Digital Project Delivery

Alberta Infrastructure

Requirements for Large Projects

Including BIM, Asset Information Management, and COBie

Alberta Infrastructure

Change History

Date	Version	Description
March 2018	V1.0	First Release
March 2020	V2.0	Minor revisions/clarifications to the following: Related Requirements, 2.0 AIM Meetings, 4.2 Required Assets, 4.3 Record Drawings, 5.0 Quality Control, 6.0 AIM Submittals
April 2024	V3.0	Consolidation of all V2.0 Requirements into one master file

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Digital Project Delivery Objective

Digital Project Delivery (DPD) is the initiative within Alberta Infrastructure to digitize the handover of building information from project teams to building operations. The Province's objective for DPD is to capture and deliver all the building asset data that is used to operate the facility to the building owner in an efficient and sustainable way. DPD is broken out into two sections: Asset Information Management, which focus on the asset data of the building, and Building Information Modeling which focuses on the geometry of the building.

The Province's objective for the use of Asset Information Management (AIM) is to capture, manage, and exchange asset information to increase efficiency for the Province's Facility and Operations Management. The objective of the AIM requirements is to define the required data, format, and responsibilities for the delivery of this asset information for a project. The AIM Requirements expects that all participating project stakeholders have downloaded, read, and understood the most current Construction Operations Building Information Exchange (COBie) Standard and the Alberta Infrastructure AIM Requirements.

The Province's objective for the use of Building Information Modeling (BIM) is to deliver higher value in quality, timeliness, cost, and a useable product for Facility Management (FM) at the end of the project construction lifecycle. While the objective of BIM is to have information contained in a model, the asset information associated to elements in a Record Model is contained in the COBie file.

Related Documents and Templates

Maintainable Asset List Template

DPD Execution Plan (DxP) Template

COBie Compliance Report Template

BIM Model Compliance Report Template

Codification Standards

Appendix A: Client Specific COBie Specifications

COBie Standard: 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/

1. Terms and Definitions

.1 **Asset Information Management (AIM)** means the collection and management of data and information related to, or required for, the operation of an asset.

.2 **As-Built Drawings** (typically called redline drawings) are produced by the Contractor to reflect the revisions and modifications to the Issued for Construction (IFC) Documents during construction. The as-built drawings are submitted to the Province for the Consultant to use to produce the Record Model/Drawings.

.3 **As-Built Models** are developed by the Contractor that captures the as-built conditions of the project during construction.

.4 **Building Information Modeling (BIM)** is a process of designing, constructing or operating a building or infrastructure asset using electronic object-oriented information [PAS 1192-2].

.5 **Construction Operations Building Information Exchange (COBie)** is a testable, digital alternative to document-based construction handover documents (O&M). The COBie Standard NBIMS-US V3 specifies the minimum information needed to operate, maintain, and manage typical buildings delivered through standard design and construction contracts.

.6 **Construction COBie** is produced by the Contractor and captures the as-built information of a single facility which provides details of asset information, based on the information provided by the consultant's Design COBie.

.7 **Construction Models** are the models developed for construction including fabrication, coordination, and sub-trade models.

.8 **Design COBie** is produced by the Consultant and captures the design information of a single facility, which provides an accurate representation of space, systems, and assets. This is the basis of information provided to the general contractor for the Construction COBie.

.9 **Digital Project Delivery (DPD)** is the handover of the digital building information that was captured through design and construction to the building owner.

.10 **DPD Execution Plan (DxP)** is a process management document created by the Proponent in consultation with the Province. The DxP documents the Proponent's intended processes, methodology, and technical details used to satisfy the DPD Requirements.

.11 **Level of Development (LOD)** is the definition of the extent to which a model is produced in terms of content, detail, and accuracy of the BIM elements at different phases or milestones. The LOD required to satisfy the project requirements will vary from one project to another and must be clearly defined in the DxP.

.12 **Maintainable Assets** are the assets within the building that require a work order to be generated including preventative maintenance and regular inspection.

.13 **Record Drawings** are produced by the Consultant which reflect the as-built conditions based on the information provided by the contractor as reflected in the As-built Drawings and Consultant's design changes issued during construction.

.14 **Record Models** are prepared by the Consultant and are a combination of the on-site revisions and modifications the Contractor noted on the as-built drawings and the Consultant's design changes issued during construction. The data from the COBie file is not required to be migrated to the Record Model.

2. Overall DPD Requirements

2.1 General

.1 The International System of Units (S.I.) shall be used in all DPD deliverables. The unit for linear dimensioning is the millimetre, except where the scope requires the use of the metre, such as in site plans. Integers shall indicate millimetres. Decimal numbers with three decimal places shall indicate metres.

.2 All DPD deliverables shall use English as the default language.

2.2 DPD Meetings

.1 The Province shall facilitate one Digital Project Delivery (DPD) kickoff meeting with each Proponent (both the Consultant and Contractor) respectively, within two (2) weeks of their respective contract award.

.2 The Consultant shall lead and facilitate recurring DPD project meetings with the Province, throughout the design phase of the contract and at a frequency defined in the DPD Execution Plan (DxP).

.3 The Contractor shall lead and facilitate recurring DPD project meetings with the Province, throughout the construction phase of the contract and at a frequency defined in the DxP.

2.3 DPD Manager

.1 Each Proponent (both the Consultant and Contractor) shall designate one individual, the DPD Manager, who will act as the single point of contact to the Province for the DPD submittals during design and construction, respectively.

.2 The DPD Manager shall be accountable for:

   .1 Ensuring compliance with the Province's Digital Project Delivery Requirements.

   .2 Coordinating and facilitating all project DPD meetings with the Province, including the creation and distribution of meeting minutes.

   .3 Developing, maintaining, updating, distributing, and providing clarifications to the DPD Execution Plan (DxP).

.4 Executing the procedures as detailed in the DxP and ensuring the reliability of information in the DPD deliverables.

.5 Executing quality control (QC) monitoring processes for BIM, AIM and COBie scopes.

.6 Coordinating the delivery of all defined DPD Submittals to the Province.

.3 DPD Manager can be divided into two roles, AIM Manager and BIM Manager, upon request.

.1 The AIM Manager shall be accountable for:

.1 Ensuring compliance with the Province's AIM Requirements.

.2 Coordinating and facilitating all project AIM meetings with the Province.

.3 Developing, maintaining, updating, distributing, and providing clarifications to/for the AIM part in the DPD Execution Plan (AxP).

.4 Executing the AIM procedures as detailed in the DxP and ensuring the reliability of information in the submittals.

.5 Executing quality control (QC) processes for accurate data creation, standards adherence, and classification of all assets required.

.6 Coordinating the delivery of all AIM Submittals to the Province.

.2 The BIM Manager shall be accountable for:

.1 Ensuring compliance with the Province's BIM Requirements.

.2 Coordinating and facilitating all project BIM meetings with the Province.

.3 Developing, maintaining, updating, distributing, and providing clarifications to the BIM part in the DPD Execution Plan (DxP).

.4 Executing the BIM procedures as detailed in the DxP and ensuring the reliability of information in the deliverables.

.5 Executing quality control (QC) processes for proper modeling, industry best practices and classification of all required elements.

.6 Coordinating the delivery of all BIM Submittals to the Province.

2.4 DPD Execution Plan (DxP)

.1 The DxP is a process management document created by the Proponent in consultation with the Province. The DxP documents the Proponent's intended processes, methodology, and technical details used to satisfy the DPD Requirements.

.1 The DxP shall provide process details for the BIM, AIM and COBie scopes, as well as any interoperability between the scope processes.

.2 Each Proponent (both the Consultant and Contractor) shall develop, maintain, and submit a separate DxP detailing their respective requirements as defined in this *DPD Requirements for Large Projects* document. Each Proponent shall:

.1 Use the DxP template provided by the Province as the basis for the execution plan, with additional modifications according to the needs of the project.

.2   Deliver the DxP to the Province in accordance with Section 6 *DPD Submittals*.

.3   Revise and resubmit the DxP to the Province for review and confirmation of acceptance, following any changes to:

.1   Roles and Staffing

.2   Collaboration Procedures

.3   Quality Control and Quality Assurance

.4   Technology Infrastructure

.5   Delivery and Updates

.6   BIM Modeling Configurations

.7   Interference Check Process

.8   Reality Capture Methods

.9   Requested Exceptions

3. BIM Modeling Requirements

3.1 General

.1   BIM requirements applies to Consultant only unless Contractor chooses to use BIM voluntarily.

.2   The ownership of the BIM models developed for the project belongs to the Province.

.3   All BIM model files shall be delivered to the Province in the native model authoring format.

.4   All BIM models submitted to the Province shall be cleaned of extraneous working material before being delivered. This extraneous material may include:

.1   Abandoned designs.

.2   Unused elements.

.3   Empty layers.

.4   Inaccurate content which may be produced in BIM production.

.5   All sheets in the construction drawing set shall be produced directly from the model authoring software. Any exceptions shall be outlined and justified in the DxP.

.6   All views, titleblocks, model elements, schedules, annotations, and settings used to produce the construction drawing set shall be retained in all model submissions. Company logos, stamps, and signatures are permitted to be removed prior to model submissions.

.7   All schedules and annotations shall be created natively in the model authoring software, and shall not be augmented with unconnected text. Any exceptions shall be outlined and justified in the DxP.

.8 Dimensions in the model shall not be overridden.

.9 All existing conditions for renovation or retrofit projects shall be modeled and include all disciplines affected by the proposed work. Any exceptions shall be outlined and justified in the DxP.

.10 Elements shall not be duplicated across discipline models. Any exceptions shall be outlined and justified in the DxP.

.11 Elements shall contain all the parameters and information required to generate the drawings and schedules.

3.2 BIM Software

.1 The Province is vendor neutral regarding the use of specific model authoring software. Model authoring software shall:

    .1 Support the most current ISO 16739 standard (Industry Foundation Classes (IFC) for data sharing in the construction and FM industries).

    .2 Have parametric modeling capabilities.

    .3 Be used as intended. All elements shall be modeled or created using the tool within the software that is designated for that specific element or purpose.

3.3 Level of Development

.1 All elements within the scope of work shall be modelled at a Level of Development (LOD) defined in the LOD matrix within the DxP.

.2 The Proponent shall develop a project specific LOD matrix that includes:

    .1 Element geometry at all project phases.

    .2 Element data at all project phases.

    .3 Element tolerances for the Record Model.

    .4 Assignment of responsibility for elements.

.3 The LOD defined for each project design phase shall effectively communicate design intent.

.4 All elements identified as required assets in accordance with Section 4.2 *Required Assets*, shall be represented with appropriate LOD.

3.4 Geo-referencing

.1 All models shall be referenced to one of the following coordinate systems:

    .1 NAD83 3TM 114 for projects in Edmonton and Calgary.

    .2 NAD83 10TM 115 for projects in the remainder of Alberta.

.2 All buildings shall have a project base point (defined origin 0,0,0) and be related to a survey point (such as a geodetic survey marker).

.3 All elements shall be modeled at true scale and at true elevation above sea level.

.4 All elements shall be oriented in accordance with the geographical north orientation (true north).

3.5 Rooms and Spaces

.1 All rooms and spaces shall be generated with the appropriate tool and associated with bounding elements.

.2 All room tags and space tags shall be connected to the room parameters. Unconnected text shall not be used for room and space tagging.

.3 Room data shall not be duplicated across discipline models. Room information in architectural models shall be referenced in other discipline models.

.4 All rooms designed for future development shall be clearly identified using the room parameter which shall be documented in the DxP.

.5 There shall be no space gaps in the model.

.6 Bounding boxes shall be used to represent rooms and spaces.

.7 Project rooms and spaces shall be named and numbered consistently across all models.

.8 Any exceptions to the above shall be outlined and justified in the DxP.

3.6 Model Structure

.1 Models shall be separated by discipline. Each discipline model shall contain the elements that relate to their discipline's design. Exceptions to model structure shall be outlined in the DxP.

.2 Model divisions shall be documented in the DxP.

3.7 Mechanical, Electrical, Plumbing (MEP) Systems

.1 The model shall be structured such that any individual MEP System and all its elements are connected and can be traced and isolated throughout the facility.

.2 The systems list shall be agreed upon by the Proponent and the Province and documented in the DxP.

3.8 Element Properties

.1 All elements shall be assigned the correct categorization. Exceptions to element categories based on software limitations shall be outlined in the DxP.

.2   Schedules shall be derived from the properties of the model and remain unaltered.

.3   Schedules shall not be augmented with unconnected data.

.4   Element properties shall be populated with accurate information of the specified or designed assets.

.5   Custom element parameters and their uses shall be listed in the DxP.

3.9 Coordination

.1   The Proponent shall use the models to perform spatial coordination and interference checks at all design and construction phases.

.2   The Proponent shall define the coordination and interference review process in the DxP.

3.10   Record Modeling

.1   The Proponent is not required to migrate asset data contained in the Construction Operations Building information exchange (COBie) file to the Record Model.

.2   The Proponent shall update the model geometry throughout the construction phase of the project to reflect approved project changes, including:

    .1   Project change orders.

    .2   Site instructions.

    .3   RFI responses and clarifications.

    .4   Shop drawings.

    .5   As-Built Drawings.

.3   The Proponent shall provide evidence of updates to the design model to the Province upon request.

.4   The Record Model shall contain:

    .1   The accurate representation of all assets included in the COBie File, including:

        .1   The as-built quantity and size

        .2   The actual orientation, location, elevation

        .3   Connections to the appropriate systems.

    .2   Routing of major services.

.5   The LOD for the Record Model shall, at a minimum, be equivalent to the LOD specified at final design phase.

.6   The Record Model shall not include the original manufacturer's data parameters.

.7   All views and sheets produced to create contract drawings for the project shall remain in the model.

.8   The Record Model shall be submitted within one version year of the current model authoring software release and in accordance with Section 6 *DPD Submittals*.

3.11   BIM Quality Control

.1   The Proponent shall:

   .1   Perform quality control procedures, as defined in the DxP, prior to every model submission to the Province.

   .2   Use the Model Compliance Form Template, provided by the Province, as the basis for the quality control, with additional modifications according to the needs of the Proponent.

   .3   Submit the Model Compliance Form to the Province in accordance with Section 6 *DPD Submittals*.

4. AIM Requirements

4.1 General

.1   The Consultant shall:

   .1   Capture all designed assets and associated information during the Design phase of the project, in the COBie file in accordance with Section 5 *COBie Requirements* and in collaboration with the Province.

   .2   Ensure consistency and completeness of COBie information in comparison with the Construction Drawing set.

.2   The Contractor shall:

   .1   Capture all asset information in the COBie file Section 5- *COBie Requirements* and in collaboration with the Province.

   .2   Complete regular updates, additions, or deletions in the COBie file in the event of project changes that impact the assets, spaces, or documents.

4.2 Required Assets

.1   The list of building assets to include in a COBie file cannot be stated for all buildings due to the varying scope and requirements for different buildings. Therefore, a project specific Maintainable Asset List shall be developed and maintained by the Consultant and Contractor, in collaboration with the Province.

   .1   The Province will provide a Maintainable Asset List template, which shall be used as the basis for the list of required assets, with additional modifications according to the needs of the Project.

    .2   Each Proponent shall refer to the COBie standard list of excluded building elements (NBIMS-US V3, Chapter 4.2, Pages 218-219), prior to the development or updates to the Maintainable Asset List.

    .3   The Maintainable Asset List will define which items are to be captured within the COBie file, by which Proponent, and in how much detail; it will be referenced by the Province during formal reviews of COBie file submittals.

.2   The Consultant shall:

    .1   Use the Maintainable Asset List template provided by the Province to identify all required categories of equipment and systems included in the project scope.

    .2   Ensure that the Maintainable Asset List is updated to remain consistent with the design progression and information contained on the construction documents.

    .3   Record all revisions/versions of the Maintainable Asset List, throughout the design phase, within the Change History section of the template.

    .4   Deliver updates to the Maintainable asset list to the Province in accordance with Section 6 *DPD Submittals*.

.3   The Contractor shall:

    .1   Review the most current version of the Maintainable Asset List at the time of contract award, and propose any changes to the Province.

    .2   Ensure that the Maintainable Asset List is updated during construction to remain consistent with all submittals and approved project changes.

    .3   Record all revisions/versions of the Maintainable Asset List, throughout the construction phase, within the Change History section of the template.

    .4   Deliver updates to the Maintainable Asset List to the Province in accordance with Section 6 *DPD Submittals*.

4.3 Digital As-Built Requirements

.1   This section is applicable to Contractors only.

.2   The Contractor shall provide to the Province As-Built Drawings in an accurately scaled, measurable, and digital format (PDF, CAD, etc.).

.3   All drawings contained in the construction document set shall be included in the As-Built Drawings.

.4   All mark-ups, notes, and annotations shall be added on the electronic drawings using the digital mark-up or annotation tool in the software and must be discernible from the original Contract Documents.

.5   No hand-written, hand-drawn, or scanned mark-ups shall be accepted.

.6   The Contractor shall update the As-Built Drawings throughout the construction phase of the project to reflect approved project changes, including:

.1   Project change orders.

.2   Site instructions.

.3   RFI responses and clarifications.

.4   Shop drawings.

.7   As-Built Drawings shall contain:

.1   The accurate representation of all assets in the COBie file, including:

.1   As-built quantity and size.

.2   As-built orientation, location, and elevation.

.3   Connections to the appropriate systems.

.2   Routing of major services.

.3   Dimensional references to gridlines and/or major permanent building elements such as walls, ceilings, and floors.

.8   The Contractor shall submit As-Built Drawings to the Province in accordance with Section 6 *DPD Submittals.*

4.4 Reality Capture

.1   This section is applicable to Contractors only.

.2   Reality Capture photographs produced by the Contractor are intended to capture the as-built conditions of the facility as detailed below. The as-built photographs are not intended or required to be incorporated into the Record Drawings by the Consultant. They are for visual record only.

.3   All Reality capture photographs produced by the Contractor shall be 16 megapixels resolution and must be clear, legible and unobstructed.

.1   The Contractor shall provide the following digital photographs of the installed as-built conditions of the following building elements at a minimum:

.1   Rooms/Spaces

.1   Photograph of each wall (north, east, south, and west views) prior to concealment.

.2   Additional photographs as needed to capture interiors of wall spaces, equipment, rough-in details or large wall sections.

.3   Photographs of each ceiling space (room quadrants: NE, SE, NW, SW views) prior to concealment. Break ceiling photographs of large areas into maximum of 200 square metre sections.

      .4   Additional photographs as needed to capture interiors of ceiling spaces, equipment, rough-in details or large area ceiling sections.

    .2   Floors/Slabs

      .1   Photographs of each floor or slab (section quadrants: NE, SE, NW, SW views) prior to concealment/concrete pour. Break floor/slab photographs of large areas into maximum of 200 square metre sections. Minimum of 4 photographs are required per 200 square metre sections.

      .2   Additional photographs as needed to capture details of floors or slabs, equipment, rough-in details, or large floor area sections.

    .3   Concrete Elements

      .1   Photographs of each concrete element containing building services prior to concealment/concrete pour. Break concrete element photographs of large areas into maximum of 200 square metre sections.

    .4   Equipment

      .1   Photographs of all equipment and assets in the final installed location and orientation (minimum of one).

      .2   Minimum of one photograph of nameplate or equipment tag.

  .2   The methods and technology to be used to capture and manage the photographs shall be defined by the Contractor in the DxP.

 .4   Alternative Reality Capture Methods

  .1   The optional use of panoramic photos, laser scanning or other reality capture technologies are encouraged. These methods can be used to supersede the above as-built photograph requirements at the discretion of the Province.

  .2   Use of any alternative reality capture options shall be detailed by the Contractor in the DxP for review and acceptability.

4.5 Record Drawings

 .1   This section is applicable to Consultants only.

 .2   The Consultant shall submit Record Drawings in accordance with Section 6 *DPD Submittals.*

  .1   Record drawings shall be submitted to the Province in both PDF and native authoring format (CAD, etc.) which is editable.

  .2   All drawings contained in the construction document set shall be included in the Record Drawings.

  .3   All record drawings shall be dated and labeled with "Issued for Project Record" in the title block.

 .3   The Consultant shall update the Record Drawings throughout the construction phase of the project to reflect approved project changes, including:

.1 Project change orders.

.2 Site instructions.

.3 RFI responses and clarifications.

.4 Shop drawings.

.5 As-Built Drawings.

.4 The Record Drawings shall contain:

.1 The accurate representation of all assets in the COBie file, as per the As-Built Drawings, including:

.1 The as-built quantity and size.

.2 The actual orientation, location, and elevation.

.3 Connections to the appropriate systems.

.2 Routing of major services.

.5 The reality capture photographs/scans provided by the Contractor (see *4.4 Reality Capture*) are not intended or required to be incorporated into the Record Drawings by the Consultant. They are for visual record only.

4.6 AIM Quality Control

.1 Each Proponent shall:

.1 Perform quality control procedures, as defined in the DxP, prior to every DPD submission to the Province.

5. COBie Requirements

5.1 General

.1 Information contained within the COBie file shall be consistent with all contract documents and progress concurrently with the project schedule.

.2 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.

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

.4 The list of required tabs for each COBie file are outlined in the corresponding sections below. Further instructions are detailed in Alberta Infrastructure *Appendix A- COBie Specification*.

.5 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.

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

.7   Rooms for future developments shall not be included in the COBie file.

5.2 Design COBie File

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

.2   The Consultant shall each capture the required data outlined in the Design COBie file in accordance with *Appendix A COBie Specification* for all assets affected by the work.

.3   The Consultant shall deliver the Final Design COBie 2.40 (NIBS) compatible file with the following tabs populated in accordance with *Appendix A COBie Specification*:

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

.4   The Consultant shall provide updates to the Design COBie File in accordance with Section 4 *AIM Requirements* and Section 6 *DPD Submittals*.

5.3 Construction COBie File

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

.2   The Contractor shall each capture the required data outlined in the Construction COBie file in accordance with *Appendix A COBie Specification* for all assets affected by the work.

.3   The Contractor shall deliver the Final Construction COBie 2.40 (NIBS) compatible file with the following tabs populated in accordance with *Appendix A COBie Specification*:

      .1   Contact

      .2   Facility

      .3   Floor

      .4   Space

      .5   Type

      .6   Component

      .7   System

      .8   Document

      .9   Attribute

.4   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   RFI responses and clarifications.

      .5   As-built Conditions

.5   The Contractor shall provide updates to the Construction COBie File in accordance with Section 4 *AIM Requirements* and Section 6 *DPD Submittals*.

5.4 COBie Quality Control

.1   Each Proponent shall:

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

      .2   Use the COBie Compliance Form Template, provided by the Province, as the basis for quality control, with additional modifications according to the needs of the Proponent.

      .3   Submit the COBie Compliance Form to the Province in accordance with Section 6 DPD *Submittals*.

6. DPD Submittals

6.1 General

.1   All DPD submittal folders and files shall be named in accordance with the Project Codification Standard provided by the Province.

.2   All COBie files shall be delivered in accordance with Section 5 *COBie Requirements*.

6.2 Consultant Submittals

.1   The Consultant shall submit a formal Design AIM Submittal Package and a formal BIM Submittal Package at each of the designated project phases, as defined in the DxP.

.2   Formal Design AIM Submittal Packages shall include:

    .1   One (1) Design COBie file, in accordance with section 5 *COBie Requirements*.

    .2   One (1) completed COBie compliance report, in accordance with Section 5.4 *COBie Quality Control*.

    .3   Drawing set of current project design phase.

    .4   Equipment schedules used in the drawing set in xls format.

    .5   The current version of the DxP, in accordance with Section 2.4 *DPD Execution Plan*.

    .6   The current version of the Maintainable Asset List, in accordance with Section 4.2 *Required Assets.*

.3   Formal BIM Submittal Packages shall include:

    .1   All BIM model files in the native model authoring format, in accordance with Section 3 BIM *Modeling Requirements*.

    .2   One (1) completed model compliance report, in accordance with Section 3.11 *BIM Quality Control*.

    .3   The current version of DxP, in accordance with Section 2.4 *DPD Execution Plan*.

    .4   All linked/referenced files.

    .5   Any additional setting file that is necessary to extract or print any information from the model.

.4   Errors found during Province reviews of the AIM submittal package and BIM submittal package should be addressed by the Consultant in the next submittal package and will not require a re-submittal, unless otherwise specified by the Province.

.5   The Consultant shall also submit:

    .1   The initial draft DxP to the Province within 30 days following project award for review and confirmation of acceptance.

    .2   Finalized Record Drawings, in accordance with Section 4.5 *Record Drawings*, within 30 days of receipt of the final As-Built Drawings.

    .3   The final Record Model, in accordance with Section 3.10 *Record Modeling*, within 30 days of receipt of final As-Built Drawings.

    .4   An IFC (2x3 coordination view V2.0) file to the Province upon request.

    .5   Additional progress files and updates to the Province upon request, including but not limited to:

.1   Progress Design COBie files, between formal submission packages.

.2   Progress project model files, between formal submission packages.

.3   Version updates to the Maintainable Asset List.

.4   Version updates to the DxP.

.5   Evidence of progress on Record Drawing updates.

.6   Evidence of progress on Record Model updates.

6.3 Contractor Submittals

.1   The Contractor shall provide the progress Construction DPD submittals to the Province by construction progress defined as follows. Any exceptions shall be discussed and agreed upon with the Province, and documented in the DxP:

   .1   Quarterly up to 25% construction.

   .2   Bi-monthly from 25% to 50% construction

   .3   Monthly from 50% to 100% construction

.2   Progress Construction DPD Submittal Packages shall include:

   .1   One (1) Construction COBie file, in accordance with section 5 *COBie Requirements*.

   .2   One (1) completed COBie compliance report, in accordance with Section 5.4 *COBie Quality Control*.

   .3   The current version of the DxP, in accordance with Section 2.4 *DPD Execution Plan*.

   .4   The current version of the Maintainable Asset List, in accordance with Section 4.2 *Required Assets.*

   .5   Updated As-Built Drawings, in accordance with Section 4.3 Digital *As-Built Requirements*.

.3   Errors found during Province reviews of the progress Construction DPD submittal package should be addressed by the Contractor in the next submittal package and will not require a re-submittal, unless otherwise specified by the Province.

.4   The Contractor shall submit a final Construction DPD Submittal Package at Interim Acceptance of the Work.

.5   The Final Construction DPD Submittal Package shall be delivered as a single compressed file containing:

   .1   One (1) Construction COBie file, in accordance with section 5 *COBie Requirements*.

   .2   One (1) completed COBie compliance report, in accordance with Section 5.4 *COBie Quality Control*.

   .3   One sub-folder titled "Docs" containing all pertinent documents associated with the facility and its assets, and the complete set of files referenced on the COBie.Documents Tab, in accordance with Section 5 *COBie Requirements*.

.4 The current version of the DxP, in accordance with Section 2.4 *DPD Execution Plan (DxP)*.

.5 One sub-folder titled "As-Built" containing finalized As-Built Drawings, in accordance with Section 4.3 *Digital As-Built Requirements*.

.6 All referenced/lined files used to generate As-Built Drawings, including but not limited to:

    .1 Project change orders.

    .2 Site instructions.

    .3 RFI responses and clarifications.

.7 One sub-folder titled "Reality Capture" containing all Reality Capture Photographs, in accordance with Section 4.4 *Reality Capture*.

.8 Digital O&M information, in accordance with Alberta Infrastructure's Master Specification section 01 78 23- *Operation and Maintenance Data and Manuals*.

.9 All BIM Models in the native model authoring format including As-Built Models and Construction Models if the Contractor chooses to use BIM.

.6 The Contractor shall also submit:

.1 The initial draft DxP to the Province within 30 days following project award for review and confirmation of acceptance.

.2 Additional progress files and updates to the Province upon request, including but not limited to:

    .1 Progress Construction COBie files, between progress submission packages.

    .2 Evidence and progress reports of reality capture photographs.