



**RETURN BIDS TO:**

**RETOURNER LES SOUMISSIONS À:**

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

**11 Laurier St. / 11 rue Laurier**

**Place du Portage, Phase III**

**Core 0B2 / Noyau 0B2**

**Gatineau, Québec K1A 0S5**

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

**SOLICITATION AMENDMENT  
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

THIS DOCUMENT CONTAINS A SECURITY  
REQUIREMENT

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Consultant Services Division/Division des services  
d'experts-conseils  
L'Esplanade Laurier  
4th floor, East Tower  
140 O'Connor Street  
Ottawa  
Ontario  
K1A 0S5

<b>Title - Sujet</b> 1500 Bronson Rehabilitation Project	
<b>Solicitation No. - N° de l'invitation</b> EJ078-193032/A	<b>Amendment No. - N° modif.</b> 004
<b>Client Reference No. - N° de référence du client</b> 20193032	<b>Date</b> 2019-10-08
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$FE-174-77705	
<b>File No. - N° de dossier</b> fe174.EJ078-193032	<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 2019-10-23</b>	
<b>Time Zone</b> Fuseau horaire Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b>	
<b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Bismonte, Tatiana	<b>Buyer Id - Id de l'acheteur</b> fe174
<b>Telephone No. - N° de téléphone</b> (819) 664-3528 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> PWGSC 1500 Bronson Ave. Ottawa, Ontario Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<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/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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fe174,EJ078-193032/A

Buyer ID - Id de l'acheteur  
fe174  
CCC No./N° CCC - FMS No./N° VME

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**A) ADMINISTRATIVE AMENDMENT TO THE REQUEST FOR PROPOSAL DOCUMENT (RFP)**

**The following changes in the Request for Proposal document are effective immediately. This amendment will form part of the contract documents.**

Amendment 004 is being issued for the following:

**DELETE:** Amendment # 003, date added, 2019-10-08.

**REPLACE:** with Amendment 003, contained herein.

**End of Amendment 004**

## A) QUESTIONS AND ANSWERS

## B) AMENDMENT TO THE REQUEST FOR PROPOSAL DOCUMENT

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### A) QUESTIONS AND ANSWERS

The following is in response to inquiries received in relation to this solicitation. This amendment will form part of the contract documents.

Number	Question(s)	Answer(s)
2	<p>In the RFP, section 2.7.2, Cost Consultant (CC) and Schedule Consultant (SC) both read that both roles will operate as an extension of PWGSC's Project Management Team.</p> <p>What procurement method will be employed to procure both of these roles?</p>	<p>All of the roles in <b>Section 2.7.2 – PWGSC Consultants</b> will be procured by PWGSC through various methods of supply. PWGSC will initiate separate contracts as and when appropriate.</p>

## B) AMENDMENT TO THE REQUEST FOR PROPOSAL DOCUMENT

The following changes in the Request for Proposal document are effective immediately. This amendment will form part of the contract documents.

### 1) Request for Proposal Document

#### PROJECT BRIEF

##### .1 DELETE:

**Section 2.7.2 – PWGSC Consultants, in its entirety**

##### .2 REPLACE with:

**Section 2.7.2 – PWGSC Consultants, (amendment 003 - attached herein, where changes have been made to align the numbering in both the English and French versions).**

The following Consultants will be retained by PWGSC and will report directly to the DR. They will provide additional information, as required, as well as provide third party advice and reviews.

#### **2.7.2.1 Environmental Consultant (EC)**

The Environmental Consultant will be responsible for all abatement work and will provide related consultant services. The Consultant and the EC will work closely to establish the Abatement and Demolition Program, for design requirements that have not already been previously addressed. It is expected that the scope of the abatement and demolition package will be required only for work that is directly related to the Consultants final design of the Project.

The Consultant should coordinate with the EC to ensure a seamless delivery of the abatement and demolition scope of work. The EC will provide all field review services during tender and construction for their field of expertise.

#### **2.7.2.2 Geotechnical Services Consultant (GSC)**

The Geotechnical Services Consultant (GSC) will provide geotechnical investigations and analysis for the Consultant to incorporate into the design, construction documents, and the Model.

The Consultant should coordinate with PWGSC's GSC, to review the geotechnical reports, to identify areas where additional geotechnical information may be necessary for design purposes, and to work in collaboration with the GSC during construction phase inspections and site monitoring activities.

The Consultant is to include a geotechnical engineer on their team as an advisor only.

#### **2.7.2.3 Cost Consultant (CC)**

PWGSC will engage a Cost Consultant to provide Project support. They will operate as an extension of PWGSC's Project Management Team and will provide an independent assessment of the Consultant's cost, risk management and quality assurance services, as well as the GC's construction cost.

#### **2.7.2.4 Schedule Consultant (SC)**

PWGSC will engage a Scheduling Consultant to provide Project support. They will operate as an extension of PWGSC's Project Management Team and will provide an independent assessment of the Consultant's scheduling, risk management and quality assurance services, as well as the GC's schedule.

#### **2.7.2.5 Security Consultant (SC)**

PWGSC will engage a Security Consultant, if required to provide security-related services. They will provide security support services related to the functional requirements and quality assurance services.

## 2) Request for Proposal Document

### PROJECT BRIEF

- .1 **DELETE:**  
**PD 2.5.1, Key Project Activities**, in its entirety.
  
- .2 **REPLACE with:**  
**PD 2.5.1, Key Project Activities** (amendment 003, attached herein,  
*where changes have been made to update the project schedule*).

Activity durations are preliminary and the Consultant is responsible for verifying and confirming the feasibility of the Prime Consultant Timeline, below, as part of their scheduling mandate.

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Line ID	Activity	% Complete	Dur	Start	Finish
0	1500 Bronson - Rehabilitation Project	24%	2543d	Wed 7/29/15	Thu 12/11/25
121	PROJECT DELIVERY STAGE	6%	1727d	Mon 11/26/18	Thu 12/11/25
122	DESIGN PHASE	10%	894d	Mon 11/26/18	Thu 7/21/22
155	PHASE 1 - BASE BLDG DESIGN WORK	0%	530d	Mon 4/6/20	Fri 6/3/22
156	DESIGN (PHASE 1 - BASE BLDG)	0%	60d	Mon 4/6/20	Fri 7/3/20
157	PRE-DESIGN STAGE	0%	60d	Mon 4/6/20	Fri 7/3/20
162	CONCEPT (SCHEMATIC) DESIGN	0%	130d	Mon 7/6/20	Fri 1/15/21
177	DESIGN DEVELOPMENT	0%	100d	Fri 1/15/21	Thu 6/10/21
192	CONSTRUCTION DOCS (BASE BLDG & FIT-UP)	0%	290d	Tue 3/30/21	Fri 6/3/22
193	CONSTRUCTION DOCS - 66% SUBMISSION	0%	290d	Tue 3/30/21	Fri 6/3/22
204	CONSTRUCTION DOCS - 99% SUBMISSION	0%	95d	Mon 11/29/21	Thu 4/21/22
212	CONSTRUCTION DOCS - 100% TENDER-READY SUBMISSION	0%	30d	Fri 4/22/22	Fri 6/3/22
216	PHASE 2 - CLIENT FIT-UP DESIGN WORK	0%	210d	Tue 8/4/20	Thu 6/10/21
226	SPECIFIC SERVICE AGREEMENT (SSA) - CLIENT/PSPC	0%	40d	Wed 10/14/20	Thu 12/10/20
234	DESIGN (PHASE 2 - CLIENT FIT-UP)	0%	120d	Fri 12/11/20	Thu 6/10/21
235	CONCEPT (SCHEMATIC) DESIGN	0%	60d	Fri 12/11/20	Mon 3/15/21
243	DESIGN DEVELOPMENT	0%	60d	Tue 3/16/21	Thu 6/10/21
251	EXPENDITURE AUTHORITY 2 (EA2)	0%	232d	Wed 8/11/21	Thu 7/21/22
281	IMPLEMENTATION PHASE	0%	932d	Mon 3/15/21	Mon 1/6/25
282	TENDER CALL, BID EVALUATION & CONSTRUCTION CONTRACT AWARD	0%	251d	Fri 11/5/21	Tue 11/15/22
283	COMPILE TENDER-READY DOCS (AS PER RPCD)	0%	140d	Fri 11/5/21	Fri 6/3/22
297	TENDER & AWARD	0%	44d	Fri 8/26/22	Mon 10/31/22
306	FURNITURE PROCUREMENT	0%	592d	Mon 3/15/21	Mon 8/14/23
332	CONSTRUCTION ADMINISTRATION	0%	521d	Tue 11/15/22	Mon 1/6/25
333	CONSTRUCTION	0%	0d	Tue 11/15/22	Tue 11/15/22
334	BASE BUILDING CONSTRUCTION	0%	235d	Wed 11/16/22	Tue 10/31/23
335	FIT-UP CONSTRUCTION	0%	261d	Thu 2/9/23	Mon 3/4/24
336	ISSUE CERTIFICATE OF SUBSTANTIAL COMPLETION	0%	0d	Mon 3/4/24	Mon 3/4/24
337	BCC INSTALLS (PSPC, SSC, CLIENT) / DEFICIENCIES CORRECTIONS / OFF	0%	205d	Tue 3/5/24	Mon 1/6/25
338	ISSUANCE OF OCCUPANCY PERMIT - SPACE AVAILABLE FOR CLIENT MO	0%	0d	Mon 1/6/25	Mon 1/6/25
339	DELIVERY CLOSE-OUT PHASE	0%	12mons	Thu 12/19/24	Thu 12/11/25

The Consultant should work closely with the Departmental Representative (DR) to maintain or reduce the durations set out in this schedule. Warranty services should be considered over and above these estimated completion dates.

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### **3) Request for Proposal Document**

#### **PROJECT BRIEF**

ANNEX D: MODEL ELEMENT TABLE

#### **.1 ADD THE FOLLOWING:**

**ANNEX D: MODEL ELEMENT TABLE** (*amendment 003, attached herein*)



# Annex D - Model Element Table Instruction Sheet

Last revised: 2019-09

By: PSPC

## General Instructions

The Model Element Table (MET) is to be filled during the planning stage by the project manager and the appropriate COE experts in conjunction with the Request for Proposals (RFP) and the BIM Project Execution Plan (PxP). Once attached to a Project Brief in an open RFP, it is the responsibility of the Proponent to respond with additional Model Element Author assignments, and other Consultant Team information. Once a contract has been awarded, the Prime Consultant is responsible to completing and maintaining this document throughout the project lifecycle. In addition, it is the responsibility of the Prime Consultant to negotiate with the Departmental Representative (DR) for MET finalization and issue. The CM or Contractor will contribute relevant sections as required.

All parties within the Project Team must follow this document. It is split into sections for specifying the required Level of Development (LOD) at the element level for various project phases/milestones, contract roles, and model element authorship, use, and security classification. The MET acts as a reference for all parties throughout project delivery.

Sheets 1-3 and 5-6 are required to be verified by the Prime Consultant and approved by the DR. Each sheet contains a value legend at the top of the page with the appropriate values, specific to that sheet, which can be used to fill in the cells.

## Sheets 1-3

For sheets 1-3 there are five categories to fill out in the cells which are as follows:

**Requirements (REQ)** – The requirements column of the first three pages is filled in to tell the consultant what elements are and are not required when modelling at different stages during the project. The symbols used for this category and their meaning are shown in Table 1 below.

Table 1: Requirements Legend

Requirements Legend (REQ)	
Symbol	Requirement

●	Mandatory
○	Mandatory Req'd if exists
✘	Not Required by PSPC
✓	Optional Requirement
◆	See Comments
N.A.	Not Applicable

**Level of Development (LOD)** – Used to describe the required detailing of the element within the model. The values are shown in the table below and a more detailed description of the LOD's and their authorized uses is available in sheet 4. Authorized Uses. Certain LOD's are required for certain model uses (i.e. 350 for prefabrication), which must be kept in mind when developing the MET.

Table 2. BIM Levels of Development

BIM - Level of Development (LOD)	
LOA	Description
0	Not Modeled. Elements to be shown as 2D symbols.
100	Conceptual areas and volumes, purely geometric
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

**Model Element Author (MEA)** – Model element authors are used to specify to the consultant the discipline of the person(s) required to model the element to the specified LOD. The values for the MEA category are the discipline codes shown below in Table 3.

Table 3: Model Element Authors

BIM - Model Element Authors		
Discipline Code	Author	Author Code
ARCH	General/Prime Architect	A-A
	Landscape Architect	A-L
	Interior Designer	A-ID
ENG	Electrical	
	Municipal Engineering	
	Structural/Seismic	
	Mechanical	
	Electrical	
	<b>Others:</b>	
SPEC	Heritage Conservation	
	Sustainability	
	<b>Others:</b>	

**Level of Accuracy (LOA)** – LOA specifications within the MET are used to set the tolerances on the 3-dimensional position of the element. The values range from 1-6 (table 4) with 1 being the most specific.

Table 4. Level of Accuracy (LOA) Specifications

BIM - Level of Accuracy (LOA)	
LOA	Description
1	Representational accuracy to within $\pm 10$ mm in the X,Y, and Z coordinates
2	Representational accuracy to within $\pm 25$ mm in the X,Y, and Z coordinates
3	Representational accuracy to within $\pm 50$ mm in the X,Y, and Z coordinates
4	Representational accuracy to within $\pm 250$ mm in the X,Y, and Z coordinates
5	Representational accuracy to within $\pm 500$ mm in the X,Y, and Z coordinates
6	Information taken from un-verified existing drawings or documents (e.g. as-builts), with no tolerance specified.

**Precision by Elements** - Used to specify Located or Surveyed Elements (LS), or Subsurface or Hidden Elements (SH) are required in modelling. The values are shown in the table below.

Table 5: Precision by Elements

Precision by elements (LS/SH)	
Element	Description
LS	Located or Surveyed Elements
SH	Subsurface or Hidden Elements

## Sheet 5

On the Model Element Authors page, the MEA column is to be filled in with the author code of the author responsible for modelling the corresponding element. In the notes column add any additional information deemed important or necessary.

## Sheet 6

The Model Element Security page is to be used to detail the security level (LEVEL) and Model Approach (MA). These levels are specified for every elements, again down to Unifomat level 4. Space is also provided for notes. Additionally, there is space for MEA (Model Element Author) assignments to each element. Here the code of the MEA is used and space is provided for their notes. The appropriate values are listed in the table below.

## BIM Security Protocols

The goal of the following protocol is to maintain any cloud-based Model in an "UNCLASSIFIED" state. Please refer to the list items below for various classifications of model or drawing elements and their respective levels of sensitivity. Notes are assigned to each element in order to provide further guidance on risk mitigation strategies, or instructions for secure information handling.

Security Level (LEVEL)		Model Approach (MA)	
U	Unclassified	1	Model Element; include information
C	Confidential	2	Model Element; do not include sensitive information
S	Secret	3	Model Element as proxy; do not include information
TS	Top Secret	4	Do not model; do not include information
PA	Protected A		
PB	Protected B		
PC	Protected C		



# Annex D - Model Element Table

Level of Development, Level of Accuracy and Precision of Elements

\*All LOD/LOA requirements specified reflect on new or original modelling content within the scope of the project this Table is used with. 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.\*

## Measurement Modelling

### Sheet 1

Last revised: 2019-09  
By: PSPC

Value Legend	
BIM - Level of Development (LOD)	
LOD	Description
0	Not Modeled. Elements to be shown as 2D symbols.
100	Conceptual areas and volumes, purely geometric
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

  

BIM - Level of Accuracy (LOA)	
LOA	Description
1	Representational accuracy to within ± 10 mm in the X,Y, and Z coordinates
2	Representational accuracy to within ± 25 mm in the X,Y, and Z coordinates
3	Representational accuracy to within ± 50 mm in the X,Y, and Z coordinates
4	Representational accuracy to within ± 250 mm in the X,Y, and Z coordinates
5	Representational accuracy to within ± 500 mm in the X,Y, and Z coordinates
6	Information taken from un-verified existing drawings or documents (e.g. as-builts), with no tolerance specified.

  

Requirements Legend (REQ)	
Symbol	Requirement
●	Mandatory
○	Mandatory Req'd if exists
✘	Not Required by PSPC
✓	Optional Requirement
◆	See Comments
N.A.	Not Applicable

  

Precision by elements (LS/SH)	
Element	Description
LS	Located or Surveyed Elements
SH	Subsurface or Hidden Elements

PROJECT SETUP									
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling					
				REQ	LOD	MEA	LS/SH	LOA	
		Building Grids	Planning Grid	●	0				4
		Floor Levels		●	200				4
		Site Plan/Grading/Topography		●	200				4
	Other Elements:	upon in collaboration with the DR.							
A - SUBSTRUCTURE									
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling					
				REQ	LOD	MEA	LS/SH	LOA	
	Foundations	Standard Foundations	Wall Foundations	●	200				4
			Column Foundations & Pile Caps	●	200				4
			Perimeter Drainage & Insulation	●	200				4
		Special Foundations	Pile Foundations	●	200				4
			Grade Beams	●	200				4
			Caissons	●	200				4
			Underpinning	●	200				4
			Dewatering	●	200				4
			Raft Foundations	●	200				4
			Pressure Injected Grouting	●	200				4
			Other Special Conditions	●	200				4
		Slab on Grade		●	200				5

Symbol	Requirement				
●	Mandatory				
○	Mandatory Req'd if exists				
Standard Slab on Grade	●	200			5
Structural Slab on Grade	●	200			5
Inclined Slab on Grade	●	200			5
Trenches, Pits & Bases	●	200			5
Under-Slab Drainage & Insulation	●	200			4
<b>Basement Construction</b>					
Basement Excavation					
Excavation for Basements					
Structure Back Fill & Compaction					
Shoring					
Basement Walls	●	200			4
Basement Wall Construction	●	200			4
Moisture Protection	●				
Basement Wall Insulation	●				
Interior Skin	●				
Other Elements: All Elements not listed, but agreed upon in collaboration with the DR	●	300			4

### B - SHELL

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling						
				REQ	LOD	MEA	LS/SH	LOA		
<b>Super Structure</b>										
<b>Floor Construction</b>						●	200			5
Construction						●	200			5
Upper Floors Construction						●	200			5
Balcony Floors Construction						●	200			5
Ramps						●	200			5
Exterior Stairs and Fire Escapes						●	200			5
Floor Raceway Systems						●	200			5
Other Floor Construction						●	200			5
<b>Roof Construction</b>						●	200			5
Flat Roof Construction						●	200			5
Pitched Roof Construction										
Canopies						●	200			5
Other Roof Systems						●	300			4
<b>Exterior enclosure</b>										
<b>Exterior Walls</b>						●	200			4
<b>Exterior Windows</b>						●	200			4
Windows						●	200			4
Curtain Walls						●	200			4
Storefronts						●	200			4
<b>Exterior Doors</b>						●	200			4
Glazed Doors & Entrances						●	200			4
Solid Exterior Doors						●	200			4
Revolving Doors						●	200			4
Overhead Doors						●	200			4
Other Doors & Entrances						●	200			4
<b>Roofing</b>										
<b>Roof Coverings</b>						●	200			4
Roof finishes						●	200			4
Membranes						●	200			4
Roof Insulation & Fill						●	200			4
Flashings & Trim						●	200			4
Roof Eaves & Soffits						●	200			4
Gutters and Downspouts						●	200			4
<b>Roof Openings</b>						●	200			4
Glazed Roof Openings										
Roof Hatches										
Gravity Roof Ventilators						●	200			4
Other Elements: All Elements not listed, but agreed upon in collaboration with the DR.						●	200			4

### C - INTERIORS

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling						
				REQ	LOD	MEA	LS/SH	LOA		
<b>Interior Construction</b>										
<b>Partitions</b>						●	200			5
Fixed Partitions						●	200			4
Demountable Partitions						●	200			5
Retractable Partitions						●	200			5
Site Built Toilet Partitions						●	200			5
Site Built Compartments Cubicles						●	200			5
Interior Balustrades & Screens						●	200			5
Interior Windows & Storefronts						●	200			4
<b>Interior Doors</b>						●	200			4
Interior Doors						●	200			4
Interior Door Frames						●	200			4
Interior Door Hardware						●	200			4
Interior Door Wall Opening Elements						●	200			4
Interior Door Sidelights & Transoms						●	200			4

Symbol		Requirement			
●		Mandatory			
○		Mandatory Req'd if exists			
Interior Hatches & Access Doors		●	200		4
Door Painting & Decoration		●	200		5
Fittings					
Fabricated Toilet Partitions					
Fabricated Compartments & Cubicles					
Storage Shelving & Lockers					
Ornamental Metals & Handrails					
Identifying Devices					
Closet Specialties					
General Fittings & Misc. Metals					
Stairs					
Stair Construction		●	200		5
Regular Stairs		●	200		5
Curved Stairs		●	200		5
Spiral Stairs		●	200		5
Stair Handrails & Balustrades		●	200		5
Stair Finishes		●	200		5
Stair, Tread, Landing Finishes		●	200		5
Stair Soffit Finishes		●	200		5
Stair Handrail & Balustrade Finishes		●	200		5
Interior Finishes					
Wall Finishes		●	200		4
Wall Finishes to Inside Exterior Walls		●	200		4
Wall Finishes to Interior Walls		●	200		4
Column Finishes		●	200		4
Floor Finishes		●	200		5
Floor Toppings		●	200		5
Traffic Membranes		●	200		5
Hardeners & Sealers		●	200		5
Flooring		●	200		5
Carpeting		●	200		5
Bases, Curbs & Trim		●	200		5
Access Pedestal Flooring		●	200		5
Ceiling Finishes		●	200		5
Ceiling Finishes		●	200		5
Suspended Ceilings		●	200		5
Other Ceilings		●	200		5
Other Elements: collaboration with the UR.		●	300		4

D - SERVICES

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling						
				REQ	LOD	MEA	LS/SH	LOA		
Conveying										
Elevators & Lifts						●	200			5
Passenger Elevators						●	200			5
Freight Elevators						●	200			5
Lifts						●	200			5
Escalators & Moving Walks						●	200			5
Escalators						●	200			5
Moving Walks						●	200			5
Other Conveying Systems						●	200			5
Dumbwaiters										
Pneumatic Tube Systems										
Hoists & Cranes										
Conveyors										
Chutes										
Turntables										
Systems										
Transportation Systems										
Plumbing										
Plumbing Fixtures						●	200			4
Water closets						●	200			4
Urinals						●	200			4
Lavatories						●	200			4
Sinks						●	200			4
Bathtubs						●	200			4
Wash Fountains						●	200			4
Showers						●	200			4
Drinking Fountains & Coolers						●	200			4
Bidets & Other Plumbing Fixtures						●	200			4
Domestic Water Distribution						●				4
Cold Water Service						●				4
Hot Water Service						●				4
Domestic Water Supply Equipment						●				4
Sanitary Waste						●				4
Waste Piping						●				4
Vent Piping						●				4
Floor Drains						●				4
Sanitary Waste Equipment						●				4
Pipe Insulation						●				4

		Symbol	Requirement				
		●	Mandatory				
		○	Mandatory Req'd if exists				
Rain Water Drainage		●				4	
	Pipe & Fittings	●				4	
	Roof Drains	●				4	
	Rainwater Drainage Equipment	●				4	
	Pipe Insulation	●				4	
Other Plumbing Systems		●				4	
	Gas Distribution	●				4	
	Acid Waste System						
	Interceptors	●				4	
	Pool Piping and Equipment						
	Decorative Fountain Piping Devices						
HVAC	Other Piping Systems	●				4	
Energy Supply							
	Oil Supply System						
	Gas Supply System	●				4	
	Coal Supply System						
	Steam Supply System	●				4	
	Hot Water Supply System	●				4	
	Solar Energy System						
	Wind Energy System						
	Heat Generating Systems		●				5
		Boilers	●				5
Boiler Room Piping & Specialties		●				5	
Auxiliary Equipment		●				5	
Insulation		●				5	
Cooling Generating Systems		●				5	
	Chilled Water Systems	●				5	
	Direct Expansion Systems	●				5	
Distribution Systems		●				5	
	Air Distribution Systems	●				5	
	Exhaust Ventilation Systems	●				5	
	Steam Distribution Systems	●				5	
	Hot Water Distribution	●				5	
	Chilled Water Distribution	●				5	
	Change-over Distribution System	●				5	
	Glycol Distribution Systems	●				5	
Terminal & Package Units		●				5	
	Terminal Self-Contained Units	●				5	
	Package Units	●				5	
Controls & Instrumentation		●				5	
	Heating Generating Systems	●				5	
	Cooling Generating Systems	●				5	
	Heating/Cooling Air Handling Units	●				5	
	Exhaust & Ventilating Systems	●				5	
	Hoods and Exhaust Systems	●				5	
	Terminal Devices	●				5	
	Energy Monitoring & Control	●				5	
	Building Automation Systems	●				5	
	Other Controls & Instrumentation	●				5	
Systems Testing & Balancing							
	Piping System Testing & Balancing						
	Air Systems Testing & Balancing						
	HVAC Commissioning						
Other HVAC Systems & Equipment		●				4	
	Special Cooling Systems & Devices	●				4	
	Special Humidity Control	●				4	
	Dust & Fume Collectors	●				4	
	Air Curtains	●				4	
	Air Purifiers	●				4	
	Paint Spray Booth Ventilation	●				4	
	General Construction Items (HVAC)	●				4	
	Fire Protection						
	Sprinklers		●				4
Sprinkler Water Supply		●				4	
Sprinkler Pumping Equipment		●				4	
Dry Sprinkler System		●				4	
Standpipes		●	200			4	
	Standpipe Water Supply	●	200			4	
	Pumping Equipment	●	200			4	
	Standpipe Equipment	●	200			4	
	Fire Hose Equipment	●	200			4	
Fire Protection Specialties		●	200			4	
	Fire Extinguishers	●	200			4	
Other Fire Protection Systems	Fire Extinguisher Cabinets	●	200			4	
Other Fire Protection Systems		●	200			4	
	Carbon Dioxide Systems	●	200			4	
	Foam Generating Equipment	●	200			4	
	Clean Agent Systems	●	200			4	

Symbol	Requirement			
●	Mandatory			
○	Mandatory Req'd if exists			
Dry Chemical System	●	200		4
Hood & Duct Fire Protection	●	200		4
<b>Electrical</b>				
Electrical Service & Distribution	●	200		4
High Tension Service & Dist.	●	200		4
Low Tension Service & Dist.	●	200		4
Lighting & Branch Wiring	●	200		4
Branch Wiring Devices	●	200		4
Lighting Equipment	●	200		4
Communications & Security	●	200		4
Public Address & Music Systems	●	200		4
Intercommunication & Paging System	●	200		4
Telephone Systems	●	200		4
Call Systems	●	200		4
Television Systems	●	200		4
Clock and Program Systems	●	200		4
Fire Alarm Systems	●	200		4
Security and Detection Systems	●	200		4
Local Area Networks	●	200		4
Other Electrical Systems	●	200		4
Grounding Systems	●	200		4
Emergency Light & Power Systems	●	200		4
Floor Raceway Systems	●	200		4
Other Special Systems & Devices	●	200		4
General Construction Items (Elect.)	●	200		4

**E - EQUIPMENT & FURNISHINGS**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling				
				REQ	LOD	MEA	LS/SH	LOA
	Equipment	Commercial Equipment	Security & Vault Equipment	●	200			5
			Teller & Service Equipment					
			Registration Equipment					
			Checkroom Equipment					
			Mercantile Equipment					
			Laundry & Dry Cleaning Equipment					
			Vending Equipment					
			Office Equipment					
		Institutional Equipment	Ecclesiastical Equipment					
			Library Equipment					
			Theater & Stage Equipment					
			Instrumental Equipment					
			Audio-visual Equipment					
			Detention Equipment					
			Laboratory Equipment					
			Medical Equipment					
			Other Institutional Equipment					
		Vehicular Equipment	Vehicular Service Equipment					
			Parking Control Equipment	●	200			5
			Loading Dock Equipment	●	200			5
			Other Vehicular Equipment					
		Other Equipment	Maintenance Equipment	●	200			5
			Solid Waste Handling Equipment	●	200			5
			Food Service Equipment	●	200			5
			Residential Equipment					
			Unit Kitchens	●	200			5
			Window Washing Equipment					
			Other Equipment					
	Furnishings	Fixed Furnishings	Fixed Artwork	●	200			4
			Fixed Casework	●	200			4
			Blinds & Other Window Treatment	●	200			4
			Fixed Floor Grilles and Mats	●	200			4
			Fixed Multiple Seating	●	200			4
			Fixed Interior Landscaping	●	200			4
		Movable Furnishings	Movable Artwork					

Symbol	Requirement
●	Mandatory
○	Mandatory Req'd if exists
Furniture & Accessories	
Movable Rugs & Mats	
Movable Interior Landscaping	
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.
●	300
	4

**F - SPECIAL CONSTRUCTION & DEMOLITION**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling					
				REQ	LOD	MEA	LS/SH	LOA	
	Special Construction								
		Special Structures							
			Air Supported Structures						
			Pre-engineered Structures						
			Other Special Structures						
		Integrated Construction		●	200				4
			Integrated Assemblies	●	200				4
			Special Purpose Rooms	●	200				4
			Other Integrated Construction	●	200				4
		Special Construction Systems		●	200				4
			Sound, Vibration & Seismic Const.	●	200				4
			Radiation Protection	●	200				4
			Special Security Systems	●	200				4
			Vaults	●	200				4
			Other Special Construction Systems	●	200				4
		Special Facilities							
			Aquatic Facilities						
			Ice Rinks						
			Site Constructed Incinerators						
			Kennels & Animal Shelters						
			Liquid & Gas Storage Tanks	●	200				4
			Other Special Facilities						
		Special Controls & Instrumentation		●	200				4
			Recording Instrumentation	●	200				4
			Building Automation System	●	200				4
			Other Special Controls & Instrumentation	●	200				4
		Selective Building Demolition							
		Building Elements Demolition		●	200				5
			Building Interior Demolition	●	200				5
			Building Exterior Demolition	●	200				5
		Hazardous Components Abatement		●	200				4
			Removal of Hazardous Components	●	200				4
			Encapsulation of Hazardous Components	●	200				4

**G - BUILDING SITEWORK**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Measurement Modelling					
				REQ	LOD	MEA	LS/SH	LOA	
	Site Preparation								
		Site Clearing		●	200				5
			Clearing & Grubbing	●	200				4
			Tree Removal & Thinning	●	200				4
		Site Demolition & Relocations		●	200				5
			Building Demolition	●	200				5
			Demolition of Site Components	●	200				5
			Relocation of Building & Utilities	●	200				5
			Utilities Relocation	●	200				5
		Site Earthwork		●	200				5
			Site Grading Excavation	●	200				5
			Borrow Fill	●	200				5
			Soil Stabilization & Treatment	●	200				5
			Site Dewatering	●	200				5
			Site Shoring	●	200				5
			Embankments	●	200				5
			Erosion Control	●	200				5
		Hazardous Waste Remediation		●	200				5
			Removal of Contaminated Soil	●	200				5
			Soil Restoration & Treatment	●	200				5
		Site Improvements							

		Symbol		Requirement			
		●	○	Mandatory			
		●	○	Mandatory Req'd if exists			
Roadways		●	○	200			5
	Bases and Sub-Bases	●	○	200			5
	Paving & Surfacing	●	○	200			5
	Curbs Gutters & Drains	●	○	200			5
	Guardrails and Barriers	●	○	200			5
	Painted Lines	●	○	200			5
	Markings & Signage	●	○	200			5
	Vehicular Bridges	●	○	200			5
Parking Lots		●	○	200			5
	Bases and Sub-Bases	●	○	200			5
	Paving & Surfacing	●	○	200			5
	Curbs, Rails & Barriers	●	○	200			5
	Parking Booths & Equipment	●	○	200			5
	Markings & Signage	●	○	200			5
Pedestrian Paving		●	○	200			5
	Paving & Surfacing	●	○	200			5
	Edging	●	○	200			5
	Exterior Steps	●	○	200			5
	Pedestrian Bridges						
Site Development		●	○	200			5
	Fences & Gates	●	○	200			5
	Retaining Walls	●	○	200			5
	Terrace & Perimeter Walls	●	○	200			5
	Signage	●	○	200			5
	Site Furnishings	●	○	200			5
	Fountains, Pools, & Watercourses						
	Playing Fields						
	Flagpoles	●	○	200			5
	Miscellaneous Structures	●	○	200			5
Landscaping		●	○	200			5
	Fine Grading & Soil Preparation	●	○	200			5
	Erosion Control Measures	●	○	200			5
	Top Soil and Planting Beds	●	○	200			5
	Seeding and Sodding	●	○	200			5
	Planting	●	○	200			5
	Planters	●	○	200			5
	Irrigation Systems	●	○	300			4
	Other Landscape Features	●	○	200			5
Site Mechanical Utilities							
Water Supply		●	○	200			4
	Potable Water Distribution & Storage	●	○	200			4
	Non Potable Water Distribution & Storage	●	○	200			4
	Well Systems	●	○	200			4
	Fire Protection Distribution & Storage	●	○	200			4
	Pumping Stations	●	○	200			4
	Package Water Treatment Plants	●	○	200			4
Sanitary Sewer		●	○	200			4
	Piping	●	○	200			4
	Manholes & Cleanouts	●	○	200			4
	Septic Disposal Systems	●	○	200			4
	Lift Stations	●	○	200			4
	Packaged Water Waste Treatment Plants	●	○	200			4
	Septic Tanks	●	○	200			4
	Drain Fields	●	○	200			4
Storm Sewer		●	○	200			4
	Piping	●	○	200			4
	Manholes	●	○	200			4
	Headwalls & Catch Basins	●	○	200			4
	Lift Stations	●	○	200			4
	Retention Ponds						
	Ditches & Culverts	●	○	200			4
Heating Distribution		●	○	200			4
	Steam Supply	●	○	200			4
	Condensate Return	●	○	200			4
	Hot Water Supply System	●	○	200			4
	Pumping Stations	●	○	200			4
Cooling Distribution		●	○	200			4
	Chilled Water Piping	●	○	200			4
	Wells for Cooling/Heating	●	○	200			4
	Pumping Stations	●	○	200			4

Symbol		Requirement			
●		Mandatory			
○		Mandatory Req'd if exists			
Cooling Towers on Site					
Fuel Distribution	Fuel Piping	●	200		4
	Fuel Equipment	●	200		4
	Fuel Storage Tanks	●	200		4
	Fuel Dispensing Stations	●	200		4
Other Site Mechanical Utilities		●	200		4
	Industrial Waste Systems	●	200		4
	POL (Petroleum Oil & Lubricants) Distribution Systems	●	200		4
Site Electrical Utilities					
Electrical Distribution		●	200		4
	Substations	●	200		4
	Overhead Power Distribution	●	200		4
	Underground Power Distribution	●	200		4
Site Lighting		●	200		4
	Fixtures & Transformers	●	200		4
	Poles	●	200		4
	Wiring Conduits & Ductbanks	●			4
	Site Lighting Controls	●	200		4
Site Communications & Security		●	200		4
	Site Communications Systems	●	200		4
	Site Security & Alarm Systems	●	200		4
Other Site Electrical Utilities		●	200		4
	Cathodic Protection				
	Site Emergency Power Generation				
Other Site Construction					
Service & Pedestrian Tunnels		●	200		5
	Service Tunnels	●	200		5
	Trench Boxes	●	200		5
	Pedestrian Tunnels	●	200		5
Other Site Systems & Equipment					
	Snow Melling Systems				

# Annex D - Model Element Table

Level of Development, Level of Accuracy and Precision of Elements

\*All LOD/LOA requirements specified reflect on new or original modelling content within the scope of the project this Table is used with. 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.\*

## Design Authoring

### Sheet 2

Last revised: 2019-09

By: PSPC

BIM - Level of Development (LOD)	
LOD	Description
0	Not Modelled. Elements to be shown as 2D symbols.
100	Conceptual areas and volumes, purely geometric
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

Requirements Legend (REQ)	
Symbol	Requirement
●	Mandatory
○	Mandatory Req'd if exists
✖	Not Required by PSPC
✓	Optional Requirement
◆	See Comments
N.A.	Not Applicable

BIM - Level of Accuracy (LOA)	
LOA	Description
1	Representational accuracy to within ± 10 mm in the X,Y, and Z coordinates
2	Representational accuracy to within ± 25 mm in the X,Y, and Z coordinates
3	Representational accuracy to within ± 50 mm in the X,Y, and Z coordinates
4	Representational accuracy to within ± 250 mm in the X,Y, and Z coordinates
5	Representational accuracy to within ± 500 mm in the X,Y, and Z coordinates
6	Information taken from un-verified existing drawings or documents (e.g. as-builts), with no tolerance specified.

Precision by elements (LS/SH)	
Element	Description
LS	Located or Surveyed Elements
SH	Subsurface or Hidden Elements

A - SUBSTRUCTURE				LS/S		LS/SH		Project Phases/Milestones				LS/S								
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Pre-Design		Schematic Design		Design Development				Construction Docs				Contract Admin.				
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	
Foundations	Standard Foundations	Wall Foundations Column Foundations & Pile Caps Perimeter Drainage & Insulation	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Special Foundations	Pile Foundations Grade Beams Caissons Underpinning Dewatering Raft Foundations Pressure Injected Grouting Other Special Conditions	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Slab on Grade	Standard Slab on Grade Other Slab on Grade Structural Slab on Grade Inclined Slab on Grade Trenches, Pits & Bases Under-Slab Drainage & Insulation	● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Basement Construction	Basement Excavation	Excavation for Basements Structure Back Fill & Compaction Shoring	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
				● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
Basement Walls		Basement Wall Construction Moisture Protection Basement Wall Insulation Interior Skin	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.			● 300	4	● 350	4	● 350	3	● 400	3	● 400	2	● 400	2	● 400	2			
B - SHELL				LS/S		LS/SH		Project Phases/Milestones				LS/S								
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Pre-Design		Schematic Design		Design Development				Construction Docs				Contract Admin.				
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	
Super Structure	Floor Construction	Construction Upper Floors Construction Balcony Floors Construction Ramps Exterior Stairs and Fire Escapes Floor Raceway Systems Other Floor Construction	● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Roof Construction	Flat Roof Construction Pitched Roof Construction Canopies Other Roof Systems	● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Exterior enclosure	Exterior Walls	Windows Curtain Walls Storefronts	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
				● 350	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
		Exterior Doors	Glazed Doors & Entrances Solid Exterior Doors Revolving Doors Overhead Doors Other Doors & Entrances	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
				● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
				● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
				● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2	
		Roofing	Roof Coverings	Roof Finishes Membranes Roof Insulation & Fill Flashing & Trim Roof Eaves & Soffits Gutters and Downspouts	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2
					● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2
Roof Openings	Glazed Roof Openings Roof Hatches Gravity Roof Ventilators		● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.			● 300	4	● 350	4	● 350	3	● 400	3	● 400	2	● 400	2	● 400	2			
C - INTERIORS				LS/S		LS/SH		Project Phases/Milestones				LS/S								
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Pre-Design		Schematic Design		Design Development				Construction Docs				Contract Admin.				
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	
Interior Construction	Partitions	Fixed Partitions Demountable Partitions Retractable Partitions Site Built Toilet Partitions Site Built Compartments Cubicles Interior Balustrades & Screens Interior Windows & Storefronts	● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	3	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Interior Doors	Interior Doors Interior Door Frames Interior Door Hardware Interior Door Wall Opening Elements Interior Door Sidelights & Transoms Interior Hatches & Access Doors Door Painting & Decoration	● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 300	4	● 350	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
			● 200	5	● 300	4	● 350	3	● 400	3	● 400	3	● 400	2	● 400	2	● 400	2		
	Fittings	Fabricated Toilet Partitions Fabricated Compartments & Cubicles Storage Shelving & Lockers Ornamental Metals & Handrails	● 300	4	● 350															

	Identifying Devices	●	300	4	●	350	3	●	400	3	●	400	2
	Closet Specialties	●	300	4	●	350	3	●	400	3	●	400	2
	General Fittings & Misc. Metals	●	300	4	●	350	3	●	400	3	●	400	2
Stairs	Stair Construction	●	200	5	●	300	4	●	350	3	●	400	2
	Regular Stairs	●	200	5	●	300	4	●	350	3	●	400	2
	Curved Stairs	●	200	5	●	300	4	●	350	3	●	400	2
	Spiral Stairs	●	200	5	●	300	4	●	350	3	●	400	2
	Stair Handrails & Balustrades	●	200	5	●	300	4	●	350	3	●	400	2
	Stair Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Stair Tread, Landing Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Stair Soffit Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Stair Handrail & Balustrade Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Interior Finishes	Wall Finishes	●	300	4	●	300	4	●	350	3	●	400
	Wall Finishes to Inside Exterior Walls	●	300	4	●	300	4	●	350	3	●	400	2
	Wall Finishes to Interior Walls	●	300	4	●	300	4	●	350	3	●	400	2
	Column Finishes	●	300	4	●	300	4	●	350	3	●	400	2
	Floor Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Floor Toppings	●	200	5	●	300	4	●	350	3	●	400	2
	Traffic Membranes	●	200	5	●	300	4	●	350	3	●	400	2
	Hardness & Sealers	●	200	5	●	300	4	●	350	3	●	400	2
	Flooring	●	200	5	●	300	4	●	350	3	●	400	2
	Carpeting	●	200	5	●	300	4	●	350	3	●	400	2
	Bases, Curbs & Trim	●	200	5	●	300	4	●	350	3	●	400	2
	Access Pedestal Flooring	●	200	5	●	300	4	●	350	3	●	400	2
	Ceiling Finishes	●	200	5	●	300	4	●	350	3	●	400	2
	Suspended Ceilings	●	200	5	●	300	4	●	350	3	●	400	2
	Other Ceilings	●	200	5	●	300	4	●	350	3	●	400	2
Other Elements	All Elements not listed, but agreed upon in collaboration with the DR.	●	300	4	●	350	4	●	350	3	●	400	2

**D - SERVICES**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Project Phases/Milestones																																						
				Pre-Design				Schematic Design				Design/Development				Construction Docs				Contract Admin.																						
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA																			
Conveying	Elevators & Lifts	Passenger Elevators	Freight Elevators	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2									
				●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2									
	Escalators & Moving Walks	Escalators	Moving Walks	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2									
				●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2									
	Other Conveying Systems	Dumbwaiters	Pneumatic Tube Systems	Hoists & Cranes	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2								
					●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2								
		Conveyors	Chutes	Turntables	Systems	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2							
						●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2							
		Transportation Systems				●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2							
						●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2							
		Plumbing	Plumbing Fixtures	Water closets	Urinals	Lavatories	Sinks	Bathubs	Wash Fountains	Showers	Drinking Fountains & Coolers	Sinks & Other Plumbing Fixtures	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2
													●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2
				Domestic Water Distribution	Cold Water Service	Hot Water Service	Domestic Water Supply Equipment	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2					
								●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2					
	Sanitary Waste			Waste Piping	Vent Piping	Floor Drains	Sanitary Waste Equipment	Pipe Insulation	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2				
									●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2				
	Rain Water Drainage			Pipe & Fittings	Roof Drains	Rainwater Drainage Equipment	Pipe Insulation	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2					
								●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2					
	Other Plumbing Systems			Gas Distribution	Acid Waste System	Interceptors	Pool Piping and Equipment	Ureodivide Fountain Piping Devices	Other Piping Systems	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2			
										●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2			
HVAC	Energy Supply		Oil Supply System	Gas Supply System	Coal Supply System	Steam Supply System	Hot Water Supply System	Solar Energy System	Wind Energy System	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2			
										●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2			
			Heat Generating Systems	Boilers	Boiler Room Piping & Specialties	Auxiliary Equipment	Insulation	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2					
								●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2					
			Cooling Generating Systems	Chilled Water Systems	Unirect Expansion Systems	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2							
						●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2							
			Distribution Systems	Air Distribution Systems	Exhaust Ventilation Systems	Steam Distribution Systems	Hot Water Distribution	Chilled Water Distribution	Change-over Distribution System	Glycol Distribution Systems	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2		
											●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2		
			Terminal & Package Units	Terminal Self-Contained Units	Package Units	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2							
						●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2							
	Controls & Instrumentation	Heating Generating Systems	Cooling Generating Systems	Heating/Cooling Air Handling Units	Exhaust & Ventilating Systems	Hoods and Exhaust Systems	Terminal Devices	Energy Monitoring & Control	Building Automation Systems	Other Controls & Instrumentation	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2		
											●	300	5	●	350	4	●	350	3	●	400	3	●	400	2	●	300	5	●	350	4	●	350	3	●	400	3	●	400	2		
	Systems Testing & Balancing	Piping System Testing & Balancing	Air Systems Testing & Balancing	HVAC Commissioning	Other Systems Testing and Balancing	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2							
						●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2							
	Other HVAC Systems & Equipment	Special Cooling Systems & Devices	Special Humidity Control	Dust & Fume Collectors	Air Curtains	Air Purifiers	Paint Spray Booth Ventilation	General Construction Items (HVAC)	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2				
									●	300	4	●	350	4	●	350	3	●	400	3	●	400																				



G - BUILDING SITWORK				LS/S				LS/S/H				LS/S				LS/S					
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Pre-Design		Schematic Design				Design Development				Construction Docs				Contract Admin.			
				REQ	LOD	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA
				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Site Preparation				●	200	4	●	300	4	●	350	3	●	400	3	●	400	3	●	400	2
	Site Clearing	Clearing & Grubbing	●	200	5	●	300	4	●	300	3	●	400	3	●	400	3	●	400	3	
		Tree Removal & Thinning	●	200	4	●	300	4	●	300	3	●	400	3	●	400	3	●	400	3	
	Site Demolition & Relocations	Building Demolition	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Demolition of Site Components	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Relocation of Building & Utilities	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Utilities Relocation	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Site Earthwork	Site Grading Excavation	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Borrow Fill	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Soil Stabilization & Treatment	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Site Dewatering	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Site Shoring	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Embankments	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Erosion Control	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Hazardous Waste Remediation	Removal of Contaminated Soil	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Soil Restoration & Treatment	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
Site Improvements				●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2
	Roadways	Bases and Sub-Bases	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Paving & Surfacing	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Curbs Gutters & Drains	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Guardrails and Barriers	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Painted Lines	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Markings & Signage	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Vehicular Bridges	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Parking Lots	Bases and Sub-Bases	●	200	5	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Paving & Surfacing	●	200	5	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Curbs, Rails & Barriers	●	200	5	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Parking Booths & Equipment	●	200	5	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Markings & Signage	●	200	5	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Pedestrian Paving	Paving & Surfacing	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Edging	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Exterior Steps	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Pedestrian Bridges	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Site Development	Fences & Gates	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Retaining Walls	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Terrace & Perimeter Walls	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Signage	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Site Furnishings	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Fountains, Pools, & Watercourses	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Playing Fields	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Flagpoles	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Miscellaneous Structures	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Landscaping	Fine Grading & Soil Preparation	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Erosion Control Measures	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Top Soil and Planting Beds	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Seeding and Sodding	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Planting	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Planters	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Irrigation Systems	●	300	4	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Other Landscape Features	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
Site Mechanical Utilities				●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2
	Water Supply	Potable Water Distribution & Storage	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Non Potable Water Distribution & Storage	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Well Systems	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Fire Protection Distribution & Storage	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Pumping Stations	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Package Water Treatment Plants	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Sanitary Sewer	Piping	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Manholes & Cleanouts	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Septic Disposal Systems	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Lift Stations	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Package Water Waste Treatment Plants	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Septic Tanks	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Drain Fields	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Storm Sewer	Piping	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Manholes	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Headwalls & Catch Basins	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Lift Stations	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Retention Ponds	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Ditches & Culverts	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Heating Distribution	Steam Supply	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Condensate Return	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Hot Water Supply System	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Pumping Stations	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Cooling Distribution	Chilled Water Piping	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Wells for Cooling/Heating	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Pumping Stations	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Cooling Towers on Site	●	300	4	●	350	4	●	350	3	●	400	3	●	400	2	●	400	2	
	Fuel Distribution	Fuel Piping	●	300	4	●	300	4	●	350	3	●	400	3	●	400	2	●	400	2	
		Fuel Equipment	●	300	4	●	300	4	●	350											

Service & Pedestrian Tunnels	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2
Service Tunnels	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2
Trench Boxes	●	200	5	●	300	4	●	350	3	●	400	3	●	400	2
Pedestrian Tunnels	●	200	5	●	300	4	●	300	3	●	400	3	●	400	2
Other Site Systems & Equipment				●	200	5	●	300	3	●	400	3	●	400	2
Snow Melting Systems				●	200	5	●	300	3	●	400	3	●	400	2

# Annex D - Model Element Table

Level of Development, Level of Accuracy and Precision of Elements

\*All LOD/LOA requirements specified reflect on new or original modelling content within the scope of the project this Table is used with. 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.\*

## Construction Modelling Sheet 3

Last revised: 2019-08

By: PSPC

Value Legend		Requirements Legend (REQ)	
BIM - Level of Development (LOD)		Symbol	Requirement
0	Not Modelled. Elements to be shown as 2D symbols.	●	Mandatory
100	Conceptual areas and volumes, purely geometric	○	Mandatory Req'd if exists
200	An approximate modelled representation, information associated	✱	Not Required by PSPC
300	An informed and modelled representation, information associated	✓	Optional Requirement
350	A detailed/specific modelled representation, information associated	◆	See Comments
400	An accurate modelled representation, information associated	N.A.	Not Applicable
500	An accurate modelled representation, CAFM and Heritage information associated		

  

BIM - Level of Accuracy (LOA)		Precision by elements (LS/SH)	
LOA	Description	Element	Description
1	Representational accuracy to within ± 10 mm in the X,Y, and Z coordinates	LS	Located or Surveyed Elements
2	Representational accuracy to within ± 25 mm in the X,Y, and Z coordinates	SH	Subsurface or Hidden Elements
3	Representational accuracy to within ± 50 mm in the X,Y, and Z coordinates		
4	Representational accuracy to within ± 250 mm in the X,Y, and Z coordinates		
5	Representational accuracy to within ± 500 mm in the X,Y, and Z coordinates		
6	Information taken from un-verified existing drawings or documents (e.g. as-builts), with no tolerance specified.		

A - SUBSTRUCTURE				LS/SH				LS/SH				LS/SH				LS/SH			
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Project Phases/Milestones															
				Coordination Modelling				As-Built				Phase Modelling				Record Modelling			
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA
	Foundations	Standard Foundations	Well Foundations	●	200			●	300		4	●	400		3	●	500		3
			Column Foundations & Pile Caps	●	200			●	300		4	●	400		3	●	500		3
			Perimeter Drainage & Insulation	●	200			●	300		4	●	400		3	●	500		3
		Special Foundations		●	200			●	300		4	●	400		3	●	500		3
			Pile Foundations	●	200			●	300		4	●	400		3	●	500		3
			Grade Beams	●	200			●	300		4	●	400		3	●	500		3
			Caissons	●	200			●	300		4	●	400		3	●	500		3
			Underpinning	●	200			●	300		4	●	400		3	●	500		3
			Dewatering	●	200			●	300		4	●	400		3	●	500		3
			Raft Foundations	●	200			●	300		4	●	400		3	●	500		3
			Pressure Injected Grouting	●				●	300		4	●	400		3	●	500		3
			Other Special Conditions	●				●				●				●			
		Slab on Grade		●				●				●				●			
			Standard Slab on Grade	●				●				●				●			
			Structural Slab on Grade	●				●				●				●			
			Inclined Slab on Grade	●				●				●				●			
			Trenches, Pits & Bases	●				●				●				●			
			Under-Slab Drainage & Insulation	●				●				●				●			
	Basement Construction	Basement Excavation		●				●				●				●			
			Excavation for Basements	●				●				●				●			
			Structure Back Fill & Compaction	●				●				●				●			
			Shoring	●				●				●				●			
		Basement Walls		●				●				●				●			
			Basement Wall Construction	●				●				●				●			
			Moisture Protection	●				●				●				●			
			Basement Wall Insulation	●	200			●	300		4	●	400		3	●	500		3
			Interior Skin	●	200			●	300		4	●	400		3	●	500		3
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.		●				●				●				●			

B - SHELL				LS/SH				LS/SH				LS/SH				LS/SH			
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Project Phases/Milestones															
				Coordination Modelling				As-Built				Phase Modelling				Record Modelling			
				REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA	REQ	LOD	MEA	LOA
	Super Structure	Floor Construction		●	200		5	●	300		4	●	400		3	●	500		3
			Construction	●				●				●				●			
			Upper Floors Construction	●				●				●				●			
			Balcony Floors Construction	●				●				●				●			
			Ramps	●				●				●				●			
			Exterior Stairs and Fire Escapes	●				●				●				●			
			Floor Raceway Systems	●				●				●				●			
			Other Floor Construction	●				●				●				●			
		Roof Construction		●				●				●				●			
			Flat Roof Construction	●				●				●				●			
			Pitched Roof Construction	●				●				●				●			
			Canopies	●				●				●				●			
			Other Roof Systems	●				●				●				●			
	Exterior enclosure	Exterior Walls		●				●				●				●			
		Exterior Windows		●				●				●				●			
			Windows	●				●				●				●			
			Curtain Walls	●				●				●				●			
			Storefronts	●				●				●				●			
		Exterior Doors		●				●				●				●			
			Glazed Doors & Entrances	●				●				●				●			
			Solid Exterior Doors	●				●				●				●			
			Revolving Doors	●				●				●				●			
			Overhead Doors	●				●				●				●			
			Other Doors & Entrances	●				●				●				●			
	Roofing	Roof Coverings		●				●				●				●			
			Roof finishes	●				●				●				●			
			Traffic Toppings & Paving	●				●				●				●			
			Membranes	●				●				●				●			
			Roof Insulation & Fill	●				●				●				●			
			Flashings & Trim	●				●				●				●			
			Roof eaves & soffits	●				●				●				●			
			Gutters and Downspouts	●				●				●				●			
		Roof Openings		●	200		5	●	300		4	●	400		3	●	500		3
			Glazed Roof Openings	●	200		5	●	300		4	●	400		3	●	500		3







A - SUBSTRUCTURE		LS/SH	LS/SH			LS/SH	LS/SH		
		Project Phases/Milestones							
Roadways	Bases and Sub-Bases								
	Paving & Surfacing								
	Curbs Gutters & Drains								
	Guardrails and Barriers								
	Painted Lines								
	Markings & Signage								
	Vehicular Bridges								
	Parking Lots	Bases and Sub-Bases							
		Paving & Surfacing							
		Curbs, Rails & Barriers							
		Parking Booths & Equipment							
		Markings & Signage							
	Pedestrian Paving	Paving & Surfacing							
		Edging							
		Exterior Steps							
Pedestrian Bridges									
Site Development	Fences & Gates								
	Retaining Walls								
	Terrace & Perimeter Walls								
	Signage								
	Site Furnishings								
	Fountains, Pools, & Watercourses								
	Playing Fields								
	Flagpoles								
	Miscellaneous Structures								
	Landscaping	Fine Grading & Soil Preparation							
Erosion Control Measures									
Top Soil and Planting Beds									
Seeding and Sodding									
Planting									
Planters									
Irrigation Systems									
Other Landscape Features									
Site Mechanical Utilities									
Water Supply		Potable Water Distribution & Storage							
	Non Potable Water Distribution & Storage								
	Well Systems								
	Fire Protection Distribution & Storage								
	Pumping Stations								
	Package Water Treatment Plants								
Sanitary Sewer	Piping								
	Manholes & Cleanouts								
	Septic Disposal Systems								
	Lift Stations								
	Package Water Waste Treatment Plants								
	Septic Tanks								
Storm Sewer	Drain Fields								
	Piping								
	Manholes								
	Headwalls & Catch Basins								
Heating Distribution	Lift Stations								
	Retention Ponds								
	Ditches & Culverts								
	Steam Supply								
	Condensate Return								
Cooling Distribution	Hot Water Supply System								
	Pumping Stations								
	Chilled Water Piping								
Fuel Distribution	Wells for Cooling/Heating								
	Pumping Stations								
	Cooling Towers on Site								
	Fuel Piping								
Other Site Mechanical Utilities	Fuel Equipment								
	Fuel Storage Tanks								
	Fuel Dispensing Stations								
	Industrial Waste Systems								
Site Electrical Utilities	POL (Petroleum Oil & Lubricants) Distribution Systems								
	Electrical Distribution								
	Substations								
	Overhead Power Distribution								
Site Lighting	Underground Power Distribution								
	Fixtures & Transformers								
	Poles								
Site Communications & Security	Wiring Conduits & Ductbanks								
	Site Lighting Controls								
Other Site Electrical Utilities	Site Communications Systems								
	Site Security & Alarm Systems								
Other Site Construction	Cathodic Protection								
	Site Emergency Power Generation								
Service & Pedestrian Tunnels	Service Tunnels								
	Trench Boxes								
	Pedestrian Tunnels	● 200	4	● 200	3	● 300	3	● 400	3
Other Site Systems & Equipment	Pedestrian Tunnels	● 200	4	● 200	3	● 300	3	● 400	3
	Snow Melting Systems			● 200	3	● 300	3	● 400	3



## Annex D - Model Element Table

### Authorized Model Uses Sheet 4

Last revised: 2019-08  
By: PSPC

BIM - Level of Development (LOD)		Authorized Uses				
LOD	Description	Analysis	Cost Estimating	Project Scheduling	Coordination	Other Authorized Uses
0	Not Modeled. Elements to be shown as 2D symbols.	N/A	N/A	N/A	N/A	
100	Modeled elements are at a conceptual point of development. Information can be conveyed with massing forms, written narratives, and 2D symbols.	Simple analysis based on volume and orientation	Cost estimation by floor area, volume or similar approaches	Project phasing and overall duration	N/A	
200	Modeled elements have approximate relationships to quantities, size, location, and orientation. Some information may still be conveyed with written narratives.	More advanced analysis than LOD 100 based on approximate relationships and sizes	Cost estimation by volume, and quantity of elements and systems	Scheduling of installation of major elements	Coordination with other model elements at a basic level. Early clash detection possible	
300	Modeled elements are explained in terms of specific systems, quantities, size, shape, location, and orientation.	Advanced analysis able to be performed with precise size, shape, location and orientation of elements	Cost estimates available based upon specific data	Scheduling for construction or installation of detailed elements	Coordination with other elements based upon specific size, shape, location, and orientation. Detailed clash detection	Energy analysis, structural analysis, water consumption analysis, psychometric analysis, hygrothermal analysis, hydraulic analysis
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.	LOD 300 analysis available with systems and connections	Cost estimates are based upon specific elements and connections	Scheduling of installations described as systems rather than elements	Coordination with other elements and systems including connections	Prefabrication
400	Continuation of LOD 350 with enough information added to facilitate fabrication, assembly, and installation.	Analysis of procured elements	Costs are based upon actual procured elements	Scheduling of installation all elements with installation information	Coordination of fabrication, installation, and early operations issues	
500	Modeled elements are representative of as installed conditions and can be utilized for ongoing facilities management.	Analysis of installed systems	Operations and Maintenance cost estimation and replacement scheduling	Maintenance scheduling	N/A	

# Annex D - Model Element Table

## Model Element Authorship

### Sheet 5

Last revised: 2019-09  
By: PSPC

BIM - Model Element Authors		
Discipline Code	Author	Author Code
ARCH	General/Prime Architect	AA
	Landscape Architect	A-L
	Interior Designer	A-ID
ENG	Electrical	
	Municipal Engineering	
	Structural/Seismic	
	Mechanical	
	Electrical	
	Others:	
SPEC	Heritage Conservation	
	Sustainability	
	Others:	

PROJECT SETUP					
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	MEA	Notes
		Building Grids	Planning Grid		
		Floor Levels			
		Site Plan/Grading/Topography			
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.			

A - SUBSTRUCTURE					
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	MEA	Notes
	Foundations	Standard Foundations	Wall Foundations Column Foundations & Pile Caps Perimeter Drainage & Insulation		
		Special Foundations	Pile Foundations Grade Beams Caissons Underpinning Dewatering Raft Foundations Pressure Injected Grouting Other Special Conditions		
		Slab on Grade	Standard Slab on Grade Structural Slab on Grade Inclined Slab on Grade Trenches, Pits & Bases Under Slab Drainage & Insulation		
	Basement	Basement Excavation	Excavation for Basements Structure Back Fill & Compaction Shoring		
		Basement Walls	Basement Wall Construction Moisture Protection Basement Wall Insulation Interior Skin		
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.			

B - SHELL					
Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	MEA	Notes
	Super Structure	Floor Construction	Construction Upper Floors Construction Balcony Floors Construction Ramps Exterior Stairs and Fire Escapes Floor Raceway Systems Other Floor Construction		
		Roof Construction	Flat Roof Construction Pitched Roof Construction Canopies Other Roof Systems		
	Exterior enclosure	Exterior Walls	Windows Curtain Walls Storefronts		
		Exterior Windows			
		Exterior Doors	Glazed Doors & Entrances Solid Exterior Doors Revolving Doors Overhead Doors		

		Other Doors & Entrances		
Roofing				
	Roof Coverings			
		Roof finishes		
		Membranes		
		Roof Insulation & Fill		
		Flashings & Trim		
		Roof Eaves & Soffits		
		Gutters and Downspouts		
	Roof Openings			
		Glazed Roof Openings		
		Roof Hatches		
		Gravity Roof Ventilators		
Other Elements:		All Elements not listed, but agreed upon in collaboration with the DR.		

**C - Interiors**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Model Element Author Assignments	
				MEA	Notes
	Interior Construction				
		Partitions			
			Fixed Partitions		
			Demountable Partitions		
			Retractable Partitions		
			Site Built Toilet Partitions		
			Site Built Compartments Cubicles		
			Interior Balustrades & Screens		
			Interior Windows & Storefronts		
		Interior Doors			
			Interior Doors		
			Interior Door Frames		
			Interior Door Hardware		
			Interior Door Wall Opening Elements		
			Interior Door Sidelights & Transoms		
			Interior Hatches & Access Doors		
			Door Painting & Decoration		
		Fittings			
			Fabricated Toilet Partitions		
			Fabricated Compartments & Cubicles		
			Storage Shelving & Lockers		
			Ornamental Metals & Handrails		
			Identifying Devices		
			Closet Specialties		
			General Fittings & Misc. Metals		
	Stairs				
		Stair Construction			
			Regular Stairs		
			Curved Stairs		
			Spiral Stairs		
			Stair Handrails & Balustrades		
		Stair Finishes			
			Stair, Tread, Landing Finishes		
			Stair Soffit Finishes		
			Stair Handrail & Balustrade Finishes		
	Interior Finishes				
		Wall Finishes			
			Wall Finishes to Inside Exterior Walls		
			Wall Finishes to Interior Walls		
			Column Finishes		
		Floor Finishes			
			Floor Toppings		
			Traffic Membranes		
			Hardeners & Sealers		
			Flooring		
			Carpeting		
			Bases, Curbs & Trim		
			Access Pedestal Flooring		
		Ceiling Finishes			
			Ceiling Finishes		
			Suspended Ceilings		
			Other Ceilings		
Other Elements:		All Elements not listed, but agreed upon in collaboration with the DR.			

**D - SERVICES**

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	Model Element Author Assignments	
				MEA	Notes
	Conveying				
		Elevators & Lifts			
			Passenger Elevators		
			Freight Elevators		
			Lifts		
		Escalators & Moving Walks			
			Escalators		
			Moving Walks		
		Other Conveying Systems			
			Dumbwaiters		
			Pneumatic Tube Systems		
			Hoists & Cranes		
			Conveyors		
			Chutes		
			Turntables		
			Systems		
			Transportation Systems		
	Plumbing				

	<b>Plumbing Fixtures</b>		
	Water closets		
	Urinals		
	Lavatories		
	Sinks		
	Bathtubs		
	Wash Fountains		
	Showers		
	Drinking Fountains & Coolers		
	Bidets & Other Plumbing Fixtures		
	<b>Domestic Water Distribution</b>		
	Cold Water Service		
	Hot Water Service		
	Domestic Water Supply Equipment		
	<b>Sanitary Waste</b>		
	Waste Piping		
	Vent Piping		
	Floor Drains		
	Sanitary Waste Equipment		
	Pipe Insulation		
	<b>Rain Water Drainage</b>		
	Pipe & Fittings		
	Roof Drains		
	Rainwater Drainage Equipment		
	Pipe Insulation		
	<b>Other Plumbing Systems</b>		
	Gas Distribution		
	Acid Waste System		
	Interceptors		
	Pool Piping and Equipment		
	Decorative Fountain Piping Devices		
	Other Piping Systems		
<b>HVAC</b>			
	<b>Energy Supply</b>		
	Oil Supply System		
	Gas Supply System		
	Coal Supply System		
	Steam Supply System		
	Hot Water Supply System		
	Solar Energy System		
	Wind Energy System		
	<b>Heat Generating Systems</b>		
	Boilers		
	Boiler Room Piping & Specialties		
	Auxiliary Equipment		
	Insulation		
	<b>Cooling Generating Systems</b>		
	Chilled Water Systems		
	Direct Expansion Systems		
	<b>Distribution Systems</b>		
	Air Distribution Systems		
	Exhaust Ventilation Systems		
	Steam Distribution Systems		
	Hot Water Distribution		
	Chilled Water Distribution		
	Change-over Distribution System		
	Glycol Distribution Systems		
	<b>Terminal &amp; Package Units</b>		
	Terminal Self-Contained Units		
	Package Units		
	<b>Controls &amp; Instrumentation</b>		
	Heating Generating Systems		
	Cooling Generating Systems		
	Heating/Cooling Air Handling Units		
	Exhaust & Ventilating Systems		
	Hoods and Exhaust Systems		
	Terminal Devices		
	Energy Monitoring & Control		
	Building Automation Systems		
	Other Controls & Instrumentation		
	<b>Systems Testing &amp; Balancing</b>		
	Piping System Testing & Balancing		
	Air Systems Testing & Balancing		
	HVAC Commissioning		
	Other Systems Testing and Balancing		
	<b>Other HVAC Systems &amp; Equipment</b>		
	Special Cooling Systems & Devices		
	Special Humidity Control		
	Dust & Fume Collectors		
	Air Curtains		
	Air Purifiers		
	Paint Spray Booth Ventilation		
	General Construction Items (HVAC)		
<b>Fire Protection</b>			
	<b>Sprinklers</b>		
	Sprinkler Water Supply		
	Sprinkler Pumping Equipment		
	Dry Sprinkler System		
	<b>Standpipes</b>		
	Standpipe Water Supply		
	Pumping Equipment		
	Standpipe Equipment		
	Fire Hose Equipment		
	<b>Fire Protection Specialties</b>		
	Fire Extinguishers		
	Fire Extinguisher Cabinets		
	<b>Other Fire Protection Systems</b>		
	Carbon Dioxide Systems		
	Foam Generating Equipment		

	Clean Agent Systems		
	Dry Chemical System		
Electrical	Hood & Duct Fire Protection		
	<b>Electrical Service &amp; Distribution</b>		
	High Tension Service & Dist.		
	Low Tension Service & Dist.		
	<b>Lighting &amp; Branch Wiring</b>		
	Branch Wiring Devices		
	Lighting Equipment		
	<b>Communications &amp; Security</b>		
	Public Address & Music Systems		
	Intercommunication & Paging System		
	Telephone Systems		
	Call Systems		
	Television Systems		
	Clock and Program Systems		
	Fire Alarm Systems		
	Security and Detection Systems		
	Local Area Networks		
	<b>Other Electrical Systems</b>		
	Grounding Systems		
	Emergency Light & Power Systems		
	Floor Raceway Systems		
	Other Special Systems & Devices		
	General Construction Items (Elect.)		

E - EQUIPMENT & FURNISHINGS					
Level 1	Level 2	Level 3	Level 4	Model Element Author Assignments	
Major Group Elements	Group Elements	Individual Elements	Sub Elements	MEA	Notes
	Equipment				
		<b>Commercial Equipment</b>			
			Security & Vault Equipment		
			Teller & Service Equipment		
			Registration Equipment		
			Checkroom Equipment		
			Mercantile Equipment		
			Laundry & Dry Cleaning Equipment		
			Vending Equipment		
			Office Equipment		
		<b>Institutional Equipment</b>			
			Ecclesiastical Equipment		
			Library Equipment		
			Theater & Stage Equipment		
			Instrumental Equipment		
			Audio-visual Equipment		
			Detention Equipment		
			Laboratory Equipment		
			Medical Equipment		
			Other Institutional Equipment		
		<b>Vehicular Equipment</b>			
			Vehicular Service Equipment		
			Parking Control Equipment		
			Loading Dock Equipment		
			Other Vehicular Equipment		
		<b>Other Equipment</b>			
			Maintenance Equipment		
			Solid Waste Handling Equipment		
			Food Service Equipment		
			Residential Equipment		
			Unit Kitchens		
			Window Washing Equipment		
			Other Equipment		
	Furnishings	Furnishings			
		<b>Fixed Furnishings</b>			
			Fixed Artwork		
			Fixed Casework		
			Blinds & Other Window Treatment		
			Fixed Floor Grilles and Mats		
			Fixed Multiple Seating		
			Fixed Interior Landscaping		
		<b>Movable Furnishings</b>			
			Movable Artwork		
			Furniture & Accessories		
			Movable Rugs & Mats		
			Movable Interior Landscaping		
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.			

F - SPECIAL CONSTRUCTION & DEMOLITION					
Level 1	Level 2	Level 3	Level 4	Model Element Author Assignments	
Major Group Elements	Group Elements	Individual Elements	Sub Elements	MEA	Notes
	Special Construction				
		<b>Special Structures</b>			
			Air Supported Structures		
			Pre-engineered Structures		

				Other Special Structures		
				<b>Integrated Construction</b>		
				Integrated Assemblies		
				Special Purpose Rooms		
				Other Integrated Construction		
				<b>Special Construction Systems</b>		
				Sound, Vibration & Seismic Const.		
				Radiation Protection		
				Special Security Systems		
				Vaults		
				Other Special Construction Systems		
				<b>Special Facilities</b>		
				Aquatic Facilities		
				Ice Rinks		
				Site Constructed Incinerators		
				Kennels & Animal Shelters		
				Liquid & Gas Storage Tanks		
				Other Special Facilities		
				<b>Special Controls &amp; Instrumentation</b>		
				Recording Instrumentation		
				Building Automation System		
				Other Special Controls & Instrumentation		
				<b>Selective Building Demolition</b>		
				<b>Building Elements Demolition</b>		
				Building Interior Demolition		
				Building Exterior Demolition		
				<b>Hazardous Components Abatement</b>		
				Removal of Hazardous Components		
				Encapsulation of Hazardous Components		
<b>6 - SITEWORK</b>						
Level 1	Level 2	Level 3	Level 4	Model Element Author Assignments		
Major Group Elements	Group Elements	Individual Elements	Sub Elements	MEA	Notes	
	<b>Site Preparation</b>					
		<b>Site Clearing</b>				
			Clearing & Grubbing			
			Tree Removal & Thinning			
		<b>Site Demolition &amp; Relocations</b>				
			Building Demolition			
			Demolition of Site Components			
			Relocation of Building & Utilities			
			Utilities Relocation			
		<b>Site Earthwork</b>				
			Site Grading Excavation			
			Borrow Fill			
			Soil Stabilization & Treatment			
			Site Dewatering			
			Site Shoring			
			Embankments			
			Erosion Control			
		<b>Hazardous Waste Remediation</b>				
			Removal of Contaminated Soil			
			Soil Restoration & Treatment			
		<b>Site Improvements</b>				
		<b>Roadways</b>				
			Bases and Sub-Bases			
			Paving & Surfacing			
			Curbs Gutters & Drains			
			Guardrails and Barriers			
			Painted Lines			
			Markings & Signage			
			Vehicular Bridges			
		<b>Parking Lots</b>				
			Bases and Sub-Bases			
			Paving & Surfacing			
			Curbs, Rails & Barriers			
			Parking Booths & Equipment			
			Markings & Signage			
		<b>Pedestrian Paving</b>				
			Paving & Surfacing			
			Edging			
			Exterior Steps			
			Pedestrian Bridges			
		<b>Site Development</b>				
			Fences & Gates			
			Retaining Walls			
			Terrace & Perimeter Walls			
			Signage			
			Site Furnishings			
			Fountains, Pools, & Watercourses			
			Playing Fields			
			Flagpoles			
			Miscellaneous Structures			
		<b>Landscaping</b>				
			Fine Grading & Soil Preparation			
			Erosion Control Measures			
			Top Soil and Planting Beds			
			Seeding and Sodding			
			Planting			
			Planters			
			Irrigation Systems			
			Other Landscape Features			
		<b>Site Mechanical Utilities</b>				
		<b>Water Supply</b>				
			Potable Water Distribution & Storage			
			Non Potable Water Distribution & Storage			

	Well Systems		
	Fire Protection Distribution & Storage		
	Pumping Stations		
	Package Water Treatment Plants		
	<b>Sanitary Sewer</b>		
	Piping		
	Manholes & Cleanouts		
	Septic Disposal Systems		
	Lift Stations		
	Package Water Waste Treatment Plants		
	Septic Tanks		
	Drain Fields		
	<b>Storm Sewer</b>		
	Piping		
	Manholes		
	Headwalls & Catch Basins		
	Lift Stations		
	Retention Ponds		
	Ditches & Culverts		
	<b>Heating Distribution</b>		
	Steam Supply		
	Condensate Return		
	Hot Water Supply System		
	Pumping Stations		
	<b>Cooling Distribution</b>		
	Chilled Water Piping		
	Wells for Cooling/Heating		
	Pumping Stations		
	Cooling Towers on Site		
	<b>Fuel Distribution</b>		
	Fuel Piping		
	Fuel Equipment		
	Fuel Storage Tanks		
	Fuel Dispensing Stations		
	<b>Other Site Mechanical Utilities</b>		
	Industrial Waste Systems		
	POL (Petroleum Oil & Lubricants) Distribution Systems		
Site Electrical Utilities	<b>Electrical Distribution</b>		
	Substations		
	Overhead Power Distribution		
	Underground Power Distribution		
	<b>Site Lighting</b>		
	Fixtures & Transformers		
	Poles		
	Wiring Conduits & Ductbanks		
	Site Lighting Controls		
	<b>Site Communications &amp; Security</b>		
	Site Communications Systems		
	Site Security & Alarm Systems		
	<b>Other Site Electrical Utilities</b>		
	Cathodic Protection		
	Site Emergency Power Generation		
Other Site Construction	<b>Service &amp; Pedestrian Tunnels</b>		
	Service Tunnels		
	Trench Boxes		
	Pedestrian Tunnels		
	<b>Other Site Systems &amp; Equipment</b>		
	Snow Melting Systems		

# Annex D - Model Element Table

## Model Element Security Protocol

### Sheet 6

Last revised: 2019-09  
By: PSPC

BIM - Model Element Authors		BIM Security Protocols			
ARCH	General/Prime Architect	ARCH	The goal of the following protocol is to maintain any cloud-based Model in an "UNCLASSIFIED" state. Please refer to the list items below for various classifications of model or drawing elements and their respective levels of sensitivity. Notes are assigned to each element in order to provide further guidance on risk mitigation strategies, or instructions for secure information handling.		
	Landscape Architect				
	Interior Designer				
ENG	Electrical		Security Level (LEVEL)		Model Approach (MA)
	Municipal Engineering		U	Unclassified	1 Model Element: include information
	Structural/Seismic	SE	C	Confidential	2 Model Element: do not include sensitive information
	Mechanical	MEP	S	Secret	3 Model Element as proxy; do not include information
	Electrical		TS	Top Secret	4 Do not model; do not include information
	Others:		PA	Protected A	
SPEC	Heritage Conservation		PB	Protected B	
	Sustainability		PC	Protected C	
	Others:				

Level 1 Major Group Elements	Level 2 Group Elements	Level 3 Individual Elements	Level 4 Sub Elements	MEA Assignments		Security Assignments		
				MEA	Notes	LEVEL	MA	Notes
<b>PROJECT SETUP</b>								
		Building Grids	Planning Grid			U	1	
		Floor Levels				U	1	
		Site Plan/Grading/Topography				U	1	
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.						
<b>A - SUBSTRUCTURE</b>								
	Foundations	Standard Foundations				U/PB/S	2	
		Wall Foundations				U/PB/S	2	
		Column Foundations & Pile Caps				U/PB/S	2	
		Perimeter Drainage & Insulation				U/PB/S	2	
		Special Foundations				U/PB/S	2	
		Pile Foundations				U/PB/S	2	
		Grade Beams				U/PB/S	2	
		Caissons				U/PB/S	2	
		Underpinning				U/PB/S	2	
		Dewatering				U/PB/S	2	
		Raft Foundations				U/PB/S	2	
		Pressure Injected Grouting				U/PB/S	2	
		Other Special Conditions				U/PB/S	2	
		Slab on Grade				U/PB/S	2	
		Standard Slab on Grade				U/PB/S	2	
		Structural Slab on Grade				U/PB/S	2	
		Inclined Slab on Grade				U/PB/S	2	
		Trenches, Pits & Bases				U/PB/S	2	
		Under-Slab Drainage & Insulation				U/PB/S	2	
	Basement Construction					U/PB/S	2	
		Basement Excavation				U/PB/S	2	
		Excavation for Basements				U/PB/S	2	
		Structure Back Fill & Compaction				U/PB/S	2	
		Shoring				U/PB/S	2	
		Basement Walls				U/PB/S	2	
		Basement Wall Construction				U/PB/S	2	
		Moisture Protection				U/PB/S	2	
		Basement Wall Insulation				U/PB/S	2	
		Interior Skin				U/PB/S	2	
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.						
<b>B - SHELL</b>								
	Super Structure	Floor Construction				U/PB/S	2	
		Construction				U/PB/S	2	
		Upper Floors Construction				U/PB/S	2	
		Balcony Floors Construction				U/PB/S	2	
		Ramps				U/PB/S	2	
		Exterior Stairs and Fire Escapes				U/PB/S	2	
		Floor Raceway Systems				U/PB/S	2	
		Other Floor Construction				U/PB/S	2	
		Roof Construction				U/PB/S	2	
		Flat Roof Construction				U/PB/S	2	
		Pitched Roof Construction				U/PB/S	2	
		Canopies				U/PB/S	2	
		Other Roof Systems				U/PB/S	2	
	Exterior enclosure	Exterior Walls				U/PB/S	2	
		Exterior Windows				U/PB/S	2	
		Windows				U/PB/S	2	
		Curtain Walls				U/PB/S	2	
		Storefronts				U/PB/S	2	
		Exterior Doors				U/PB/S	2	
		Glazed Doors & Entrances				U/PB/S	2	
		Solid Exterior Doors				U/PB/S	2	
		Revolving Doors				U/PB/S	2	
		Overhead Doors				U/PB/S	2	
		Other Doors & Entrances				U/PB/S	2	
	Roofing	Roof Coverings				U	1	
		Roof finishes				U	1	
		Membranes				U	1	
		Roof Insulation & Fill				U	1	
		Flashings & Trim				U	1	
		Roof Eaves & Soffits				U	1	
		Gutters and Downspouts				U	1	
		Roof Openings				U	1	
		Glazed Roof Openings				U	1	
		Roof Hatches				U	1	
		Gravity Roof Ventilators				U	1	
	Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.						
<b>C - INTERIORS</b>								
	Interior Construction							

<b>Partitions</b>			U	1
	Fixed Partitions		U	1
	Demountable Partitions		U	1
	Retractable Partitions		U	1
	Site Built Toilet Partitions		U	1
	Site Built Compartments/Cubicles		U	1
	Interior Balustrades & Screens		U	1
	Interior Windows & Storefronts		U	1
<b>Interior Doors</b>			UPB/S	2
	Interior Doors		UPB/S	2
	Interior Door Frames		UPB/S	2
	Interior Door Hardware		UPB/S	2
	Interior Door Wall Opening Elements		UPB/S	2
	Interior Door Sidelights & Transoms		UPB/S	2
	Interior Hatches & Access Doors		UPB/S	2
	Door Painting & Decoration		UPB/S	2
<b>Fittings</b>			U	1
	Fabricated Toilet Partitions		U	1
	Fabricated Compartments & Cubicles		U	1
	Storage Shelving & Lockers		U	1
	Ornamental Metals & Handrails		U	1
	Identifying Devices		U	1
	Close Specialties		U	1
	General Fittings & Misc. Metals		U	1
<b>Stairs</b>			U	1
<b>Stair Construction</b>			U	1
	Regular Stairs		U	1
	Curved Stairs		U	1
	Spiral Stairs		U	1
	Stair Handrails & Balustrades		U	1
<b>Stair Finishes</b>			U	1
	Stair Tread, Landing Finishes		U	1
	Stair Soffit Finishes		U	1
	Stair Handrail & Balustrade Finishes		U	1
<b>Interior Finishes</b>			U	1
<b>Wall Finishes</b>			U	1
	Wall Finishes to Inside Exterior Walls		U	1
	Wall Finishes to Interior Walls		U	1
	Column Finishes		U	1
<b>Floor Finishes</b>			U	1
	Floor Toppings		U	1
	Traffic Membranes		U	1
	Hardeners & Sealers		U	1
	Flooring		U	1
	Carpeting		U	1
	Bases, Cuffs & Trim		U	1
	Access Pedestal Flooring		U	1
<b>Ceiling Finishes</b>			U	1
	Ceiling Finishes		U	1
	Suspended Ceilings		U	1
	Other Ceilings		U	1
<b>Other Elements:</b>		All Elements not listed, but agreed upon in collaboration with the DR.		

**D - SERVICES**

<b>Conveying</b>			U	1
<b>Elevators &amp; Lifts</b>			U	1
	Passenger Elevators		U	1
	Freight Elevators		U	1
	Lifts		U	1
<b>Escalators &amp; Moving Walks</b>			U	1
	Escalators		U	1
	Moving Walks		U	1
<b>Other Conveying Systems</b>			U	1
	Dumbwaiters		U	1
	Pneumatic Tube Systems		U	1
	Hoists & Cranes		U	1
	Conveyors		U	1
	Chutes		U	1
	Turntables		U	1
	Systems		U	1
	Transportation Systems		U	1
<b>Plumbing</b>			U	1
<b>Plumbing Fixtures</b>			U	1
	Water closets		U	1
	Urinals		U	1
	Lavatories		U	1
	Sinks		U	1
	Bathtubs		U	1
	Wash Fountains		U	1
	Showers		U	1
	Drinking Fountains & Coolers		U	1
	Bidets & Other Plumbing Fixtures		U	1
<b>Domestic Water Distribution</b>			U	1
	Cold Water Service		U	1
	Hot Water Service		U	1
	Domestic Water Supply Equipment		U	1
<b>Sanitary Waste</b>			U	1
	Waste Piping		U	1
	Vent Piping		U	1
	Floor Drains		U	1
	Sanitary Waste Equipment		U	1
	Pipe Insulation		U	1
<b>Rain Water Drainage</b>			U	1
	Pipe & Fittings		U	1
	Roof Drains		U	1
	Rainwater Drainage Equipment		U	1
	Pipe Insulation		U	1
<b>Other Plumbing Systems</b>			U	1
	Gas Distribution		U	1
	Acid Waste System		U	1
	Interceptors		U	1
	Pool Piping and Equipment		U	1
	Decorative Fountain Piping Devices		U	1
	Other Piping Systems		U	1
<b>HVAC</b>			U	1
<b>Energy Supply</b>			U	1
	Oil Supply System		U	1
	Gas Supply System		U	1
	Coal Supply System		U	1
	Steam Supply System		U	1
	Hot Water Supply System		U	1
	Solar Energy System		U	1
	Wind Energy System		U	1
<b>Heat Generating Systems</b>			U	1

	Boilers			U	1
	Boiler Room Piping & Specialties			U	1
	Auxiliary Equipment			U	1
	Insulation			U	1
	Cooling Generating Systems			U	1
	Chilled Water Systems			U	1
	Direct Expansion Systems			U	1
	Distribution Systems			U	1
	Air Distribution Systems			U	1
	Exhaust Ventilation Systems			U	1
	Steam Distribution Systems			U	1
	Hot Water Distribution			U	1
	Chilled Water Distribution			U	1
	Change-over Distribution System			U	1
	Glycol Distribution Systems			U	1
	Terminal & Package Units			U	1
	Terminal Self-Contained Units			U	1
	Package Units			U	1
	Controls & Instrumentation			U	1
	Heating Generating Systems			U	1
	Cooling Generating Systems			U	1
	Heating/Cooling Air Handling Units			U	1
	Exhaust & Ventilation Systems			U	1
	Hoods and Exhaust Systems			U	1
	Terminal Devices			U	1
	Energy Monitoring & Control			U	1
	Building Automation Systems			U	1
	Other Controls & Instrumentation			U	1
	Systems Testing & Balancing			U	1
	Piping System Testing & Balancing			U	1
	Air Systems Testing & Balancing			U	1
	HVAC Commissioning			U	1
	Other Systems Testing and Balancing			U	1
	Other HVAC Systems & Equipment			U	1
	Special Cooling Systems & Devices			U	1
	Special Humidity Control			U	1
	Dust & Fume Collectors			U	1
	Air Curtains			U	1
	Air Purifiers			U	1
	Paint Spray Booth Ventilation			U	1
	General Construction Items (HVAC)			U	1
Fire Protection				U	1
	Sprinklers			U	1
	Sprinkler Water Supply			U	1
	Sprinkler Pumping Equipment			U	1
	Dry Sprinkler System			U	1
	Standpipes			U	1
	Standpipe Water Supply			U	1
	Pumping Equipment			U	1
	Standpipe Equipment			U	1
	Fire Hose Equipment			U	1
	Fire Protection Specialties			U/PB/S	3
	Fire Extinguishers			U	1
	Fire Extinguisher Cabinets			U	1
	Other Fire Protection Systems			U/PB/S	3
	Carbon Dioxide Systems			U/PB/S	3
	Foam Generating Equipment			U/PB/S	3
	Clean Agent Systems			U/PB/S	3
	Dry Chemical System			U/PB/S	3
	Hood & Duct Fire Protection			U/PB/S	3
Electrical				U/PB/S	3
	Electrical Service & Distribution			U/PB/S	3
	High Tension Service & Dist.			U/PB/S	3
	Low Tension Service & Dist.			U/PB/S	3
	Lighting & Branch Wiring			U/PB/S	3
	Branch Wiring Devices			U/PB/S	3
	Lighting Equipment			U/PB/S	3
	Communications & Security			U/PB/S	3
	Public Address & Music Systems			U/PB/S	3
	Intercommunication & Paging System			U/PB/S	3
	Telephone Systems			U/PB/S	3
	Call Systems			U/PB/S	3
	Television Systems			U/PB/S	3
	Clock and Program Systems			U/PB/S	3
	Fire Alarm Systems			U/PB/S	3
	Security and Detection Systems			PB/S	4
	Local Area Networks			U/PB/S	3
	Other Electrical Systems			U/PB/S	3
	Grounding Systems			U/PB/S	3
	Emergency Light & Power Systems			U/PB/S	3
	Floor Raceway Systems			U/PB/S	3
	Other Special Systems & Devices			U/PB/S	3
	General Construction Items (Elect)			U/PB/S	3
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.				
<b>E-EQUIPMENT &amp; FURNISHINGS</b>					
Equipment				U	1
	Commercial Equipment			U	1
	Security & Vault Equipment			PB/S	4
	Teller & Service Equipment			U	1
	Registration Equipment			U	1
	Checkroom Equipment			U	1
	Mercantile Equipment			U	1
	Laundry & Dry Cleaning Equipment			U	1
	Vending Equipment			U	1
	Office Equipment			U	1
	Institutional Equipment			U	1
	Ecdoclassical Equipment			U	1
	Library Equipment			U	1
	Theater & Stage Equipment			U	1
	Instrumental Equipment			U	1
	Audio-visual Equipment			U	1
	Detention Equipment			U	1
	Laboratory Equipment			U	1
	Medical Equipment			U	1
	Other Institutional Equipment			U	1
	Vehicular Equipment			U	1
	Vehicular Service Equipment			U	1
	Parking Control Equipment			U	1
	Loading Dock Equipment			U	1
	Other Vehicular Equipment			U	1
	Other Equipment			U	1
	Maintenance Equipment			U	1
	Solid Waste Handling Equipment			U	1

		Food Service Equipment			U	1
		Residential Equipment			U	1
		Unit Kitchens			U	1
		Window Washing Equipment			U	1
		Other Equipment			U	1
Furnishings	Furnishings				U	1
	Fixed Furnishings				U	1
		Fixed Artwork			U	1
		Fixed Casework			U	1
		Blinds & Other Window Treatment			U	1
		Fixed Floor Grilles and Mats			U	1
		Fixed Multiple Seating			U	1
		Fixed Interior Landscaping			U	1
	Movable Furnishings				U	1
		Movable Artwork			U	1
		Furniture & Accessories			U	1
		Movable Rugs & Mats			U	1
		Movable Interior Landscaping			U	1
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.					

**F- SPECIAL CONSTRUCTION & DEMOLITION**

Special Construction					U	3
	Special Structures				U	3
		Air Supported Structures			U	3
		Pre-engineered Structures			U	3
		Other Special Structures			U	3
	Integrated Construction				U	3
		Integrated Assemblies			U	3
		Special Purpose Rooms			U	3
		Other Integrated Construction			U	3
	Special Construction Systems				U	3
		Sound, Vibration & Seismic Const.			U	3
		Radiation Protection			U	3
		Special Security Systems			PB/S	4
		Vaults			U	3
		Other Special Construction Systems			U	3
	Special Facilities				U	3
		Aquatic Facilities			U	3
		Ice Rinks			U	3
		Site Constructed Incinerators			U	3
		Kennels & Animal Shelters			U	3
		Liquid & Gas Storage Tanks			U	3
		Other Special Facilities			U	3
	Special Controls & Instrumentation				U	3
		Recording Instrumentation			U	3
		Building Automation System			U	3
		Other Special Controls & Instrumentation			U	3
Selective Building Demolition					U	3
	Building Elements Demolition				U	3
		Building Interior Demolition			U	3
		Building Exterior Demolition			U	3
	Hazardous Components Abatement				U	3
		Removal of Hazardous Components			U	3
		Components			U	3
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.				U	3

**G- BUILDING SITESWORK**

Site Preparation					U	1
	Site Clearing				U	1
		Clearing & Grubbing			U	1
		Tree Removal & Thinning			U	1
	Site Demolition & Relocations				U	1
		Building Demolition			U	1
		Demolition of Site Components			U	1
		Relocation of Building & Utilities			U	1
		Utilities Relocation			U	1
	Site Earthwork				U	1
		Site Grading Excavation			U	1
		Borrow Fill			U	1
		Soil Stabilization & Treatment			U	1
		Site Dewatering			U	1
		Site Shoring			U	1
		Embankments			U	1
		Erosion Control			U	1
	Hazardous Waste Remediation				U	1
		Removal of Contaminated Soil			U	1
		Soil Restoration & Treatment			U	1
Site Improvements					U	1
	Roadways				U	1
		Bases and Sub-Bases			U	1
		Paving & Surfacing			U	1
		Curbs, Gutters & Drains			U	1
		Guardrails and Barriers			U	1
		Painted Lines			U	1
		Markings & Signage			U	1
		Vehicular Bridges			U	1
	Parking Lots				U	1
		Bases and Sub-Bases			U	1
		Paving & Surfacing			U	1
		Curbs, Rafts & Barriers			U	1
		Parking Booths & Equipment			U	1
		Markings & Signage			U	1
	Pedestrian Paving				U	1
		Paving & Surfacing			U	1
		Edging			U	1
		Exterior Steps			U	1
		Pedestrian Bridges			U	1
	Site Development				U	1
		Fences & Gates			U	1
		Retaining Walls			U	1
		Terrace & Perimeter Walls			U	1
		Signage			U	1
		Site Furnishings			U	1
		Fountains, Pools, & Watercourses			U	1
		Playing Fields			U	1
		Flagpoles			U	1
		Miscellaneous Structures			U	1
	Landscaping				U	1
		Fine Grading & Soil Preparation			U	1
		Erosion Control Measures			U	1
		Top Soil and Planting Beds			U	1
		Seeding and Sodding			U	1
		Planting			U	1
		Planters			U	1

	Irrigation Systems			U	1
	Other Landscape Features			U	1
Site Mechanical Utilities				U	1
	Water Supply			U	1
	Potable Water Distribution & Storage			U	1
	& Storage			U	1
	Well Systems			U	1
	Storage			U	1
	Pumping Stations			U	1
	Package Water Treatment Plants			U	1
	Sanitary Sewer			U	1
	Piping			U	1
	Manholes & Cleanouts			U	1
	Septic Disposal Systems			U	1
	Lift Stations			U	1
	Package Water Waste Treatment Plants			U	1
	Septic Tanks			U	1
	Drain Fields			U	1
	Storm Sewer			U	1
	Piping			U	1
	Manholes			U	1
	Headwalls & Catch Basins			U	1
	Lift Stations			U	1
	Retention Ponds			U	1
	Ditches & Culverts			U	1
	Heating Distribution			U	1
	Steam Supply			U	1
	Condensate Return			U	1
	Hot Water Supply System			U	1
	Pumping Stations			U	1
	Cooling Distribution			U	1
	Chilled Water Piping			U	1
	Wells for Cooling/Heating			U	1
	Pumping Stations			U	1
	Cooling Towers on Site			U	1
	Fuel Distribution			U	1
	Fuel Piping			U	1
	Fuel Equipment			U	1
	Fuel Storage Tanks			U	1
	Fuel Dispensing Stations			U	1
	Other Site Mechanical Utilities			U	1
	Industrial Waste Systems			U	1
	Lubricants Distribution Systems			U	1
Site Electrical Utilities				U	1
	Electrical Distribution			U	1
	Substations			U	1
	Overhead Power Distribution			U	1
	Underground Power Distribution			U	1
	Site Lighting			U	1
	Fixtures & Transformers			U	1
	Poles			U	1
	Wiring Conduits & Ductbanks			U	1
	Site Lighting Controls			U	1
	Site Communications & Security			PB/S	4
	Site Communications Systems			PB/S	4
	Site Security & Alarm Systems			PB/S	4
	Other Site Electrical Utilities			U	1
	Cathodic Protection			U	1
	Site Emergency Power Generation			U	1
Other Site Construction				U	1
	Service & Pedestrian Tunnels			U	1
	Service Tunnels			U	1
	Trench Boxes			U	1
	Pedestrian Tunnels			U	1
	Other Site Systems & Equipment			U	1
	Snow Melting Systems			U	1
Other Elements:	All Elements not listed, but agreed upon in collaboration with the DR.				

Solicitation No. - N° de l'invitation  
EJ078-193032/A  
Client Ref. No. - N° de réf. du client  
20193032

Amd. No. - N° de la modif.  
003  
File No. - N° du dossier  
fe174.EJ078-193032/A

Buyer ID - Id de l'acheteur  
fe174  
CCC No./N° CCC - FMS No./N° VME

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**End of Amendment 003**