

Digital Project Delivery

Appendix A: COBie Specifications for Alberta Government Projects

Change History

Date	Version	Description
March 2018	V1.0	First Release
July 2018	V1.1	Revisions to COBie Responsibilities Matrix
March 2020	V2.0	Minor Revisions, Addition of Commissioning Agent
April 2024	V3.0	Edited to align with DPDR V3.0. Provide further Client-specific instruction for government projects

Table of Contents

Change History	1
Table of Contents	2
COBie Specifications Objective	3
COBie Standard	3
Related Requirements	3
1. Classification Systems	4
2. COBie Requirements	4
2.1 COBie General	4
2.2 Contact Tab	5
2.3 Facility Tab	6
2.4 Floor Tab	6
2.5 Space Tab	7
2.6 Zone Tab	8
2.7 Type Tab	8
2.8 Component Tab	11
2.9 System Tab	12
2.1 Assembly Tab	13
2.2 Connection Tab	13
2.3 Spare Tab	13
2.4 Resource Tab	13
2.5 Job Tab	14
2.6 Impact Tab	14
2.7 Document Tab	14
2.8 Attribute Tab	15
2.9 Coordinate Tab	16
2.10 Issue Tab	16

COBie Specifications Objective

The Construction Operations Building information exchange (COBie) is a specification for the delivery of building information during design and construction to organize and ultimately replace current document-based construction handover deliverables. The COBie deliverable captures data that is already found on drawing schedules, construction administration forms and handover deliverables, into a single, consistent, open- standard, for construction handover information.

The following document details the technical application of the appropriate COBie sheets. These instructions will facilitate the exchange of building, system, and product information through the project life cycle. These requirements do not deviate from the existing COBie standard, but rather further detail the required formatting, naming and classifications to meet the data standards.

All project stakeholders shall have downloaded, read, and understood the COBie standard, Alberta Infrastructure's COBie Requirements and these instructions. Since engineering consultants and construction subcontractors have a critical role in helping designers and prime contractors meet COBie deliverable requirements, participating engineering consultants and subcontractors shall have downloaded, read, and understood the COBie standard, Alberta Infrastructure's COBie Requirements and these Instructions.

COBie Standard

NBIMS-US V3 may be downloaded from <http://www.nationalbimstandard.org>. Free registration is required prior to download. Following download, the COBie Standard is found in chapter 4.2 (and related Annexes). Architects, engineers, and contractors will find most value from NBIMS-U V3, chapter 4.2, pages 1-46 and 218-230. Pages in the center of the COBie standard are of primary interest to business process analysts and software engineers.

Related Requirements

Alberta Infrastructure's DPD Requirements for Large Projects

1. Classification Systems

- .1 The project shall utilize the Province's Maintainable Asset List to assign required COBie categories to the project contacts, facility, floors, spaces, types, systems, and documents.
- .2 All permissible values for each tab are listed under the respective pick-lists within the Province's Maintainable Asset List.
- .3 All COBie.Category values shall be formatted with the Category Numerical Code and Written Category Title separated with a semicolon and space character as follows:
 - .1 Example: **23-27 17 31 00 00: Rotary Pumps**
 - .2 No commas shall be used within the COBie.Category Fields

2. COBie Requirements

2.1 COBie General

- .1 Information contained within the COBie files shall be compliant with the Province's *DPD Requirements for Large Projects*.
- .2 The COBie tabs that are not required for a specific deliverable shall be included with only a single header row.
- .3 All fields in the COBie file shall be formatted as a text value. Formula shall not be used in the COBie file.
- .4 Information required as part of the final COBie deliverable that is not yet provided within the current deliverable, due to the information not yet being available, shall be set as "TBD".
- .5 Information that will not be provided as part of the final COBie deliverable, due to it being not available or not applicable for a given field, shall be set as "n/a".
- .6 All area measurements within the COBie files shall be entered in square meters.
- .7 The following legend indicates the color fill for field information. Field information falls into the categories in the table below:

Color	Data Requirement	Description
Text	Required Input	Data must always be entered in these cells.
Text	Required Reference	Data is required in these cells and values must directly relate to other worksheets or pick lists.
Text	External Reference	Optional data which indicates fields populated to establish the relationship between the authoring tool and COBie file. The GUID (Globally Unique Identifier) makes it possible to connect graphical elements and data elements.
Text	If Specified as Required	Indicates fields that are required as specified by the Owner. See matrix below.

.8 Use the following legend when referencing the project phase in the tables below:

Project Phase Legend

SD	Schematic Design
DD	Design Development
CD	Construction Documents
CA	Construction Contract Administration
SHDA	Shop Drawing Approval
INT	Equipment Installation
ST	Equipment Start-up
IA	Interim Acceptance of the Work

.9 Use the following legend when referencing the responsibility in the tables below:

Responsibility Legend

- x** Indicates when the field is first populated by the Consultant
- x** Indicates when the field is updated by the Consultant
- o** Indicates when the field is first populated by the Contractor
- o** Indicates when the field is updated by the Contractor
- *** Indicates fields to be verified by the Independent Commissioning Authority

2.2 Contact Tab

- .1 The Contact sheet shall contain all the project contacts including consultants, contractors, sub-contractors, manufacturers and vendors.
- .2 The Contact sheet shall be modified as the project progresses to reflect the project participants.
- .3 The Contact sheet shall be populated by the Consultants during the design phase and the Contractor during construction.
- .4 For all other fields contained on the Contact sheet that are not included in the following table, refer to the COBie Standard. The Contact sheet shall be populated as follows:

COBie column	Required Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Contact.Email	Email addresses of each of the project team members.	x	x	x	o	o			
Contact.CreatedBy	Creator’s email (Reference to Contact.Email)	x	x	x	o	o			
Contact.CreatedOn	Date/Time created in YYYY-MM-DD”T”HH:MM:SS format	x	x	x	o	o			
Contact.Category	Contact’s respective category (reference to PickLists)	x	x	x	o	o			
Contact.Company	Name of company	x	x	x	o	o			
Contact.Phone	Phone number of respective company	x	x	x	o	o			

2.3 Facility Tab

- .1 The Facility sheet shall contain the facility information as provided by Alberta Infrastructure.
- .2 Only one facility per COBie file shall be provided. The facility sheet shall consist of one row only.
- .3 The Facility.ProjectName field shall contain the internal project ID number, provided by the Province.
- .4 The Facility.SiteName field shall contain the internal site ID number, provided by the Province.
- .5 For all other fields contained on the Facility sheet that not included in the following table, refer to the COBie Standard. The Facility sheet shall be populated as follows:

COBie column	Required Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Facility.Name	Name of the Facility	x							
Facility.CreatedBy	Creator's email (Reference to Contact.Email)	x							
Facility.CreatedOn	Date/Time created in YYYY-MM-DD"T"HH:MM:SS format	x							
Facility.Category	Facility's respective category (reference to PickLists)	x							
Facility.ProjectName	Project Name	x							
Facility.SiteName	Site Name	x							

2.4 Floor Tab

- .1 The Floor sheet shall list all levels that relate to rooms in a facility.
- .2 The facility floors shall be outlined and populated by the Consultant.
- .3 The Floor sheet shall only contain the occupational level as shown on the Contract Documents. The Floor sheet shall not include any construction levels.
- .4 To ensure the proper identification of assets placed under, outside, or above the building, a minimum of one COBie.Floor shall be provided for each "Foundation", "Site", and "Roof" level.
- .5 The Consultant shall update the external references with the GUID of added spaces if they are available.
- .6 The Contractor may add or update floors or levels that contain project assets or provide access to project assets.

- .7 For all other fields contained on the Floor sheet that are not included in the following table, refer to the COBie Standard. The Floor sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Floor.Name	All levels that exist within the facility (consistent with Construction Documents)	x	x	x					
Floor.CreatedBy	Creator's email (Reference to Contact.Email)	x	x	x					
Floor.CreatedOn	Date/Time created in YYYY-MM-DD"T"HH:MM:SS format	x	x	x					
Floor.Category	Floor's respective category (reference to PickLists)	x	x	x					
Floor.ExtSystem	This field is automatically populated during export	x	x	x					
Floor.ExtObject	This field is automatically populated during export	x	x	x					
Floor.ExtIdentifier	This field is automatically populated during export	x	x	x					
Floor.Description	A general text description of the Floor	x	x	x					
Floor.Elevation	Geodetic Elevation of floor in meters	x	x	x					

2.5 Space Tab

- .1 All rooms in the Consultant's room finish schedule shall appear as rows in the Space sheet. Each space shall be a row in this sheet.
- .2 The Space.Name field shall contain the unique room number as shown on the Construction Documents.
- .3 The Space.Description field shall contain the written room name as shown on the Construction Documents.
- .4 The Space.GrossArea field shall contain the area of the space as shown on the Construction Documents. No null or N/A values are acceptable within this field.
- .5 The COBie spaces shall include the ceiling space above finished ceilings within the space boundaries.
- .6 Should there be mechanical or structural access spaces, such as plenums or under floor spaces, that require intensive management, and if agreed to by the Province to do so, these additional access spaces shall be included as rows in the Space sheet.
- .7 To ensure the proper identification of assets placed under, outside, or above the building one Space row shall be provided for each corresponding "Foundation", "Site", and "Roof" Floor rows.
- .8 Spaces for future developments shall not be included in the Space sheet.
- .9 Any COBie assets found in those regions of the building shall be identified as being within those Space rows.

- .10 For all other fields contained on the Space sheet that are not included in the following table, refer to the COBie Standard. The Space sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase								
		SD	DD	CD	CA	SHDA	INS	ST	IA	
Space.Name	Room numbers (consistent with Construction Documents)	x	x	x	o					
Space.CreatedBy	Creator’s email (Reference to Contact.Email)	x	x	x	o					
Space.CreatedOn	Date/Time created in YYYY-MM-DD”T”HH:MM:SS format	x	x	x	o					
Space.Category	Spaces respective category (reference to PickLists)	x	x	x	o					
Space.FloorName	Level the Space is located on (reference to Floor.Name)	x	x	x	o					
Space.Description	Room names (consistent with Construction Documents)	x	x	x	o					
Space.ExtSystem	This field is automatically populated during export	x	x	x					x	
Space.ExtObject	This field is automatically populated during export	x	x	x					x	
Space.ExtIdentifier	This field is automatically populated during export	x	x	x					x	
Space.GrossArea	The Gross area of each space	x	x	x	o					
Space.NetArea	The Net area of each space	x	x	x	o					

2.6 Zone Tab

- .1 The Province does not require that the COBie.Zone sheet is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.7 Type Tab

- .1 The Project Team shall define a project specific list of required asset types in collaboration with the Province and in accordance with the Province's *DPD Requirements for Large Projects*.
- .2 The Project Team shall use the Maintainable Asset List template, provided by the Province, as the basis of the required asset types with modifications as required and in consultation with the Province.
- .3 All items identified in the Maintainable Asset List shall be captured in the Type sheet.
- .4 The responsibility for the data entry in the Type sheet is shared between the Consultant and Contractor, as follows:
- .1 Each Type shall be listed as a new row in the Type sheet. Type rows and associated data are entered/updated as follows:
- .1 All items in the Maintainable Asset List identified as design scope shall be entered/updated in the Type sheet by the Consultant, as information is finalized in the contract documents.

- .2 All items in the Maintainable Asset List identified as construction scope shall be entered/updated in the Type sheet by the Contractor throughout construction.
- .3 In the event of approved project changes issued during construction, the Contractor shall complete updates in the COBie to reflect the issued changes.
- .2 Data available during construction shall be entered/updated by the Contractor for all rows in the Type sheet. Refer to the table below for details.
- .5 Each Type.Name shall follow the guidelines provided in the Maintainable Asset List template.
- .6 Unique equipment tags shall not be contained in the type names on the type tab of the COBie file.
- .7 The Type.Name shall not contain the GUID or other system generated identification numbers unrecognizable to a facility manager outside the context of the specific software.
- .8 The Type.Manufacturer field shall contain the Original Equipment Manufacturer (OEM) email address.
- .9 Where the model number is not available, model series shall be captured in Type.ModelNumber column.
- .10 The Type.WarrantyGuarParts field shall contain the equipment vendor email address.
- .11 The Type.ReplacementCost field shall contain the manufacturer's suggested retail price for each asset. No null or N/A values are acceptable within this field. Any exceptions shall be discussed and approved by Province and documented in the DxP.
- .12 The Type.ExpectedLife field shall contain the manufacturer's suggested expected life for each asset. No null or N/A values are acceptable within this field. Any exceptions shall be discussed and approved by Province and documented in the DxP.
- .13 The Type.WarrantyDescription field shall contain the short description of the warranty for each asset. No null or N/A values are acceptable within this field. Any exceptions shall be discussed and approved by Province and documented in the DxP.

.14 For all other fields contained on the Type sheet that are not included in the following table, refer to the COBie Standard. The Type sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Type.Name	Unique type names (follow naming guideline in MAL)		x*	x*	o				
Type.CreatedBy	Creator's email (Reference to Contact.Email)		x	x	o				
Type.CreatedOn	Date created in YYYY-MM-DD"T"HH:MM:SS format		x	x	o				
Type.Category	Types respective category (reference to PickLists)		x	x	o				
Type.Description	A general text description of the Type		x*	x*	o				
Type.AssetType	Either "Fixed" or "Movable"		x	x	o				
Type.Manufacturer	Original Equipment Manufacturer (OEM) email address (Reference to Contact.Email)					o*			
Type.ModelNumber	OEM's part number					o*			
Type.WarrantyGuarParts	Parts supplier email address (Reference to Contact.Email)						o		
Type.WarrantyDurParts	Duration of Warranty in regard to parts						o		
Type.WarrantyGuarLabor	Labor warranty provider (Reference to Contact.Email)						o		
Type.WarrantyDurLabor	Duration of Warranty in regard to Labor						o		
Type.WarrantyDurUnit	Unit of time for above warranty durations						o		
Type.ExtSystem	This field is automatically populated during export		x	x					x
Type.ExtObject	This field is automatically populated during export		x	x					x
Type.ExtIdentifier	This field is automatically populated during export		x	x					x
Type.ReplacementCost	Replacement cost per unit					o			
Type.ExpectedLife	Manufacturer or industry recommended life cycle					o			
Type.DurationUnit	Unit of time for above Expected Life duration					o			
Type.WarrantyDescription	A general text description of the warranty						o		
Type.NominalLength	Nominal Length of Type in mm					o*			
Type.NominalWidth	Nominal Width of Type in mm					o*			
Type.NominalHeight	Nominal Height of Type in mm					o*			

2.8 Component Tab

- .1 The Component sheet is used to create an entry for each instance of a type in the facility.
- .2 The responsibility for the data entry in the Component sheet is shared between the Consultant and Contractor, as follows:
 - .1 Each Component shall be listed as a new row in the Component sheet. Component rows and associated data are entered/updated as follows:
 - .1 For all Types in the Maintainable Asset List identified as design scope, the corresponding Components shall be entered/updated in the Component sheet by the Consultant, as information is finalized in the contract documents.
 - .2 For all Types in the Maintainable Asset List identified as construction scope, the corresponding Components shall be entered/updated in the Component sheet by the Contractor throughout construction.
 - .3 In the event of approved project changes issued during construction, the Contractor shall complete updates in the COBie to reflect the issued changes.
 - .2 Data available during construction shall be entered/updated by the Contractor for all rows in the Component sheet. Refer to the table below for details.
- .3 Component.Name shall be named uniquely and match the equipment tag shown on the Contract Documents/Shop Drawings:
 - .1 Where design schedules describe Components as individual occurrences, Components shall be named uniquely matching the equipment tag shown on the Contract Documents.
 - .2 Where design schedules describe Components only by asset type, rather than individual occurrence, Components shall be named uniquely based on TypicalTag-Space-Count. Typical Tag is the equipment repeating or typical identifier shown on the Contract Documents.
 - .3 Where equipment tag is not available in the Contract Documents/Shop Drawing, items shall be tagged uniquely based on TypeName-Space-Count. Type Name is the name captured in the Type tab.
- .4 Component.Name shall not contain the GUID or other system generated identification numbers unrecognizable to a facility manager outside the context of the specific software.

- .5 For all other fields contained on the Component sheet that are not included in the following table, refer to the COBie Standard. The Component sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Component.Name	Unique component tags (consistent with Construction Documents)			x*	o*				
Component.CreatedBy	Creator's email (Reference to Contact.Email)			x	o*				
Component.CreatedOn	Date created in YYYY-MM-DD"T"HH:MM:SS format			x	o*				
Component.TypeName	Type of each component (Reference to Type.Name)			x*	o*				
Component.Space	Location of component (Reference to Space.Name)			x*	o*				
Component.Description	A general text description of the component			x	o*				
Type.ExtSystem	This field is automatically populated during export			x					x
Type.ExtObject	This field is automatically populated during export			x					x
Type.ExtIdentifier	This field is automatically populated during export			x					x
Component.SerialNumber	OEM's serial number						o*		
Component.InstallationDate	Installation date in YYYY-MM-DD"T"HH:MM:SS format						o*		
Component.WarrantyStartDate	Warranty start date in YYYY-MM-DD"T"HH:MM:SS format							o*	

2.9 System Tab

- .1 The Project Team shall define a project specific list of required systems in collaboration with the Province and in accordance with the Province's *DPD Requirements for Large Projects*.
- .2 The System sheet shall be outlined and populated by the Consultant.
- .3 All components entered during construction shall be entered to the respective systems on the systems tab.
- .4 The Project Team shall use the Maintainable Asset List template, provided by the Province, as the basis of the required systems with modifications as required and in consultation with the Province.
- .5 The specific value for System.Name assigned to each relevant Component shall be determined by the primary system on which that component is installed.
- .6 The System.Name shall follow the guidelines provided in the Maintainable Asset List.

- .7 A COBie component shall be listed only once for each system but may be listed in multiple systems.
- .8 For all other fields contained on the System sheet that are not included in the following table, refer to the COBie Standard. The System sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
System.Name	Facility system (consistent with Construction Documents)		x	x	o				
System.CreatedBy	Creator's email (Reference to Contact.Email)		x	x	o				
System.CreatedOn	Date created in YYYY-MM-DD"THH:MM:SS format		x	x	o				
System.Category	Systems respective category (reference to PickLists)		x	x	o				
System.ComponentNames	Components found on each respective system (Reference to Component.Name)			x	o				
System.ExtSystem	This field is automatically populated during export		x	x					x
System.ExtObject	This field is automatically populated during export		x	x					x
System.ExtIdentifier	This field is automatically populated during export		x	x					x
System.Description	A general text description of the system		x	x	o				

2.10 Assembly Tab

- .1 The Province does not require that the COBie.Assembly Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.11 Connection Tab

- .1 The Province does not require that the COBie.Connection Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.12 Spare Tab

- .1 The Province does not require that the COBie.Spare Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.13 Resource Tab

- .1 The Province does not require that the COBie.Resource Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.14 Job Tab

- .1 The Province does not require that the COBie.Job Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.15 Impact Tab

- .1 The Province does not require that the COBie.Impact Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.16 Document Tab

- .1 The Document table shall be populated/updated by the Contractor throughout the construction duration.
- .2 The COBie document tab shall be populated by the Contractor and shall contain the COBie data and links to documents for all documentation specified in 01 33 23 *Submittals* and 01 78 23 *Operation and Maintenance Data and Manuals*, including but not limited to:
 - .1 Shop Drawings
 - .2 Manuals
 - .3 Reports
 - .4 Certificates
 - .5 Warranties
 - .6 Permits
- .3 Each file for the submittals above shall be a separate row in the COBie Document tab.
- .4 The Document.Name shall be in accordance with the Project Codification Standard, provided by the Province.
- .5 Only relative path types shall be listed in the Document.Directory field of the Document sheet.
- .6 Document.Description shall contain the text description of the documents. No null or N/A values are acceptable within this field.

.7 The Document sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Document.Name	Document identifier (ID number or name)				o	o	o		
Document.CreatedBy	Creator's email (Reference to Contact.Email)				o	o	o		
Document.CreatedOn	Date created in YYYY-MM-DD"T"HH:MM:SS format				o	o	o		
Document.Category	Document's respective category (reference to PickLists)				o	o	o		
Document.ApprovalBy	Approver (Reference to Contact.Email)				o	o	o		
Document.Stage	Stage of the Document (reference to PickLists)				o	o	o		
Document.SheetName	COBie sheet the document applies to				o	o	o		
Document.RowName	Specific row on the COBie sheet the document applies to				o	o	o		
Document.Directory	File path within the COBie folder structure				o	o	o		
Document.File	Exact name of the file found at the path above				o	o	o		
Document.ExtSystem	This field is automatically populated during export				o	o	o		
Document.ExtObject	This field is automatically populated during export				o	o	o		
Document.ExtIdentifier	This field is automatically populated during export				o	o	o		
Document.Description	Description of the document and/or contents				o	o	o		
Document.Reference	Specification Section				o	o	o		

2.17 Attribute Tab

- .1 This sheet shall contain any required attributes defined by the project team, in collaboration with the Province.
- .2 The Project Team shall use the Maintainable Asset List template, provided by the Province, as the basis to define the required attributes, with modifications as required and in consultation with the Province.
- .3 Design parameters shall not be included in the attribute sheet unless otherwise agreed upon by the Project Team and documented in the DxP.

.4 The Attribute sheet shall be populated as follows:

COBie column	Requirement Information	Project Phase							
		SD	DD	CD	CA	SHDA	INS	ST	IA
Attribute.Name	Name of the attribute field		x	x	o				
Attribute.CreatedBy	Creator's email (Reference to Contact.Email)		x	x	o				
Attribute.CreatedOn	Date created in YYYY-MM-DD"T"HH:MM:SS format		x	x	o				
Attribute.Category	Attribute's respective category		x	x	o				
Attribute.SheetName	COBie sheet the attribute applies to		x	x	o				
Attribute.RowName	Specific row on the COBie sheet the attribute applies to		x	x	o				
Attribute.Value	The value given for this attribute field		x	x	o				
Attribute.Unit	Specified units for the attribute value (or n/a)		x	x	o				
Attribute.ExtSystem	This field is automatically populated during export		x	x					x
Attribute.ExtObject	This field is automatically populated during export		x	x					x
Attribute.ExtIdentifier	This field is automatically populated during export		x	x					x
Attribute.Description	Description of the source of the attribute		x	x	o				
Attribute.AllowedValues	A comma delimited list of one or more allowed values								

2.18 Coordinate Tab

.1 The Province does not require that the COBie.Coordinate Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.

2.19 Issue Tab

.1 The Province does not require that the COBie.Issue Tab is used. This tab is to remain blank in the COBie Template unless otherwise agreed upon by the Project Team and documented in the DxP.