSPC title block must be inserted and filled in all sheet sets.

### 8.6 Exporting to DWG

The DWG export functionality shall follow the layering requirement for Facilities Technical Services (FTS) Record Base plans in conformance with the latest version of the PSPC National CAD Standards document. The .TXT file to accommodate this conversion has been developed and is available for standard use, should export to DWG formats be required.

### 8.7 Importing Point-Cloud

Importing Point-Cloud into Revit is much like linking Revit models or CAD files. The .rcp or .rcs Point clouds file can be inserted with the insert Point-cloud command and used to index a raw format for use in a project. Point-clouds should be placed using the correct position and elevation provided by the land surveyor and these Point-clouds must remain link to the Revit model.

### 8.8 Linking CAD Plans

The user must manage the amount of linked files, either within the model or as a separate project file that is linked into the main model.

### 8.9 Linking Revit Models

Linked models should be set to ‘attachment’ (not ‘overlay’ as is the default setting), so as to ensure any linked files will be transferred to the host model.

### 8.10 Title block, Key Plan, North Arrow, Legend

All Record base plans must include title block, key plan, north arrow, general floor title, scale symbol legend and street, which have been developed in the Revit template and are available for standard use.

### 8.11 Constraints

Constraints are non-view specific elements that can function independently of dimensions and build intelligence into the model by defining relationships and interdependencies between elements. However, over-constraining the model can cause issues during the life-cycle of the building and should be used only when necessary. The modeller must remove all constraints considered “unnecessary or avoidable” before the final deliverable.

### 8.12 Worksharing and ownership

The federated model stores the current ownership information for all workset and element in the project, and acts as the distribution point for multiple team members to work on the same project model at the same time. The service provider must synchronize with the federated model to publish changes and remove all ownership before deliverable and provide an integrated model to PSPC.

### 8.13 Site BIM (Topographies)

Building of the model should take place on the program’s internal origin, with shared coordinates “geo-referenced” by acquiring coordinates from the linked civil file. Set up True North, and define the project latitude and longitude (or city location). Create a topo surface from Survey data, and create a building pad or other site components as required to accurately portray in 3D and drawings the extent and relationship of the site of the building(s). The proponent should create this as a separate file from the architectural or other discipline building file. Should the proponent receive a Site BIM that has already been created for the project, they are required to link in the Site BIM, place and orient the site in X, Y and Z, and proceed to acquire coordinates from the site file. In both cases, it is important to always be working off the civil coordinate system (geo-referenced).

### 8.14 Generalized Overview of Creating a ecModel

1. Create the site as a separate “BIM” file, importing the needed Survey and/or Civil 3D information and/or objects and/or surface. Set up True North and Acquire Coordinates from the Survey or Civil import.
2. In the building model, set up your levels and grids, and be sure you are working in the Existing Phase. Start with what you know can stack easily, particularly with Core and Shell. Use generic thickness where wall assemblies or composition is unknown.
3. As you model, find where there are inconsistencies or problems with elements not lining up or dimensions different from existing information. Keep an ongoing list and communicate these with your manager on an ongoing basis. Once work can no longer proceed because of the need to go on site and measure and take more photos of the areas in question, then do so, and documents clearly any assumptions you have had to make to finish your model.
4. Review schedules for mistakes or missing information. Perform Interference Checking and correct any issues. Prepare a communication that defines completeness (e.g., LOD, unresolved issues, assumptions in modeling, missing information, etc.). This communication can exist within a drafting view of the file.

### 8.15 Suggested Order of Modelling (for ecModel “BIM”)

1. Establish True North (import Site Plan); Latitude/Longitude or Location by city listed; Shared Co-ordinates; Topography
2. Create Levels

3. Link existing “*Ref. plans*” drawings (If they are considered valuable)
4. Establish Structural Grids
5. Structural Objects (locked to grid)
6. Shafts and Stairs
7. Floors, locked to levels
8. Walls, locked to structural objects (or grids)
9. Doors, Windows, Embedded Curtain Walls
10. Ceilings
11. Rooms (with associated data)
12. Fixtures, Equipment, Life-Safety, Millwork, Furniture (Component Elements)

## 8.16 Creating a ecModel *with* Reference Architectural or Structural Plans

The overriding intent of this process is to model all structural building elements by a method that weighs and balances the reality of building construction with a desire to create an orthogonally correct, normalized floor plate. This is achieved through the analysis; comparison and adjustment of reference plan measurements relative to field-based measurements between like structural building elements.

Throughout the development of a model spanning multiple floors, consistent field-based measurements are achieved by averaging the measurements of and between building structural elements that exist on all applicable project floors, which were designed to vertically align as per the original building design layout (e.g., columns, structural walls, exterior walls, shear walls, elevator shafts, mechanical shafts, and stairwells). The average measurements are to be used within locating, sizing and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements located on the grid.

Comparisons, analysis, and adjustment to the location of building elements are to be applied individually in both the X and Y coordinate planes.

The following standard procedures are recommended in creating a model with reference plans:

1. Review existing documentation and survey points to set up all the levels in the project.
2. Create the grid based on existing documentation (DWG plans may be linked in as underlays on the corresponding levels), adding dimension strings along the way. Then locate all structural building elements, such as bearing walls and columns, as per their location and measurements of the reference architectural or structural plans. Keep the same grid numbering as already defined in the existing drawings.
3. Compare the measurements between adjacent structural elements on the reference plans with the measurements captured during data collection activities on data collection sheets.
4. If the compared difference is within the 30 mm/100 metres acceptable tolerance limit relative to the plan distance, the reference plan location of the structural elements within the structural grid will be adopted (i.e., a reference plan inverse distance between structural column centres of 20 metres has an acceptable tolerance limit of 6 mm).
5. If the compared difference is greater than the 30 mm/100 metres acceptable tolerance limit relative to the plan distance, the structural element will be adjusted within the structural grid to reflect the measurement captured during data collection activities on data collection sheets.
6. Add additional structural elements such as structural walls, exterior walls, shear walls, elevator shafts, and stairwells that are present on the project floor. For projects that span multiple floors, the additional structural elements must include those elements that exist on all applicable project floors, which were designed to vertically align as per the original building design layout. The average

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measurements are to be used within locating and adjusting processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.

7. Undertake a similar comparison process for these building elements as for the located structural building columns. Adopt or adjust their location within the structural grid as required.
8. Add and identify the consistent finishes around structural elements other than concrete or steel.
9. Identify the construction of building core walls for those other than concrete or concrete blocks.
10. Complete the process by analyzing the alignment of the structural grid relative to all structural elements located within the structural grid. Shift the structural grid as required to achieve a result whereby the maximum quantity of structural elements are located on and aligned with the structural grid.

### 8.17 Creating a ecModel *without* Reference Architectural or Structural Plans

The overriding intent of this process is to model all structural building elements into a method that weighs and balances the reality of building construction with a desire to create an orthogonally correct, normalized floor plate. This is achieved through the analysis: a comparison and adjustment of reference plan measurements relative to field-based measurements between like structural building elements.

Throughout the development of a model spanning multiple floors, consistent field-based measurements are achieved by averaging the measurements of and between building structural elements that exist on all applicable project floors, which were designed to vertically align as per the original building design layout (e.g., columns, structural walls, exterior walls, shear walls, elevator shafts, mechanical shafts, and stairwells). The average measurements are to be used within locating, sizing and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements located on the grid.

Comparisons, analysis and adjustment to the location of building elements are to be applied individually in both the X and Y coordinate planes.

The following standard procedures are recommended for creating a model without reference plans:

1. Set up all levels in accordance with on-site survey measurements (finished floor).
2. Create a structural grid based on the original building design units. Convert imperial units to metric. The year of construction can assist in establishing the original design units. The “comments” parameter in the grid type properties should read “exact location unknown” or “approximate location” or “location based on assumptions.”
3. Locate the structural building columns within the structural grid as per the measurements captured during data collection activities on data collection sheets.
4. Compare the data collection sheet measurements between adjacent structural column centres relative to their intended layout measurement distances (i.e. 50 feet column centres for imperial designs, 20 metres column centres for metric designs).
5. If the compared difference is within the 30 mm/100 metres acceptable tolerance limit relative to the intended design distance, adjust the location of the structural column element in the required direction to align it with the established structural grid.

As an example, within a building designed in imperial units, the measured distance between two adjacent column centres is measured at 15244 mm (50.013 feet). It is logical to assume that the original design was intended to be 50 feet column centres (15240 mm). The acceptable tolerance limit relative to the intended design distance is calculated as 5 mm. In this case the distance is to be

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adjusted to 15240 mm to reflect the intended design of 50 feet column centres. The 4 mm adjustment in this example is within the 30 mm/100 metres acceptable tolerance limit.

6. If the compared difference is greater than the 30 mm/100 metres acceptable tolerance limit, the structural building column will not be adjusted and will be located as per measurement captured during data collection activities on data collection sheets.
7. Add additional structural elements such as structural walls, exterior walls, shear walls, elevator shafts and stairwells, including elements that were designed to align vertically as per the original building design layout. The average measurements are to be used during locating and adjustment processes to achieve the mandatory inter-floor consistency for the location of all structural elements forming the floor plan template.
8. Undertake a similar comparison process for these structural building elements as for the located structural building columns. Adopt or adjust their location within the structural grid as required.
9. Add and identify the consistent finishes as required around structural elements other than concrete or steel.
10. Identify the construction of building core walls for those other than concrete or concrete blocks.

Complete the model by analyzing the alignment of the structural grid relative to all structural elements located within the structural grid. Shift the structural grid as required to achieve a result whereby the maximum quantity of structural elements are located on and aligned with the structural grid.

### 8.18 Completing the ecModel

Complete the model by adding the elements and information listed below, if present within the project area. The lists of elements identified below correspond with the lists of elements and attribute information captured during on-site data collection activities. The elements are to be modelled as indicated in the lists below. Observe the described methodology for analyzing and averaging measurements of building area layout and elements.

Note that some of the elements indicated here may already have been located or identified during the development of the model.

### 8.19 Analyzing and Averaging Measurements of Building Area Layout and Elements

If the longest and shortest measurements of the length, width or height of a defined building area or individual building element differ by less than 30 mm (i.e. opposite walls of a room, beginning and end width of a corridor, varying ceiling heights within an open area), an average of the measurements must be calculated and used to position element(s) in the model (i.e. opposite walls adjusted to the average length, ceiling height normalized vertically). Adjustments, as in the case of rooms, are to be made in a manner that will, where applicable and logical, preserve an orthogonal representation of the area layout or element. If the longest and shortest measurements of the length, width or height of a defined building area or individual building element differ by greater than 30 mm, the area layout and element(s) shall be depicted as per the measurements captured during data collection activities on data collection sheets.

### 8.20 Room Object and Scheduled

Generally, once partitions are placed, the modeller should place rooms, adding in any information about that room that has been collected, such as name, number and floor finish.

## 8.21 Room/Space Objects

Room objects (Revit) or space objects (IFC) are important and necessary components to any BIM. The modeller is to ensure that all objects determined as “room bounding” are functioning correctly, and all rooms are properly enclosed (i.e., no “leaking” to other spaces or to the exterior). Rooms are a critical component of energy modelling, as well as for hosting data about the room itself. The modeller should maintain a room schedule to verify proper enclosure and data completeness

## 8.22 Tagging

Spot Dimension and Spot Elevation Markers are required to “tag” z-values in both plans and overall building sections (required whenever there is a level change).

Type information tags required for walls, doors, and windows.

Rooms are to be tagged and showing room name, number and floor finish information.

“Dummy” tags are generally not allowed. All tags are to be “Smart” tags, referencing information from the properties of the object in question, and therefore not showing a value that has no inherent automatic coordination with the object data.

## 9 General Elements

Element	Type	Properties
Levels	System Family: Levels	3D extents for all large-scale drawings; 2D view-specific modification should be kept to a minimum.
Interior walls	System Family: Wall Tool	Type Parameter: Wall Function: Interior; Layers Defined where possible
Exterior walls	System Family: Wall Tool	Type Parameter: Wall Function: Exterior; Layers Defined where possible
Curtain walls	System Family: Wall Tool	Type: Curtain Wall
Interior fixed partitions	System Family: Wall Tool	Type Parameter: Wall Function: Interior; Layers Defined where possible
Low walls	System Family: Wall Tool	Type Parameter: Wall Function: Interior; Layers Defined where possible
Wall finish	System Family: Wall Tool	Finish Layer Defined
Columns	Column Family	Architectural Use Only
Horizontal conveyors and moving sidewalks	Specialty Equipment Family	3D Geometry with appropriate level of 2D detail
Elevators	Specialty Equipment Family	Wall Hosted Door/Opening; 2D symbolic lines in plan; 3D geometry optional
Escalators	Specialty Equipment Family	3D Family
Dumbwaiters	Specialty Equipment Family	Wall Hosted Door/Opening; 2D symbolic lines in plan; 3D geometry optional
Lifts and lift platforms	Specialty Equipment Family	Wall Hosted Door/Opening; 2D symbolic lines in plan; 3D geometry optional
Stairs	System Family: Stair Tool; Nosing Profile Family	Width; Minimum Tread Depth; Maximum Riser Height; Check if Monolithic; Specify Materials, Riser, Stringer and Tread Properties
Staircase landings	Stair/Floor/Slab	Can be within the stair sketch or as a separate Floor or Slab object
Stair cut	Default within Stair Tool; relative to cut plane	Turn off VG setting: Stairs – Stairs Beyond Cut Line + Stringers Beyond Cut Line
UP or DN Symbol and Arrow	Default within Stair or Ramp Tool	Required for all stairs and ramps (maintain default settings)
Barrier free ramps	System Family: Ramp Tool	Turn off VG setting: Ramps – Ramps Beyond Cut Line + Stringers Beyond Cut Line
Railings, Staircase handrails and guardrails	System Family: Railing Tool; Rail Profile Families; Baluster Families	Turn off VG setting: Railings – Railings Beyond Cut Line
Floors	System Family: Floor Tool	Choose the correct system family to represent Instance Parameter: Structural Usage; Layers defined where possible; Raised areas modeled as separate instances; Slope floor where the change in elevation is required to accurately demonstrate existing conditions.
Floor description	Tag: Annotation Family	Floor Finish Parameter within Room Object
Floor openings	Floor/Opening	Within floor sketch, or with separate Opening Tool
Rooms description	Tag: Annotation Family	Name Parameter within Room Object

## 9.1 Miscellaneous Interior Floor Elements

Elements	Type	Properties
Benches	Furniture Family	Various types; Parametric
Lockers	Specialty Equipment Family	May contain individual families nested
Planters	Site or Furniture Family	(Depending on whether it is for Indoors or Outdoors)
Public phones	Specialty Equipment Family	Symbol in Plan
Vending machines	Specialty Equipment Family	Various types; maybe hosted or freestanding
Bank Machine	Specialty Equipment Family	Various types
Shelving	Furniture Family	Various types; Parametric (could also be a Casework or Specialty Equipment family, depending on case/use)
Cabinet	Casework Family	May contain simplified geometry with 2D symbolic or model lines for required detail; should be parametric
Ladders	Specialty Equipment Family	Various types; hosted to wall or face
Video projectors	Specialty Equipment Family	Various types; maybe hosted and freestanding
Barrier Free Sign	Symbol: Generic Annotation Family	2D Symbolic lines in Plan view with 5' turning radius and handicap symbols in the centre
Barrier Free push button	Specialty Equipment Family	Wall-hosted or Free-standing types

## 9.2 Structural Elements

Elements	Type	Properties
Beams (basement excluded)	Structural Beam Family	Various types; Parametric
Bearing walls	System Family: Wall	Instance Parameter: Structural Usage: Bearing
Retaining walls	System Family: Wall	Type Parameter: Function: Retaining
Foundation walls	System Family: Wall	Type Parameter: Function: Foundation
Core/Shaft walls	System Family: Wall	Type Parameter: Function: Core-Shaft
Structural Columns	Structural Column Family	Various types; Parametric
Structural grids with bubbles	System Family: Grid	Default Settings
Structural grid dimensions	System Family: Dimensions	PSPC defined dimension style
Expansion joint	System Family: Floor	Part of the floor slab sketch (i.e., break the slab); tag or annotate as such in appropriate views
Floors above and overhangs	View-Specific Detail Lines	Use underlay settings to pick edges and lock lines; finish by removing underlay; any change to the edge should result in the location of the locked detail lines updating automatically.

### 9.3 Curtain Wall, Window, Door and Wall Profile Elements

Elements	Type	Properties
Windows	Window Family	Specify parameters for Frame Width; Sill; Header
Doors	Door Family	Specify parameters for Frame Width; Header; Swing
Curtain Walls	System Family: Wall Tool	Type: Curtain Wall; Automatically Embedded; Specify mullion types, grid spacing, panel type(s), and wall function; To be used embedded in solid walls
Mullions	System Family: Mullion; with Mullion Profile Family	Specify parameters for Mullion Width
Curtain Wall Panels	Curtain Wall Panel Family	Type parameter defines as Glazed, Solid, or other user defined; may include louvers or other solar shading properties
Curtain Wall Doors	Door – Curtain Wall Family	(Workaround for “from room” and “to room” in schedule: Select curtain door panels, switch to wall, and insert regular door. Be careful of numbering; may require manual input for non-duplication of numbering.)
Wall Profiles	Reveal Profile Family or Profile Family	The origin is the insertion point
Control joint mullion	System Family: Mullion; with Mullion Profile Family	Families different from regular mullions only where a special control joint mullion is used (i.e., instead of two regular mullions placed side-by-side with a space for the control joint)
Overhead or clerestory window	Window Family	Use Plan Region tool to show elements above cut plane

### 9.4 Electrical Elements

Elements	Type	Properties
Clocks	Specialty Equipment Family	Wall-hosted
Luminaries	Lighting Family	Hosted; 2D symbolic lines in RCP
Track Lights	Lighting Family	Hosted; 2D symbolic lines in RCP
Sound equipment including P.A. systems	Specialty Equipment	Symbol in Plan
Video conference systems	Specialty Equipment	Symbol in Plan
Electrical panels	Electrical Family	Wall-hosted
Switch and outlets	Electrical Family	Wall-hosted
Ceiling fans	Electrical Family	Ceiling, roof or face-based

## 9.5 Plumbing Elements

Elements	Type	Properties
Urinals	Plumbing Fixture Family	Wall-hosted
Bidets	Plumbing Fixture Family	2D symbolic lines may be used in plan and elevation to keep standard graphics, but basic 3D geometry to be displayed in section and 3D views at a minimum
Sinks	Plumbing Fixture Family	
Tubs	Plumbing Fixture Family	
Janitorial tubs	Plumbing Fixture Family	
Showers stalls	Plumbing Fixture Family	
Drinking fountains	Plumbing Fixture Family	
Counter tops	Casework Family	Snaps to wall(s)
Handicap seating in showers	Specialty Equipment	Various types
Lockers	Specialty Equipment	Various types
Grab-bars	Specialty Equipment	Wall-hosted
Washroom partitions; door and swing	Specialty Equipment	Various types; Parametric

## 9.6 Life-Safety Elements

Elements	Type	Properties
Exit signs	Specialty Equipment	Ceiling hosted 3D element; Symbol in RCP
Annunciation panels	Specialty Equipment	
Buzzers and bells	Specialty Equipment	Wall hosted; Symbol in RCP
Emergency fire light	Specialty Equipment	Symbol in RCP
Emergency lights and battery packs	Specialty Equipment	Symbol in RCP
Pull stations	Specialty Equipment	Symbol in Floor Plan
Heat detectors	Specialty Equipment	Symbol in RCP
Smoke detectors	Specialty Equipment	Symbol in RCP
Emergency voice communication systems	Specialty Equipment	Symbol in Floor Plan
Motion detectors	Specialty Equipment	Symbol in RCP
Surveillance cameras	Specialty Equipment	Symbol in RCP
Sprinklers	Specialty Equipment	Symbol nested in ceiling-hosted family
Sprinkler pipes		Within
Fire extinguishers	Specialty Equipment	Symbol in Floor Plan
Fire hose cabinets	Specialty Equipment	Symbol in Floor Plan
Stand pipes		
Emergency Eye Wash	Specialty Equipment	Symbol in Floor Plan
Emergency shower	Specialty Equipment	Symbol in Floor Plan
First Aid Kit	Specialty Equipment	Symbol in Floor Plan

## 9.7 Mechanical Elements

Elements	Type	Properties
Supply and return vents	Mechanical Equipment	Hosted; Various types
Outside air grills	Mechanical Equipment	Wall-hosted
Pipes (excluding mechanical rooms/ areas)		
Mechanical shafts	Room Object	Room name = Mechanical Room (Mech. Rm)
Mechanical equipment (excluding mechanical rooms/ areas)	Mechanical Equipment	
Thermostats	Mechanical Equipment	Wall-hosted
Air conditioning equipment	Mechanical Equipment	
Heater	Mechanical Equipment	
Refrigerant equipment	Mechanical Equipment	
Convectors	Mechanical Equipment	
Floor drains	Mechanical Equipment	Including floor cut void
Hot and cold water tanks	Mechanical Equipment	

## 9.8 Ceiling Elements

Elements	Type	Properties
Ceiling beams – (excluding basement)	Structural Framing – Beams and Braces Family	Various types; Parametric
Ceiling grid	System Family: Ceiling	Type properties: Structure: Define by patterns in finish layer material category
Planning grid		
Bulkheads	In-Place Family: Ceiling	Typically a Sweep with a Profile (use of Profile family preferred for typical cases)
Overhead openings	Opening Tool; Door or Window Family (no geometry)	(Dependent on situation; Openings not generally recommended; door or window family use must be mindful of scheduling)
Skylights	Window Family	Roof or Face-based
Access door	Door Family	Roof or Face-based

## 9.9 Parking Elements

Elements	Type	Properties
Vehicle ramps	System Family: Ramp	
Curbs		
Gates	Site Family	
Pay booths	Specialty Equipment Family	
Sidewalks		
Parking lines	Parking Family	
Parking space		Various types; Parametric
Parking Number	Tag	
Accessible or Barrier Free Parking spaces	Parking Family	Type: Barrier Free
No-parking areas		
Motorcycle parking spaces	Parking Family	Type: Motorcycle
Bicycle stalls	Site Family	
Street Name	Site Family	

## 9.10 Exterior Site Elements

Only exterior site elements that are attached to the construction of the building are captured.

Elements	Type	Properties
Exterior porches	(Various)	
Exterior staircases	System Family: Stair	
Retaining walls	System Family: Wall	Type Properties: Function: Retaining
Terraces	(Various)	
Court yards	(Various)	
Patios	(Various)	
Guide posts and bollards	Site Family	
Vehicle ramps	System Family: Ramp	

### 9.11 Areas under Construction

Clearly depict and indicate in the model those areas where data collection activities cannot be undertaken. If available, determine and note the date of completion of the construction.

### 9.12 Roof Elements

If the property manager doesn't grant access to the data capture of the roof, the information from existing Architectural and Structural As-built will be transferred to the new model. If no drawings are available, the location and dimensions of elements, such as overhangs and canopies, are to be estimated by the data capture team and roof elements can be examine via “Google Earth”.

### 9.13 Non-Accessible Areas

Clearly depict and indicate in the model those areas that are access-restricted or non-accessible.

### 9.14 Parking Elements - Outside Stalls

Exterior parking stalls include parking spaces available within an outside parking lot. Unless requested, no outside parking elements are to be added to the model.

### 9.15 Title Block Information Elements

Elements	Type	Properties	Depicted by
Project name and address	Default Parameters	Follow PSPC naming conventions	Project Leader
Drawing name: building name and floor number	Default Parameters	Follow PSPC naming conventions	Project Leader
Name of measurers and date	Shared Parameters	Follow PSPC naming conventions	Project Leader
Name of draftsperson and date	Default Parameters	Follow PSPC naming conventions	Project Leader
Name of reviewer and date	Default Parameters	Follow PSPC naming conventions	Project Leader
Name of approver and date	Default Parameters	Follow PSPC naming conventions	Project Leader
Project number	Default Parameters	Follow PSPC naming conventions	Project Leader
Drawing number	Default Parameters	Follow PSPC naming conventions	Project Leader
Name of reviser and date	Default Parameters	Follow PSPC naming conventions	Project Leader
Legend	Legend View	Follow PSPC CADD Standards	Project Leader
North Arrow	Annotation Family (Symbol)	Follow PSPC CADD Standards	Project Leader
Key plan, including insertion in appropriate locations	Annotation Family (Symbol)	Includes use of Off/On parameters; placed on appropriate sheets within title block	Project Leader

## 10 Schedules

Schedule requirements should be reviewed by the proponent and the PSPC Technical Authority. At a minimum, the model file should include the automatically populated schedules made available in the Project Template:

[Room Schedule](#) - [Door Schedule](#) - [Window Schedule](#)

[View List](#) - [Sheet List](#)

## 11 Coordination and Interference Checking

Both single BIMs and discipline BIMs used in the aggregate for a project must be coordinated prior to submittal. Utilizing the Interference Checking functionality either within the authoring tool or an aggregation tool (e.g., Autodesk Navisworks) must be executed with corresponding Conflict Resolution to any and all issues (also referred to as Clash Detection). Any conflicts that cannot be resolved, or should be ignored, must be documented and reported back to the PSPC Project Manager with reference to element IDs, types, location, and description of the issue.

## 12 IFC Mapping

All objects must be correctly mapped to Industry Foundation Classes (IFC) categories or “container” in conjunction with the version defined by the Technical Authority (TA). If a version is not defined in the Statement of Work (SoW) by the TA, the default IFC settings will suffice so long as properties, attributes and objects are correctly placed. Refer to the IFC export settings within the authoring software.

## 13 Record Model Quality Assurance

The model must be subject to a Quality Assurance processes to ensure adherence to the Building Information Modelling Record Base Building requirements. The following Quality Assurance elements in conjunction with all requirements already defined in this document shall form the base for the Quality Assurance checklist completed for all models.

\*\* The service provider is responsible to provide a signed QA check list with the company and PSPC standard QA check list elements with every deliverables.

### 13.1 Standard QA Check list

Model(s) will be checked against the technical requirements defined within this document and summarized under the following categories:

<b>Graphic and housekeeping Standards</b>
<ul style="list-style-type: none"><li>• Model was delivered to the latest version and format file.</li><li>• PSPC templates are inserted</li><li>• Phasing to existing</li><li>• Project browser follows naming convention and purged</li><li>• Level views named correctly</li></ul>

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- PSPC Key plan, North Arrow, Titles are inserted in title block
- Title block are correctly fill-in.
- Title block is properly labelled and numbered
- Legend match symbol used in drawing
- Key plan is properly identified
- Work-sharing relinquishing ownership by all users
- Check all model constraint (and over constraint)

### **Model Requirement (Integrity & Completeness)**

- Model created using standard BIM best practices.
- Materials, colours, sizes and other attributes must be selected to reflect the physical elements being modelled.
- Visible elements are modeled following the point-cloud data and design intent.
- Hidden elements are modeled using documentation provided
- Elements are created and located using the appropriated objet.
- Object associated to correct level
- Room object closed
- LOD and accuracy follows associated document
- Components and Families are used correctly
- Site elements are correctly created and geo-referenced.

### **Data Requirements (Definition & Completeness)**

- IFC deliverables are mapped property
- Point-clouds are properly linked

### **Warnings Management**

- Warmings are corrected and eliminated

## 14 Model Standard Deliverables

### 14.1 General

- Deliverables must follow the Statement of Work (SOW), meeting minutes and the all DISO documents and appendixes.
- The service provider must perform a Quality Assurance on ALL deliverables before final Revit model is given to PSPC.
- Quality Assurance checklist is signed by the service provider Project Leader.
- All final BIM models must be delivered in both the Native File Format and the latest IFC file format.
- Any files generated to support project work, such as Integration and Coordination in Autodesk Navisworks, Interference Checking reports in the authoring software or Warning Review documentation are to be submitted with the original model(s).

# Appendix H ecModel - Element Table

Level of Development, Level of Accuracy and Precision of Elements

## Facilities Technical Services: Geomatics

Note: In cases where an element has not been listed, the average category requirements shall be used until such time as a change to this table has been approved by the Departmental Representative.\*

Last revised : September 2019

### Legends:

BIM - Level of Development (LOD)		Precision by elements (LS/SH)	
0	Not Modeled. Elements to be shown as 2D symbols.	LS	Located or Surveyed Elements
100	Conceptual areas and volumes, purely geometric	SH	Subsurface or Hidden Elements
200	An approximate modelled representation, information associated		
300	An informed and modelled representation, information associated		
350	A detailed/specific modelled representation, information associated		
400	An accurate modelled representation, information associated		
500	An accurate modelled representation, CAFM and Heritage information associated		
Level of Accuracy (LOA)		Requirements Legend (REQ)	
1	Accurate to within ± 10 mm in the X, Y, and Z coordinates	●	Mandatory
2	Accurate to within ± 15 mm in the X, Y, and Z coordinates	○	Mandatory Req'd if exists
3	Accurate to within ± 30 mm in the X, Y, and Z coordinates	✖	Not Required for the ecModel
4	Accurate to within ± 500 mm in the X, Y, and Z coordinates	✓	Optional Requirement
5	Accurate to within ± 1000 mm in the X, Y, and Z coordinates	◆	See Comments
6	Information taken from original construction documents	N.A.	None Applicable
Example - 2/6	Accurate to within ± 15 mm if measurement or / taken from Original Doc.	Level Code (ie A1010)	ASTM Uniformat II Class

### Element Table:

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
								REQ	LoD	LoA
<b>PROJECT SETUP</b>										
		1.1		1.1	Building Grids			●	0	6
						1.11	Planning Grid	○	0	6
						1.2	Floor Levels	●	0	2/6
						1.3	Tileblocks	●	0	N.A.
						1.31	North Arrow / Scales	●	0	N.A.
				1.5	Site Plan/Grading/Topography			●	300	3
			Other Elements:		Project set up Elements in SoW and Appendixes but not listed			●	0	6
<b>A SUBSTRUCTURE</b>										
	A10	Foundations	A1010	Standard Foundations	A10101	Continuous Footings		●	300	3/6
					A10102	Wall Foundations		✓	200	6
					A10103	Column Foundations & Pile Caps		●	300	3/6
					A10104	Perimeter Drainage & Insulation		✖	N.A.	N.A.
			A1020	Special Foundations	A10201	Pile Foundations		✓	200	6
					A10202	Grade Beams		✓	200	3/6
					A10206	Raft Foundations		●	300	3/6
					A10207	Control Expansion joint & Cover		✓	300	3/6
			A1030	Slab on Grade	A10301	Standard Slab on Grade		●	300	3/6
					A10302	Structural Slab on Grade		●	300	3/6
	A20	Basement Construction	A2010	Basement Excavation				✖	N.A.	N.A.
			A2020	Basement Walls	A20201	Basement Wall Construction		●	300	2/6
					A20202	Moisture Protection		✖	N.A.	N.A.
					A20203	Basement Wall Insulation		✖	N.A.	N.A.
					A20204	Interior Finish (Skin)		✓	300	3/6
			Other Elements:		Substructure Elements in SoW and Appendixes but not listed			●	300	2/6
<b>B SHELL</b>										
	B10	Super Structure	B1010	Floor Construction	B10101	Upper Floors Construction		●	300	2
					B10102	Balcony Floors Construction		●	300	3/6
					B10103	Vehicle ramps & Curbs		●	200	3
					B10104	Exterior Stairs and Fire Escapes		●	300	3
					B10105	Floor Raceway Systems		✖	N.A.	N.A.
					B10106	Other Floor Construction		✓	300	3
			B1020	Roof Construction	B10201	Flat Roof Construction		●	300	3/6
					B10202	Pitched Roof Construction		●	300	3/6
					B10203	Canopies		●	300	3/6
					B10204	Other Roof Systems		✓	300	3/6
					B10205	Dormer Roof		●	300	3/6
	B20	Exterior Enclosure	B2010	Exterior Walls				●	350	2/6
					B20101	Non-Load Bearing Exterior Walls		●	350	2/6
					B20102	Load Bearing Exterior Walls		●	350	2/6
					B20103	Retaining Walls		✓	300	3/6

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
				B2020	Exterior Windows	B20201	Curtain Walls	●	350	2
						B20202	Skylights	●	350	2
								●	300	3/6
				B2030	Exterior Doors			●	350	2
						B20301	Glazed Doors & Entrances	●	350	2
						B20302	Solid Exterior Doors	●	350	2
						B20303	Revolving Doors	●	350	2
						B20304	Overhead Doors	●	300	2
						B20305	Other Doors & Entrances	✓	350	2
	B30	Roofing	B3010	Roof Coverings				●	300	3/6
						B30101	Roof finishes	●	300	3/6
						B30102	Membranes	●	300	3
						B30103	Roof Insulation & Fill	✘	N.A.	N.A.
						B30104	Flashings & Trim	✘	N.A.	N.A.
						B30105	Roof Eaves & Soffits	●	300	3/6
						B30106	Gutters and Downspouts	✘	N.A.	N.A.
				B3060	Roof Openings			●	300	3/6
						B30601	Glazed Roof Openings	●	300	3
						B30602	Roof Hatches	✘	N.A.	N.A.
						B30603	Gravity Roof Ventilators	✘	N.A.	N.A.
				Other Elements:	Shell Elements in SoW and Appendixes but not listed			●	300	3/6
C	INTERIORS							REQ	LoD	LoA
		C10	Interior Construction	C1010	Partitions			●	300	2
						C10101	Non-Load Bearing Interior Walls	●	300	2/6
						C10102	Fixed Partitions	●	300	2
						C10103	Demountable Partitions	●	300	2
						C10104	Interior Windows	●	300	2
						C10105	Retractable Partitions	●	300	2
						C10106	Site Built Toilet Partitions	●	300	2
						C10107	Site Built Compartments Cubicles	●	300	2
						C10108	Interior Balustrades & Screens	●	300	2
						C10109	Storefronts	●	300	2
				C1020	Interior Doors			●	300	2
						C10201	Interior Doors	●	300	2
						C10202	Interior Door Frames	●	300	2
						C10203	Interior Door Hardware	✘	N.A.	N.A.
						C10204	Interior Door Wall Opening Elements	●	300	2
						C10205	Interior Door Sidelights & Transoms	●	300	2
						C10206	Interior Hatches & Access Doors	✓	300	2
						C10207	Door Painting & Decoration	✘	N.A.	N.A.
				C1030	Fittings & Equipment			●	300	3
						C10301	Fabricated Toilet Partitions	●	300	3
						C10302	Fabricated Compartments & Cubicles	✘	N.A.	N.A.
						C10303	Storage Shelving & Lockers	●	200	3
						C10304	Ornamental Metals & Handrails	✘	N.A.	N.A.
						C10305	Identifying Devices	✘	N.A.	N.A.
						C10306	Closet Specialties	●	300	3
						C10307	General Fittings & Misc. Metals	✘	N.A.	N.A.
		C20	Stairs	C2010	Stair Construction (& Railings)			●	300	2
						C20101	Regular Stairs	●	350	2
						C20102	Curved Stairs	●	350	2
						C20103	Spiral Stairs	●	350	2
						C20104	Stair Handrails & Balustrades	●	300	3
						C20105	Staircase annotation	●	0	N.A.
						C20106	Ladders	●	300	2
				C2020	Stair Finishes			●	200	N.A.
						C20201	Stair, Tread, Landing Finishes	●	300	2
						C20202	Stair Soffit Finishes	●	300	3
						C20203	Stair Handrail & Balustrade Finishes	●	300	3
		C30	Interior Finishes	C3010	Wall Finishes			●	300	2
						C30101	Wall Finishes to Inside Exterior Walls	●	350	2
						C30102	Wall Finishes to Interior Walls	●	350	2
						C30103	Column Finishes	●	300	2
				C3020	Floor Finishes			●	200	N.A.
						C30201	Room Description	●	0	N.A.
						C30202	Floor Toppings	●	0	N.A.
						C30203	Traffic Membranes	✘	N.A.	N.A.
						C30204	Hardeners & Sealers	✘	N.A.	N.A.
						C30205	Flooring	●	0	N.A.
						C30206	Carpeling	●	0	N.A.
						C30207	Bases, Curbs & Trim	✘	N.A.	N.A.
						C30208	Access Pedestal Flooring	✘	N.A.	N.A.
				C3030	Ceiling Finishes			●	300	3/6
						C30301	Ceiling Finishes	●	300	2
						C30302	Ceiling grid	●	300	3
						C30303	Bulkheads & Openings	●	300	3
						C30304	Access door	✓	200	2
				Other Elements:	Interiors Elements in SoW and Appendixes but not listed			●	300	3/6
D	SERVICES							REQ	LoD	LoA
		D10	Conveying	D1010	Elevators & Lifts			●	300	2
						D10101	Passenger Elevators	●	200	2
						D10102	Freight Elevators	●	200	2
						D10103	Lifts	●	200	2

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
				D1020	Escalators & Moving Walks			●	300	3
						D10201	Escalators	●	300	3
						D10202	Moving Walks	●	300	3
				D1030	Other Conveying Systems			●	300	3
						D10901	Dumbwaiters	●	300	3
						D10902	Pneumatic Tube Systems	✖	N.A.	N.A.
						D10903	Hoists & Cranes	✖	N.A.	N.A.
						D10904	Conveyors	●	300	3
						D10905	Chutes	✖	N.A.	N.A.
						D10906	Turntables	✖	N.A.	N.A.
						D10907	Systems	✖	N.A.	N.A.
						D10908	Transportation Systems	✖	N.A.	N.A.
D20	Plumbing	D2010	Plumbing Fixtures			D20101	Water closets	●	300	3
						D20102	Urinals	●	300	3
						D20103	Lavatories	●	300	3
						D20104	Sinks	●	300	3
						D20105	Bathtubs	●	300	3
						D20106	Wash Fountains	●	300	3
						D20107	Showers	●	300	3
						D20108	Drinking Fountains & Coolers	●	300	3
						D20109	Bidets & Other Plumbing Fixtures	●	300	3
		D2020	Domestic Water Distribution			D20201	Cold Water Service	✖	N.A.	N.A.
						D20202	Hot Water Service	✖	N.A.	N.A.
						D20203	Domestic Water Supply Equipment	✖	N.A.	N.A.
		D2030	Sanitary Waste			D20301	Waste Piping	✖	N.A.	N.A.
						D20302	Vent Piping	✖	N.A.	N.A.
						D20303	Floor Drains	✓	200	3
						D20304	Sanitary Waste Equipment	✖	N.A.	N.A.
						D20305	Pipe Insulation	✖	N.A.	N.A.
		D2040	Rain Water Drainage			D20401	Pipe & Fittings	✖	N.A.	N.A.
						D20402	Roof Drains	✓	200	3
						D20403	Rainwater Drainage Equipment	✖	N.A.	N.A.
						D20404	Pipe Insulation	✖	N.A.	N.A.
		D2090	Other Plumbing Systems			D20901	Gas Distribution	✖	N.A.	N.A.
						D20902	Acid Waste System	✖	N.A.	N.A.
						D20903	Interceptors	✖	N.A.	N.A.
						D20904	Pool Piping and Equipment	✖	N.A.	N.A.
						D20905	Decorative Fountain Piping Devices	✖	N.A.	N.A.
						D20906	Other Piping Systems	✖	N.A.	N.A.
D30	HVAC	D3010	Energy Supply			D30101	Oil Supply System	✖	N.A.	N.A.
						D30102	Gas Supply System	✖	N.A.	N.A.
						D30103	Coal Supply System	✖	N.A.	N.A.
						D30104	Steam Supply System	✖	N.A.	N.A.
						D30105	Hot Water Supply System	✖	N.A.	N.A.
						D30106	Solar Energy System	✖	N.A.	N.A.
						D30107	Wind Energy System	✖	N.A.	N.A.
		D3020	Heat Generating Systems			D30201	Boilers	✖	N.A.	N.A.
						D30202	Boiler Room Piping & Specialities	✖	N.A.	N.A.
						D30203	Auxiliary Equipment	✖	N.A.	N.A.
						D30204	Insulation	✖	N.A.	N.A.
						D30205	Convectors	●	200	3
		D3030	Cooling Generating Systems			D30301	Chilled Water Systems	✖	N.A.	N.A.
						D30302	Direct Expansion Systems	✖	N.A.	N.A.
						D30303	Convectors	●	200	3
		D3040	Distribution Systems			D30401	Air Distribution Systems	✖	N.A.	N.A.
						D30402	Exhaust Ventilation Systems	✖	N.A.	N.A.
						D30403	Steam Distribution Systems	✖	N.A.	N.A.
						D30404	Hot Water Distribution	✖	N.A.	N.A.
						D30405	Chilled Water Distribution	✖	N.A.	N.A.
						D30406	Change-over Distribution System	✖	N.A.	N.A.
						D30407	Glycol Distribution Systems	✖	N.A.	N.A.
						D30408	Supply & Return	●	200	3
		D3050	Terminal & Package Units			D30501	Terminal Self-Contained Units	✖	N.A.	N.A.
						D30502	Package Units	✖	N.A.	N.A.
		D3060	Controls & Instrumentation			D30601	Heating Generating Systems	✓	N.A.	N.A.
						D30602	Cooling Generating Systems	✖	N.A.	N.A.
						D30603	Heating/Cooling Air Handling Units	✖	N.A.	N.A.
						D30604	Exhaust & Ventilating Systems	✖	N.A.	N.A.
						D30605	Hoods and Exhaust Systems	✖	N.A.	N.A.
						D30606	Terminal Devices	✖	N.A.	N.A.
						D30607	Energy Monitoring & Control	✖	N.A.	N.A.
						D30608	Building Automation Systems	✖	N.A.	N.A.
						D30609	Other Controls & Instrumentation	✖	N.A.	N.A.
						D306010	Thermostats	●	200	3
		D3070	Systems Testing & Balancing			D30701	Piping System Testing & Balancing	✖	N.A.	N.A.
						D30702	Air Systems Testing & Balancing	✖	N.A.	N.A.
						D30703	HVAC Commissioning	✖	N.A.	N.A.
						D30704	Other Systems Testing and Balancing	✖	N.A.	N.A.
		D3090	Other HVAC Systems & Equipment			D30901	Special Cooling Systems & Devices	✖	N.A.	N.A.

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
						D30902	Special Humidity Control	✘	N.A.	N.A.
						D30903	Dust & Fume Collectors	✘	N.A.	N.A.
						D30904	Air Curtains	✘	N.A.	N.A.
						D30905	Air Purifiers	✘	N.A.	N.A.
						D30906	Paint Spray Booth Ventilation	✘	N.A.	N.A.
						D30907	General Construction Items (HVAC)	✘	N.A.	N.A.
		D40	Fire Protection	D4010	Sprinklers			●	200	3
						D40101	Sprinklers pipes (upper level only)	●	200	3
						D40102	Sprinkler Water Supply	✘	N.A.	N.A.
						D40103	Sprinkler Pumping Equipment	✘	N.A.	N.A.
						D40104	Dry Sprinkler System	✓	200	3
				D4020	Standpipes			●	200	3
						D40201	Standpipe Water Supply	✘	N.A.	N.A.
						D40202	Pumping Equipment	✘	N.A.	N.A.
						D40203	Standpipe Equipment	✘	N.A.	N.A.
						D40204	Fire Hose Equipment	✘	N.A.	N.A.
				D4030	Fire Protection Specialties			●	200	3
						D40301	Fire Extinguishers	●	200	3
						D40302	Fire Hose Cabinets	●	200	3
						D40303	Exit Signs / Buzzers / Bells	●	200	3
						D40304	Emergency lighting	●	200	3
						D40305	Pull Stations / Motion detectors	●	200	3
						D40306	Heat & Smoke Detectors	●	200	3
						D40307	Emergency Eye Wash & Shower	●	200	3
				D4090	Other Fire Protection Systems			●	200	3
						D40901	Carbon Dioxide Systems	✓	200	3
						D40902	Foam Generating Equipment	✓	200	3
						D40903	Clean Agent Systems	✓	200	3
						D40904	Dry Chemical System	✓	200	3
						D40905	Hood & Duct Fire Protection	✘	N.A.	N.A.
						D40906	Annunciation panels	✓	200	3
						D40907	P.A. Systems equipment	✓	200	3
		D50	Electrical	D5010	Electrical Service & Distribution			✓	200	3
						D50101	High Tension Service & Dist.	✘	N.A.	N.A.
						D50102	Low Tension Service & Dist.	✘	N.A.	N.A.
						D50103	Electrical Services panels	✓	200	3
						D50104	Switch and outlets	✓	0	3
				D5020	Lighting and Branch Wiring			✘	N.A.	N.A.
						D50201	Branch Wiring Devices	✘	N.A.	N.A.
						D50202	Interior Lighting Equipment	●	200	3
						D50203	Exterior Building Lighting	●	200	3
				D5030	Communications & Security			●	200	3
						D50301	Public Address & Music Systems	✓	200	3
						D50302	Intercommunication & Paging System	✓	200	3
						D50303	Telephone Systems	✘	N.A.	N.A.
						D50304	Call Systems	✘	N.A.	N.A.
						D50305	Television Systems	✓	0	N.A.
						D50306	Clock and Program Systems	✓	N.A.	N.A.
						D50307	Fire Alarm Systems	●	0	3
						D50308	Security and Detection Systems	✓	0	3
						D50309	Local Area Networks	✘	N.A.	N.A.
						D503010	Public phones	●	0	3
						D503011	Conference systems	✓	0	3
				D5090	Other Electrical Systems			✘	N.A.	N.A.
						D50901	Grounding Systems	✘	N.A.	N.A.
						D50901	Emergency Light & Power Systems	✓	200	3
						D50901	Floor Raceway Systems	✘	N.A.	N.A.
						D50901	Other Special Systems & Devices	✘	N.A.	N.A.
						D50901	General Construction Items (Elect.)	✘	N.A.	N.A.
			Other Elements:		Services Elements in SoW and Appendixes but not listed			●	200	3
<b>E</b>	<b>EQUIPMENT &amp; FURNISHINGS</b>							<b>REQ</b>	<b>LoD</b>	<b>LoA</b>
		E10	Equipment	E1010	Commercial Equipment			✘	N.A.	N.A.
						E10101	Security & Vault Equipment	✘	N.A.	N.A.
						E10102	Teller & Service Equipment	✘	N.A.	N.A.
						E10103	Registration Equipment	✘	N.A.	N.A.
						E10104	Checkroom Equipment	✘	N.A.	N.A.
						E10105	Mercantile Equipment	✘	N.A.	N.A.
						E10106	Laundry & Dry Cleaning Equipment	✘	N.A.	N.A.
						E10107	Vending Equipment	●	200	3
						E10108	Office Equipment	✓	200	3
						E10109	Bank Machine	●	200	3
						E101010	Washroom Grad-bars	✓	200	3
				E1020	Institutional Equipment			✘	N.A.	N.A.
						E10201	Ecclesiastical Equipment	✘	N.A.	N.A.
						E10202	Library Equipment	✘	N.A.	N.A.
						E10203	Theatre & Stage Equipment	✘	N.A.	N.A.
						E10204	Instrumental Equipment	✘	N.A.	N.A.
						E10205	Audiovisual Equipment	✘	N.A.	N.A.
						E10206	Detention Equipment	✘	N.A.	N.A.
						E10207	Laboratory Equipment	✘	N.A.	N.A.
						E10208	Medical Equipment	✘	N.A.	N.A.
						E10209	Other Institutional Equipment	✘	N.A.	N.A.
				E1030	Vehicular Equipment			✘	N.A.	N.A.
						E10301	Vehicular Service Equipment	✘	N.A.	N.A.
						E10302	Parking Control Equipment	✘	N.A.	N.A.
						E10303	Loading Dock Equipment	✓	200	3
						E10304	Other Vehicular Equipment	✘	N.A.	N.A.
				E1090	Other Equipment			✘	N.A.	N.A.
						E10901	Maintenance Equipment	✘	N.A.	N.A.
						E10902	Solid Waste Handling Equipment	✘	N.A.	N.A.
						E10903	Food Service Equipment	✘	N.A.	N.A.
						E10904	Residential Equipment	✘	N.A.	N.A.
						E10905	Unit Kitchens	✓	200	3
						E10906	Window Washing Equipment	✘	N.A.	N.A.
						E10907	Other Equipment	✘	N.A.	N.A.
		E20	Furnishings	E2010	Fixed Furnishings			●	200	3

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
						E20101	Fixed Artwork	✓	200	3
						E20102	Fixed Casework	✗	N.A.	N.A.
						E20103	Blinds & Other Window Treatments	✗	N.A.	N.A.
						E20104	Fixed Floor Grilles and Mats	✓	200	3
						E20105	Fixed Multiple Seating	✓	200	3
						E20106	Fixed Interior Landscaping	✓	200	3
			E2020	Movable Furnishings				✓	200	3
						E20201	Movable Artwork	✗	N.A.	N.A.
						E20202	Furniture & Accessories	✓	200	3
						E20203	Movable Rugs & Mats	✓	200	3
						E20204	Movable Interior Landscaping	✓	200	3
						E20205	Office furnishings	✓	200	3
						E20206	Computer & peripherals	✓	200	3
						E20207	Signage	●	0	N.A.
			Other Elements:	Equipment & Furnishings in SoW and Appendices but not listed				●	200	3
<b>G</b>	<b>SITEWORK</b>							<b>REQ</b>	<b>LoD</b>	<b>LoA</b>
		G10	Site Preparation	G1010	Site Clearing			✗	N.A.	N.A.
						G10101	Clearing & Grubbing	✗	N.A.	N.A.
						G10102	Tree Removal & Thinning	✗	N.A.	N.A.
				G1020	Site Demolition & Relocations			✗	N.A.	N.A.
						G10201	Building Demolition	✗	N.A.	N.A.
						G10202	Demolition of Site Components	✗	N.A.	N.A.
						G10203	Relocation of Building & Utilities	✗	N.A.	N.A.
						G10204	Utilities Relocation	✗	N.A.	N.A.
				G1030	Site Earthwork			✗	N.A.	N.A.
						G10301	Site Grading Excavation	✗	N.A.	N.A.
						G10302	Borrow Fill	✗	N.A.	N.A.
						G10303	Soil Stabilization & Treatment	✗	N.A.	N.A.
						G10304	Site Dewatering	✗	N.A.	N.A.
						G10305	Site Shoring	✗	N.A.	N.A.
						G10306	Embankments	✗	N.A.	N.A.
						G10307	Erosion Control	✗	N.A.	N.A.
				G1040	Hazardous Earth Remediation			✗	N.A.	N.A.
						G10401	Removal of Contaminated Soil	✗	N.A.	N.A.
						G10402	Soil Restoration & Treatment	✗	N.A.	N.A.
		G20	Site Improvements	G2010	Roadways			✗	N.A.	N.A.
						G20101	Bases and Sub-Bases	✗	N.A.	N.A.
						G20102	Paving & Surfacing	✓	0	N.A.
						G20103	Curbs Gutters & Drains	✗	N.A.	N.A.
						G20104	Guardrails and Barriers	✓	200	3
						G20105	Painted Lines	✓	200	3
						G20106	Markings & Signage	✓	0	N.A.
						G20107	Vehicular Bridges	✓	200	4
				G2020	Parking Lots			✗	N.A.	N.A.
						G20201	Bases and Sub-Bases	✗	N.A.	N.A.
						G20202	Paving & Surfacing	●	0	N.A.
						G20203	Curbs, Rails & Barriers	✓	200	3
						G20204	Parking Booths & Equipment	✓	200	3
						G20205	Markings & Signage	✓	0	N.A.
				G2030	Pedestrian Paving			✓	200	3
						G20301	Paving & Surfacing	✓	0	N.A.
						G20302	Edging	✓	200	3
						G20303	Exterior Steps	✓	200	3
						G20304	Pedestrian Bridges	✓	200	3
				G2040	Site Development			✓	200	3
						G20401	Fences & Gates	✓	200	3
						G20402	Retaining Walls	✓	200	3
						G20403	Terrace & Perimeter Walls	✓	200	3
						G20404	Signage	✓	200	3
						G20405	Site Furnishings	✓	200	3
						G20406	Fountains, Pools & Watercourses	✓	200	3
						G20407	Playing Fields	✓	200	3
						G20408	Flagpoles	✓	200	3
						G20409	Miscellaneous Structures	✓	200	3
				G2050	Landscaping			✗	N.A.	N.A.
						G20501	Fine Grading & Soil Preparation	✗	N.A.	N.A.
						G20502	Erosion Control Measures	✗	N.A.	N.A.
						G20503	Top Soil and Planting Beds	✗	N.A.	N.A.
						G20504	Seeding and Sodding	✓	200	3
						G20505	Planting	✓	200	3
						G20506	Planters	✓	200	3
						G20507	Irrigation Systems	✗	N.A.	N.A.
						G20508	Other Landscape Features	✓	200	3
		G30	Site Mechanical Utilities	G3010	Water Supply			✗	N.A.	N.A.
						G30101	Potable Water Distribution & Storage	✗	N.A.	N.A.
						G30102	Non-Potable Water Distribution & Storage	✗	N.A.	N.A.
						G30103	Well Systems	✗	N.A.	N.A.
						G30104	Fire Protection Distribution & Storage	✗	N.A.	N.A.
						G30105	Pumping Stations	✗	N.A.	N.A.
						G30106	Package Water Treatment Plants	✗	N.A.	N.A.
				G3020	Sanitary Sewer			✗	N.A.	N.A.
						G30201	Piping	✗	N.A.	N.A.
						G30202	Manholes & Cleanouts	✗	N.A.	N.A.
						G30203	Septic Disposal Systems	✗	N.A.	N.A.
						G30204	Lift Stations	✗	N.A.	N.A.
						G30205	Packaged Water Waste Treatment Plants	✗	N.A.	N.A.
						G30206	Septic Tanks	✗	N.A.	N.A.
						G30207	Drain Fields	✗	N.A.	N.A.
				G3030	Storm Sewer			✗	N.A.	N.A.
						G30301	Piping	✗	N.A.	N.A.
						G30302	Manholes	✗	N.A.	N.A.
						G30303	Headwalls & Catch Basins	✗	N.A.	N.A.
						G30304	Lift Stations	✗	N.A.	N.A.
						G30305	Retention Ponds	✗	N.A.	N.A.
						G30306	Ditches & Culverts	✗	N.A.	N.A.
				G3040	Heating Distribution			✗	N.A.	N.A.
						G30401	Steam Supply	✗	N.A.	N.A.
						G30402	Condensate Return	✗	N.A.	N.A.

Level 1 Code	Level 1 Major Group Elements	Level 2 Code	Level 2 Group Elements	Level 3 Code	Level 3 Individual Elements	Level 4 Code	Level 4 Sub Elements	Existing Condition BIM		
						G30403	Hot Water Supply System	✘	N.A.	N.A.
						G30404	Pumping Stations	✘	N.A.	N.A.
				G3050	Cooling Distribution			✘	N.A.	N.A.
						G30501	Chilled Water Piping	✘	N.A.	N.A.
						G30502	Wells for Cooling/Heating	✘	N.A.	N.A.
						G30503	Pumping Stations	✘	N.A.	N.A.
						G30504	Cooling Towers on Site	✘	N.A.	N.A.
				G3060	Fuel Distribution			✘	N.A.	N.A.
						G30601	Fuel Piping	✘	N.A.	N.A.
						G30602	Fuel Equipment	✘	N.A.	N.A.
						G30603	Fuel Storage Tanks	✘	N.A.	N.A.
						G30604	Fuel Dispensing Stations	✘	N.A.	N.A.
				G3090	Other Site Mechanical Utilities			✘	N.A.	N.A.
						G30901	Industrial Waste Systems	✘	N.A.	N.A.
						G30902	Oil & Lubricants Distribution Systems	✘	N.A.	N.A.
		G40	Site Electrical Utilities	G4010	Electrical Distribution			✘	N.A.	N.A.
						G40101	Substations	✘	N.A.	N.A.
						G40102	Overhead Power Distribution	✘	N.A.	N.A.
						G40103	Underground Power Distribution	✘	N.A.	N.A.
				G4020	Site Lighting			✘	N.A.	N.A.
						G40201	Fixtures & Transformers	✘	N.A.	N.A.
						G40202	Poles	✘	N.A.	N.A.
						G40203	Wiring Conduits & Ductbanks	✘	N.A.	N.A.
						G40204	Site Lighting Controls	✘	N.A.	N.A.
				G4030	Site Communications & Security			✘	N.A.	N.A.
						G40301	Site Communications Systems	✘	N.A.	N.A.
						G40302	Site Security & Alarm Systems	✘	N.A.	N.A.
				G4090	Other Site Electrical Utilities			✘	N.A.	N.A.
						G40901	Cathodic Protection	✘	N.A.	N.A.
						G40901	Site Emergency Power Generation	✘	N.A.	N.A.
		G90	Other Site Construction	G9010	Service & Pedestrian Tunnels			✘	N.A.	N.A.
						G90101	Service Tunnels	✘	N.A.	N.A.
						G90102	Trench Boxes	✘	N.A.	N.A.
						G90103	Pedestrian Tunnels	✘	N.A.	N.A.
				G9090	Other Site Systems & Equipment			✘	N.A.	N.A.
						G90901	Snow Melting Systems	✘	N.A.	N.A.
			Other Elements:		Site Work in SoW and Appendixes but not listed			✘	N.A.	N.A.



# Appendix H ecModel - LoD Table

## Facilities Technical Services: Geomatics

BIM - Level of Development (LOD)		Authorized Uses
0	Not Modeled. Elements to be shown as 2D symbols	As specified in the Principle Agreement.
100	Modeled elements are at a conceptual point of development. Information can be conveyed with massing forms, written narratives, and 2D symbols.	Analysis Cost Estimating Schedule Others:
200	Modeled elements have approximate relationships to quantities, size, location, and orientation. Some information may still be conveyed with written narratives	Analysis Cost Estimating Schedule Coordination Others:
300	Modeled elements are explained in terms of specific systems, quantities, size, shape, location, and orientation	Analysis Cost Estimating Schedule Coordination Others:
350	Model Elements are geometrically represented in the model as a specific/detailed system, object or assembly in terms of size, shape, location, quantity, and orientation. Additional information may be attached to the Model Element.	Analysis Cost Estimating Schedule Coordination Others:
400	Continuation of LOD 350 with enough information added to facilitate fabrication, assembly, and installation	Analysis Cost Estimating Schedule Coordination Others:
500	Modeled elements are representative of as installed conditions and can be utilized for ongoing facilities management.	Analysis Cost Estimating Schedule Coordination Others: