Digital Project Delivery

Alberta Infrastructure
COBie Requirements

Alberta Infrastructure

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/Clarifications to the following: 1.0 COBie XLSX Files, 2.0 COBie Requirements, 3.2 Commissioning Authority, 4.0 COBie Submittal Package, 5.0 Resources

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COBie Requirements 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 objective of the Alberta Infrastructure COBie Requirements is to provide further Owner-specific instruction and specifications beyond the recognized COBie standard to ensure the final COBie deliverable is compatible with the Province's existing information systems. These requirements do not deviate from the existing COBie standard, but rather further detail the required formatting, naming and classifications to meet Alberta Infrastructure's internal data standards.

All project stakeholders shall have downloaded, read, and understood the COBie standard 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 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.

There are four formats in which COBie data may be delivered. These formats are found in Table 81, page 214. The format required by the Province is identified in this document. The requirements for COBie deliverables during design and construction are found in Table 89, page 229, and Table 90, page 230 of COBie Standard, chapter 4.2. The additional requirements applied by the Province are identified in this document and in Appendix 001- Alberta Infrastructure COBie Instructions.

Related Requirements

Alberta Infrastructure's AIM Consultant Requirements

Alberta Infrastructure's AIM Contractor Requirements

Alberta Infrastructure's AIM Design-Builder Requirements

Alberta Infrastructure' Appendix 001- COBie Instructions

1. COBie XLSX Files

1.1 General

.1 All COBie files shall be produced as a single XLSX file containing the complete set of project information for all disciplines and trades associated with the project phase.

.2 All COBie files shall conform to all format and business rules found in the NBIMS-US V3 COBie standard.

.3 The list of required tabs for each COBie file are outlined in the corresponding sections below. Further instructions are detailed in Alberta Infrastructure Appendix 001- COBie Instructions.

1.2 Design COBie File

.1 The Design COBie file shall progress concurrently with the project Contract Documents.

.2 The Consultant shall deliver the Final Design COBie 2.40 (NIBS) compatible file with the following tabs populated in accordance with *A001 COBie Instructions*:

> .1 Contact
>
> .2 Facility
>
> .3 Floor
>
> .4 Space
>
> .5 Type
>
> .6 Component
>
> .7 System
>
> .8 Attribute

.3 The Consultant shall provide updates to the Design COBie File in accordance with Section 5 *Submittals* and the Province's Asset Information Management (AIM) Consultant Requirements.

1.3 Construction COBie File

.1 The Construction COBie file shall progress concurrently with the project Construction.

.2 The Contractor shall deliver the Final Construction COBie 2.40 (NIBS) compatible file with the following tabs populated in accordance with *A001 COBie Instructions*:

    .1 Contact

    .2 Facility

    .3 Floor

    .4 Space

    .5 Type

    .6 Component

    .7 System

    .8 Document

    .9 Attribute

.3 The Contractor shall update the COBie file to reflect changes to the contract documents including but not limited to:

    .1 Site Instructions

    .2 Change Orders

    .3 Change Directives

    .4 As-built Conditions

.4 The Contractor shall provide updates to the Construction COBie File in accordance with Section 5 *Submittals* and the Province's Asset Information Management (AIM) Contractor Requirements.

1.4 Record COBie File

.1 This section is applicable to Design-Build contracts only.

.2 The Design-Builder shall update the COBie file with a unique model element identifier in the ExtSystem, ExtObject and ExtIdentifier fields on the following tabs:

    .1 Floor

    .2 Space

    .3 Type

    .4 Component

    .5 System

.3 The Design-Builder shall deliver the Final Record COBie 2.40 (NIBS) compatible file in accordance with Section 5 *Submittals* and the Province's Asset Information Management (AIM) Design-Builder Requirements.

2. COBie Requirements

2.1 General

.1   The project shall utilize the Province's Asset Classification Standard to assign required COBie categories to the project contacts, facility, floors, spaces, types, systems, and documents.

.2   The COBie tabs that are not required for a specific deliverable shall be included with only a single header row.

.3   Information that is not available or not applicable for a given field shall be set as "n/a".

2.2 Contact

.1   There are no Owner specific conditions for the Contacts Tab, refer to the COBie Standard.

2.3 Facility

.1   The Facility.ProjectName field shall contain the internal project ID number, provided by the Province.

.2   The Facility.SiteName field shall contain the internal site ID number, provided by the Province.

.3   For all other fields contained on the Facility Tab, refer to the COBie Standard.

2.4 Floor

.1   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" levels.

2.5 Space

.1   All rooms in the Consultant's room finish schedule shall appear as rows in the COBie.Space tab.

.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 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 COBie.Space tab.

.6 To ensure the proper identification of assets placed under, outside, or above the building one COBie.Space row shall be provided for each corresponding "Foundation"," Site", and "Roof" COBie.Floor rows.

.7 Any COBie assets found in those regions of the building shall be identified as being within those COBie.Space rows.

2.6 Zone

.1 The Province does not require that the COBie.Zone 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 AEP.

2.7 Type

.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 Asset Information Management (AIM) Requirements.

.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 Each COBie.Type.Name shall begin with a short prefix recognizable to a facility manager outside the context of the specific design.

.4 The COBie.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.

.5 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.

2.8 Component

.1 Where design schedules describe Components as individual occurrences, Components shall be named uniquely matching the asset 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 TypeTag-Space-Count.

.3 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.

2.9 System

.1 The Project Team shall define a project specific list of required systems in collaboration with the Province and record this list in the AEP.

.2 The specific value for COBie.System.Name assigned to each relevant Component shall be determined by the primary system on which that component is installed.

.3 The COBie.System.Name shall be named to match system names in the contract documents.

2.10   Assembly

.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 AEP.

2.11   Connection

.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 AEP.

2.12   Spare

.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 AEP.

2.13   Resource

.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 AEP.

2.14   Job

.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 AEP.

2.15   Impact

.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 AEP.

2.16   Document

.1   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   Product Data
>
> .3   Manufacturers' Reports
>
> .4   Commissioning Reports
>
> .5   Testing Reports
>
> .6   Product Certificates
>
> .7   Warranties
>
> .8   Site Photos
>
> .9   As-Built Drawings

.2   Each file for the submittals above shall be a separate row in the COBie Document tab.

.3   The COBie.Document.Name shall be in accordance with the Project Codification Standard, provided by the Province.

2.17   Attribute

.1   The Project Team shall define a project specific list of required attributes in collaboration with the Province and record this list in the AEP.

.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.

2.18   Coordinate

.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 AEP.

2.19   Issue

.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 AEP.

3. Quality Control (QC)

.1   The Consultant and Contractor shall:

    .1   Establish a plan to collect, merge, and check COBie deliverables. Document this plan in the AEP.

    .2   Perform automated testing and verification of the COBie file using the available COBie QC Reporter Command Line Tool, see Section 5.2 *COBie QC Checker Command Line Tool*.

    .3   Submit the automated testing HTML report, showing zero (0) errors, in accordance with Section 4 *COBie Submittals*.

    .4   Record the results of the automated testing using the COBie Compliance Form Template, provided by the Province.

    .5   Submit the COBie Compliance Form to the Province in accordance with Section 4 *COBie Submittal Package*.

.2   The Independent Commissioning Authority shall:

    .1   Review and verify data in the COBie XLSX files (listed in Section 1 *COBie XLSX Files*) in accordance with Appendix 001-COBie Instructions and the sampling rate listed in the *Schedule B- Systems to be Commissioned.*

    .2   Provide verification reports to the Province in accordance with *Schedule A- Schedule of Commissioning Services*.

4. COBie Submittal Package

.1   All COBie submittal packages shall be delivered to the Province in accordance with the Province's Asset Information Management (AIM) Requirements and the delivery schedule defined in the AEP.

.2   All COBie submittal packages shall be named in accordance with the Project Codification Standard provided by the Province.

.3   All COBie submittal packages shall be delivered to the Province as a single compressed file.

.4   The COBie submittal package shall contain the following:

    .1   One (1) COBie XLSX file, in accordance with Section 1 *COBie XLSX Files*.

    .2   One (1) COBie HTML Report, in accordance with Section 3 *Quality Control*.

    .3   A completed COBie compliance report in accordance with Section 3 *Quality Control*.

5. Resources

5.1 COBie Standard

.1   The COBie Standard is found in Chapter 4.2 (and Annexes) of the National Building Information Modeling Standard - United States, Version 3. This standard may be downloaded free of charge from:

https://www.nationalbimstandard.org/

5.2 COBie QC Checker Command Line Tool

.1   The COBie QC Checker may be found and downloaded free of charge from:

https://github.com/OhmSweetOhm/CobieQcReporter/releases/tag/1.0

5.3 Example COBie Files

.1   There are several example COBie project files that can be used as reference and training material; they are available for public download from:

https://www.nibs.org/page/bsa_commonbimfiles