CONSTRUCTION INDUSTRY COUNCIL
建造業議會

BIM

CIC BIM Standards

Architecture and Structural Engineering

(in line with ISO 19650)

Version 2 - December 2020

Disclaimer

Whilst reasonable efforts have been made to ensure the accuracy of the information contained in this publication (Reference Materials), the CIC nevertheless encourages readers to seek appropriate independent advice from their professional advisers where possible. Readers should not treat or rely on this publication (Reference Materials) as a substitute for such professional advice.

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Document Revision Tracking

Issue Date	Notes
September 2015 Edition	Embedded in CIC BIM Standards (Phase One)
August 2019 Edition	Embedded in “CIC BIM Standards - General” which is renamed from “CIC BIM Standards (Phase One)”.
December 2020 Edition	Title of the document is CIC BIM Standards Architecture and Structural Engineering. Sepearate document for LOD specification on architecture and structural engineering
	Define Level of Graphics (LOD-G), Level of Information (LOD-I) and Level of Documentation (DOC).

Contents

Foreword

Foreword (1)

In 2014, the Construction Industry Council (CIC), in collaboration with around 20 stakeholder organisations of the construction industry, published a report named "Roadmap for the Strategic Implementation of Building Information Modelling (BIM) in Hong Kong's Construction Industry" (hereinafter referred to as the "BIM Roadmap") with an aim to establish a blueprint for the promotion and adoption of BIM in Hong Kong.

The BIM Roadmap suggested seventeen initiatives in nine areas with three imminent actions. Establishment of local BIM standards was one of the recommended imminent actions aiming to set out a common platform and language for Hong Kong's BIM practitioners. The CIC's BIM Standards are being implemented in stages.

The Standards, now renamed as CIC BIM Standards – General was published in September 2015, and was intended to be simple and straightforward such that it can be easily mastered by laymen and new BIM practitioners.

Since then, BIM practitioners have gained more practical project experience, and there has been much wider adoption of BIM in various areas of the Architectural, Engineering, Construction and Operations (AECO) industries in Hong Kong. With the release of the Technical Circular (Works) Nos. 7/2017 & 18/2018 by the Development Bureau (DEVB) of The Government of the Hong Kong Special Administrative Region (HKSAR), it became mandatory for capital works projects with project estimates more than $30 Million to use BIM technology from 1st January 2018 onwards. All along the CIC has continued to elaborate and establish the BIM Standards for specific BIM usages and disciplines, and to conduct consultations with relevant stakeholders.

With the establishment of the Task Force on BIM Standards (Phase Two) on 21 November 2017, CIC aimed to identify and align the common practices as well as set up new standards and guidelines to facilitate better implementation and adoption of BIM technologies in project execution. The BIM Standards (Phase Two) cover the following specific BIM usages or disciplines:

(i) Statutory Plan Submission
(ii) Underground Utilities (UU)
(iii) Mechanical, Electrical and Plumbing (MEP)

These three BIM Standards will be published separately.

This amendment of the CIC BIM Standards - General is aimed at aligning its content with the above three newly developed CIC BIM Standards especially the sections relating to MEP and UU.

Feedback from practitioners subsequent to the issuance of the CIC BIM Standards Phase One (renamed as CIC BIM Standards – General) will be incorporated in due course.

On behalf of the CIC, I would like to thank everyone who has contributed to producing this Standards, in particular to the members of the Task Force on BIM Standards (Phase 2).

Ar. Ada FUNG, BBS
Chairperson
Committee on Building Information Modelling
Construction Industry Council

August 2019

Foreword (2)

I am glad to see the release of **Construction Industry Council (CIC) BIM Standards for Architecture and Structural Engineering (Version 2 – December 2020). This must be read in conjunction with CIC BIM Standards - General (Version 2 - December 2020)**, which contains major enhancements to align with ISO 19650's Information Management principles, workflows and requirements, also providing Hong Kong Local Annex of ISO 19650-2:2018.

The full suite of CIC BIM standards have been published covering the following specific BIM usages or disciplines separately:

(i) CIC BIM Standards – General (August 2019); and (Version 2 - December 2020);
(ii) CIC BIM Standards for Architecture and Structural Engineering (Version 2 – December 2020);
(iii) CIC BIM Standards for Underground Utilities (August 2019);
(iv) CIC BIM Standards for Mechanical, Electrical and Plumbing (August 2019);
(v) CIC BIM Standards for Preparation of Statutory Plan Submissions (December 2020);
(vi) CIC Production of BIM Objects Guide – General Requirements (August 2019); and
(vii) CIC BIM Dictionary (December 2020).

There are other CIC BIM documentations under preparation. In response to demand from the industry, a Task Force on BIM Specifications and Agreement under the ambit of Committee on BIM was established on 23 October 2019. The Task Force is co-chaired by Committee on BIM and Committee on Construction Business Development. The CIC has been developing:

- CIC BIM Exchange Information Requirements (EIR) Template (BIM Specifications);
- CIC Special Conditions of Contract for BIM for incorporating into existing construction contracts and consultancy agreements for implementing BIM in construction projects; and
- CIC BIM Services Agreements for procuring BIM services under different contractual relationships.

We welcome feedback on the BIM Standards from practitioners. Feedback received subsequent to the issuance of this publication would be considered in future revision.

On behalf of the CIC, I would like to thank everyone who has contributed to the making of this BIM Standards, in particular to the members of the Task Force on BIM Standards.

Ar. Ada FUNG, BBS
Chairperson
Committee on Building Information Modelling
Construction Industry Council

December 2020

Preface

The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

The CIC appreciates that some improvements and practices can be implemented immediately whilst others may take more time for implementation. It is for this reason that four separate categories of publication have been adopted, the purposes of which are as follows:

Alerts	The Alerts are reminders in the form of brief leaflets produced quickly to draw the immediate attention of relevant stakeholders to the need to follow some good practices or to implement some preventive measures in relation to the construction industry.
Reference Materials	The Reference Materials are standards or methodologies generally adopted and regarded by the industry as good practices. The CIC recommends the adoption of the Reference Materials by industry stakeholders where appropriate.
Guidelines	The Guidelines provide information and guidance on particular topics relevant to the construction industry. The CIC expects all industry stakeholders to adopt the recommendations set out in the Guidelines where applicable.
Codes of Conduct	The Codes of Conduct set out the principles that all relevant industry participants should follow. Under the Construction Industry Council (Cap 587), the CIC is tasked to formulate codes of conduct and enforce such codes. The CIC may take necessary actions to ensure compliance with the codes.

If you have read this publication, we encourage you to share your feedback with us. Please take a moment to fill out the Feedback Form attached to this publication in order that we can further enhance it for the benefit of all concerned. With our joint efforts, we believe our construction industry will develop further and will continue to prosper for years to come.

Abbreviation

Abbreviations	Definition	Section
BEP	BIM Execution Plan (formerly known as PXP)	**Section 1** – 1.4 **Section 2** – 2 **Section 3** – 3 **Section 4** – 4.2
BIM	Building Information Modelling	**Section 1** – 1.1-1.4 **Section 2, Section 3** **Section 4** – 4.1-4.3 **Section 5** **Section 6**
CAD	Computer Aided Drafting	**Section 7**
CIC	Construction Industry Council, Hong Kong	**Section 1** – 1.1, 1.3 **Section 2** **Section 4** – 4.1-4.3 **Section 5** **Section 6**
CICBIMS	Construction Industry Council Building Information Model Standards - General	**Section 1** – 1.1
DOC	Level of Documentation	**Section 1** – 1.1, 1.3
LOD-G	Level of Graphics	**Section 1** – 1.1-1.4 **Section 2** **Section 3** **Section 4** – 4.1, 4.2 **Section 5**
LOD-I	Level of Information	**Section 1** – 1.1, 1.2, 1.3 **Section 2** **Section 3** **Section 4** – 4, 4.3 **Section 5**
LOIN	Level of Information Need	**Section 1** – 1.1, 1.2, 1.3 **Section 2** **Section 5**
MEP	Mechanical, Electrical and Plumbing Services	**Section 1** – 1.3 **Section 4** – 4.1-4.3 **Section 5** **Section 6**

The CIC BIM Standards – Architecture and Structural Engineering requirements are expressed in sentences in which the principal auxiliary verb is “shall”. Recommendations are expressed in sentences in which the principal auxiliary verb is “should”. The use of the auxiliary verb “can” indicates that something is technically possible and the auxiliary verb “may” indicates permission.

1 Introduction

General

While the CIC BIM Standards – General provides a standardised Level of Information Need (LOIN) framework and a common language for the use of BIM in the construction industry in Hong Kong, this Standards serves as an extension covering and providing more specific details **mainly on architecture and structural engineering**. There are also **limited samples of LOD element specifications for site elements and civil works such as bridges and marine works (seawall, breakwater, pier/jetty, etc)**. This Standards is a reference document which states minimum requirement. Appointing Party / Client should adjust the details to suit their specific project requirements.

Objectives

The objectives of this Standards are:

- To provide the approach and direction to help Appointing Party / Client and the project team agree on the details and information on architectural, structural , site, bridge and marine works elements that need to be provided in a project.

- To provide a clear concept for Appointing Party / Client and the project team on the Level of Graphics (LOD-G), Level of Information (LOD-I) and Level of Documentation (DOC) requirements on different stages of a project.

- To assist Appointing Party / Client and the project team to define and specify the contents of Information Models during the implementation of BIM for architectural, structural, site, bridge and marine works in a project.

- To serve as a regional level BIM standards that can be referenced by the local industry and used it as a base for further extension to suit project specific needs.

This Standards aims to enable a project team to clearly specify the content of Information Models for architectural and structural disciplines at each stage of a project. The Appointing Party / Client should note the following points when developing or using the LOIN for different elements / objects;

- The LOIN should satisfy the BIM uses for each project and may vary from project to project. It is unnecessary to produce high LOIN model elements as long as they fulfil the BIM uses and objectives in the project.

- The LOIN should be specified for individual model elements / objects, instead of for the entire model. For example, for models, different elements may have different LOD-G. Some elements may only need to be modelled to LOD-G 300 while others may need to be modelled to LOD-G 400 for fabrication.

- The LOIN includes not only graphical representation, but also non-graphical information and documentation requirements associated with the relevant model elements / objects. The Appointing Party / Client and the project team can follow the approach of LOIN described in the CICBIMS – General and this Standards to agree on the required LOD-G, LOD-I and DOC on the BIM objects.

At the outset, it is important to agree on the BIM uses at various project stages and then work out the elements / objects with suitable LOIN to be included in the Information Models for each stage. Clear understanding and expectations of the Information Models and information details are essential for the successful application of BIM in the project.

Document Structure

This Standards is divided into six main sections, as follows:

	Section	Objective
1.	Introduction	State the objectives and define LOIN
2.	Use of the Standards	Describe how to use this Standards
3.	LOD Responsibility Matrix	Provide the framework for specifying/choosing elements to be included in the Information Models and LOD-G and LOD-I to be achieved
4.	LOD Elements Specification	Define criteria of various LOD-G and LOD-I for Architectural, Structural, Site, Bridge and Marine Works model elements
5.	Recommended LOD	Provide examples of recommended LOD-G and LOD-I at each project stage
6.	Common Practice for Information Modelling	Describe some common practice for Information Modelling in various disciplines.

Table 1 Document Structure

Definition of Level of Information Need (LOIN)

The Level of Information Need (LOIN) comprises the graphical representation, the non-graphical information and the documentation representation contained in each Information Model element for each stage. The LOIN should be defined explicitly for a project and used to facilitate Appointing Party / Client and project team communications throughout the project life cycle.

Because of different usages of BIM, some projects require model elements to have high graphical representation but low non-graphical information, while other projects require model elements to have low graphical representation but high non-graphical information. To enhance the management of information and facilitates better communication, LOIN in this Standards is separated for graphical representation – Level of Graphics (LOD-G), non-graphical information – Level of Information (LOD-I) and the documentation representation – Level of Documentation (DOC).

Documentation representation is for some professional deliverables like statutory drawings, contract drawings. The project team shall deliver the model elements that can fulfill documentation representation based on local standards or the Appointing Party's / Client's requirement.

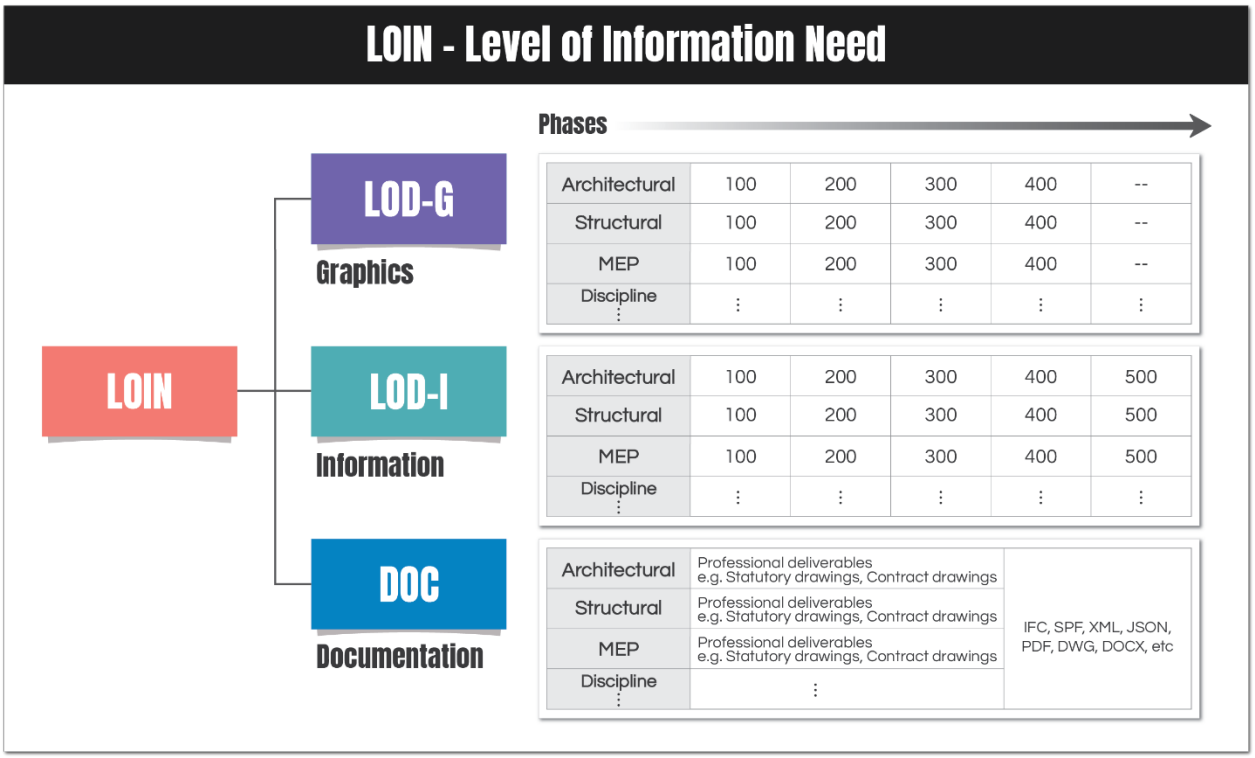


Figure 1 LOIN - Level of Information Need

Level of Graphics (LOD-G)

Level of Graphics (LOD-G) comprises various graphical scenarios with a model and there is a requirement to subdivide graphical representation as there can be different needs for modelling (3D), symbology (2D), and visualisation.

Graphical representation of elements in the model can include the shape, size, or precise location and specific details for fabrication in each stage of the project.

The definition of LOD-G is shown in the table below.

LOD-G	Definition
100	The model element is graphically represented within the model by a **symbol** or generic representation or rough 3D shape.
200	The model element is graphically represented within the model as a **generic system, object, or assembly** with approximate quantities, assumed size, shape, location, and orientation. The assumed required spaces for access and maintenance shall be indicated.
300	The model element is graphically represented within the model as a **specific system, object or assembly** in terms of quantity, size, shape, location, and orientation. The model shall include details of the required spaces for handling installation, operation and maintenance needs and the interface details for checking and coordination with other models / objects
400	The model element is graphically represented within the model as a **specific system, object or assembly** in terms of size, shape, location, quantity, and orientation with **detailing for fabrication, assembly, and installation.**
500	Not used. Refer to Section 1.4 for details

Table 2 LOD-G Definition

For the LOD-G for the Mechanical, Electrical and Plumbing and Underground Utilities model elements, refer to the CIC BIM Standards for Mechanical, Electrical and Plumbing (MEP) Engineering and the CIC BIM Standards for Underground Utilities (UU) respectively.

Level of Information (LOD-I)

Level of Information (LOD-I) is the description of non-graphical information in a model element and will evolve as the project progresses. LOD-I requirements should be defined and agreed beforehand. As the required LOD-I varies for each project, this Standards does not aim to provide an exhaustive list of information for each model element, but instead indicates a suitable approach for adoption.

The LOD-I required for the model elements should be determined based on their intended usage and should NOT be over specified. This Standards indicates a suitable approach by giving examples of minimum LOD-I associated with typical elements/objects at five levels from LOD-I 100 to LOD-I 500. Please refer to section 4.3 for the details of the LOD information requirement.

It is recommended that the project Appointing Party / Client to define and specify BOTH the LOD- G and LOD-I of the site model, architectural model, structural model, bridge and marine works elements at each stage prior to the commencement of the project.

A Information Model, especially with drawings, typically consists of a range of LOD-G and LOD-I. For example, during the design stage, some elements need to be modelled to LOD-G 200 show specific geometrical details while information at LOD-I 200 level is sufficient. For tender stage, some elements need to be modelled to LOD-G 200 which give shape and graphic, together with LOD-I 300.

At the construction stage, most of the element are modelled as LOD-G 300, together with LOD-I 300. However, some of the elements need to be modelled to LOD-G 400 for fabrication, together with LOD-I 300.

During as-built stage, the LOD-G 400 model with LOD-I 500 should be submitted for as-built record purpose. Users may truncate them if they prefer simple models during Operation and Maintenance Stage.

LOIN definitions vary among different organisations and countries. Although the newly-proposed LOIN definitions stated here are considered more appropriate, some practitioners have already adopted LOD definitions (LOD 100 – LOD 500) given in the former CIC BIM Standards - General. The relationship between the old and new definitions are as follows:

LOIN at various stages	LOIN definition recommendation*
Concept, Feasibility, Planning	LOD-G 100 + LOD-I 100
Preliminary, Scheme	LOD-G 200 + LOD-I 200
Detailed Design & Tender	LOD-G 300 + LOD-I 300
Construction	LOD-G 400 + LOD-I 400
As-Built	LOD-G 400 + Field Verification + LOD-I 500 or LOD-G 300 + Field Verification + LOD-I 500

***Details refers Section 3 LOD Responsibility Matrix

Table 3 LOIN Definition Recommendation at Various Stages

While this Standards does not mandate which definition of LOD/LOIN should be used, the new LOIN are generally encouraged. The final decision should be made and agreed by the project Appointing Party / Client.

Level of Documentation (DOC)

The Level of Documentation (DOC) is a description of the requirement to meet LOD-G and LOD-I for the professional deliverables in different stages. Each project team should understand their deliverable requirements against a specific use – e.g., presentation styles such as colour, font, 2D symbols associated with certain drawing production, information on standard title block, etc.

For example, during the tender stage, the design of Information Models shall be developed in sufficient detail for co-ordination, to be completed and enables packaged. Tender drawings and shop drawings generated by the Information Models shall meet the deliverable requirement with respect to specific assemblies, precise quantity, size, shape, location, and orientation of model elements.

Professional drawing at construction stage such as shop drawings and fabrication drawings should contain the geometry or symbol and data which meet the requirement against specific use. Model elements shall be modelled as specific assemblies, complete fabrication, assembly, and detailing information except precise quantity, size, shape, location, and orientation. Non- geometric information to the model elements can also be attached.

The LOIN use table should identify which discipline / role is responsible for the DOC and the detail will then reside within the Task Information Delivery Plan (TIDP). (refer to CIC BIM Standards – General Section 3.7.17 for further information of TIDP).

The kind of documentation is related to the uses to meet the identified requirements. The project team should understand their deliverable requirements against a specific use. Professional domain knowledge must be applied to DOC as deliverables when statutory and contractual liabilities are involved.

Field Verification

Field verification of the model elements is important for most projects in Hong Kong. In most local and international BIM standards, “field verified” is the key interpretation for the definition of LOD 500. However, in terms of geometry, a model element cannot be modelled with more details than those required for fabrication (LOD-G 400). Therefore, the criterion for field verification of a model element should preferably be detached from LOD-500, e.g., a model element with LOD-G 300 can also be field verified.

During the period between the construction stage and the as-built stage, the architectural and structural model elements must be updated according to field verified condition if there are different details between the constructed building and coordinated model after site design changes agreed in site.

In terms of the as-built site model, the model elements of site must be updated according to field verified condition if there are different details for the site features, actual level, dimension and thickness between the excavated site and coordinated model created by surveyor.

In practice, it may not be possible to field verify all model elements in the project, and the methodology and grading of field verification may vary subject to the Appointing Party’s / Client’s considerations and requirements. Different methods of field verification should be stated in the BIM Execution Plan (BEP), e.g. by visual inspection, measured survey, 360° panorama images, photogrammetry, laser scanning or any other measures agreed by the project Appointing Party / Client.

2 Use of the Standards

This section describes the recommended approach in defining the required LOIN for architectural, structural, site, bridge and marine works model elements in a project, the approach is broken down into a number of steps in the table below, along with the responsible parties and reference to relevant sections of this or other documents. With this arrangement, the Appointing Party / Client can define their requirements step-by-step and use this Standards as guidance to the relevant LOIN requirements and other details. The LOIN will form a key part of the BEP.

	Recommended Approach	Who	How
1.	Define the BIM uses of the projects	Appointing Party / Client	Refer to the "CIC BIM Standards - General"
2.	Specify the Project Information / Asset Information Requirements of the project	Appointing Party / Client	Refer to "2.0 Information Requirements" in "CIC BIM Standards - General"
3.	Understand the definition of LOIN	Appointing Party / Client	Refer to "2.6 Level of Information Need" in "CIC BIM Standards – General"
4.	Understand more about LOD-G and LOD-I specification of the elements	Appointing Party / Client, design consultant, contractor	Refer to "4 LOD Elements Specification"
5.	Define the LOD-G and LOD-I of the model elements to be specified	Appointing Party / Client	Refer to "5 Recommended LOD"
6.	Identify the LOD requirements (both graphics LOD-G and information LOD-I)	Appointing Party / Client	Refer to "3 LOD Responsibility Matrix"
7.	Identify the responsible author or party for defining / specifying the model elements LOD-G and LOD-I.	Appointing Party / Client, design consultant	Refer to "3 LOD Responsibility Matrix"
8.	Identify whether the model elements need to be field verified and which method of field verification to be used.	Appointing Party / Client	Refer to "3 LOD Responsibility Matrix"
9.	Production of Information Models	Design consultants, contractors	Refer to "6 Common Practice for Information Modelling"

Table 4 Recommended Approach in Defining the Required LOIN

3 LOD Responsibility Matrix

The LOD responsibility matrix should be used to prepare the BEP at different stages of a project. This involves defining both LOD-G and LOD-I to be achieved at each stage so that the project team can produce a high-quality Information Model with appropriate information.

Description of the fields in the LOD Responsibility Matrix is shown in the table below.

Field	Description
Required	Yes (Y) or No (N)
UOM	Unit of Measurement
Classification	This code can be used for Quality Assurance and review of models. OmniClass Table 23 system code* can be used for this field if no other specific requirements from the project Appointing Party / Client.
AUT	Model Author
G	LOD-G
I	LOD-I
V	Method for field verification of the object/equipment. It is subject to the agreement of the Appointing Party / Client. Refer to Section 1.5 for the details of field verification.

**China Guobiao (China GB), UK Uniclass and US Onmiclass have been considered to be the classification system of model elements*

Table 5 LOD Responsibility Matrix Fields

As stated in Section 1.4, the requirement for “field verification” should be defined in addition to the LOD for model elements. An additional column “V” in the LOD responsibility matrix serves this purpose. The project Appointing Party / Client or design consultants should define clearly which field verification method should be used for each model element or specify “N/A” (“Not Applicable”) to indicate that field verification is not required for that model element.

The classification of the model elements recommended in this Standards is the OmniClass® Table 23 – Products (http://www.omniclass.org/). However, since Table 23 may not cover all the element categories for construction industry, any related categories listed in other OmniClass® tables could also be made reference to, such as Table 14 related to Topography.

Project BIM Manager should add or remove any model elements from the matrix to suit project specific needs and make reference to the OmniClass® Table 23 system code and related categories tables in OmniClass®* if no project specific classification system is required by the project Appointing Party / Client.

LOD Responsibility Matrix (sample format)

Field										
Model elements	**Required**	**UOM**	**Classifi -cation**	**Project stage e.g. Detailed Design**			**Project stage e.g. As-Built**			
				AUT	**G**	**I**	**AUT**	**G**	**I**	**V**
Element 1	Y / N									
Element 2	Y / N									
Element …	Y / N									

Table 6 Outline Sample of LOD Responsibility Matrix

The tender stage specified in the LOD Responsibility Matrix is assumed to be that from a traditional “Design-Tender-Build” contract type / procurement method. If another contract type / procurement method is used, the matrix should be adjusted accordingly to suit the project.

4 LOD Elements Specification

This section describes the minimum acceptable requirements for LOD-G and LOD-I for different model elements / objects. As there are innumerable types of individual model elements, only commonly used model elements are included, and are classified as different CAT Codes from OmniClass table. In this way, users should be able to understand the principles involved and apply them in defining LOD-G and LOD-I for other elements as required.

4.1 LOD-G Requirements

The main architectural, structural, site, bridge and marine works model elements / objects requiring LOD-G specification are classified in the following table:

Discipline	Elements (classified according to OmniClass table 23)*
Site Model	**Topographical Spaces** • Site Topography (existing site and surrounding land use) • Topography (Site Formation) Escalators • Natural Slope • Artificial Slope **Site Barrier Products** • Flexible Barrier • Rigid Barrier **Planning Modules** • Massing models of adjacent or surrounding buildings **Legal and Geopolitical Space Designations** • Geological model (soil, fill, rock) **Pavements** • Pavement (Carriageway, Footpath, Cycle Track **Traffic Safety Barriers and Protections** • Profile Barrier, Parapet, Kerbs, Traffic island **Noise Barriers** • Noise Barrier **Planters** • Planter **Bollards** • Bollard **Telephone Booths** • Phone Booth **Roadway Signage** • Signage **Ground Anchorages** • Gully
Architectural model	**Planning Modules** • Building Massing Model **Rooms** • Rooms, spaces, corridors, plant & equipment rooms **Lift Shaft Components** • Elevator shaft spaces

Discipline	Elements (classified according to OmniClass table 23)*
	Interior and Finish Products • Floor slabs, ramps, roofs **Columns** • Basic structural columns, walls **Exterior Wall Assemblies** • Exterior walls **Interior Wall and Ceiling Cladding** • Interior walls / Partitions / Non-structural walls **Curtain Walls** • Curtain walls, including shading devices **Precast Concrete Façade** • Precast Facades **Doors** • Doors **Windows** • Windows **Exterior Louvers and Grilles** • Louvers **Skylights** • Skylights **Ceilings** • Ceilings **Stairs** • Stairs, Steps **Guardrails** • Railings & balustrades **Ladders** • Access ladders and catwalks **Building Maintenance Equipment** • Building Maintenance Unit **Furnishings, Fixtures and Equipment Products** • Furniture, fixtures & fittings, desks, workstations, casework, cabinets, appliances
Structural model	**Foundations** • Foundations (piles, pile caps, tie/ground beams & footings) **Retaining walls** • Diaphragm walls & retaining walls **Ground Anchorages** • Excavation & lateral stability systems **Beams** • Beam **Columns** • Column, post & hangar **Structural Wall** • Wall **Interior and Finish Products** • Slab, floor, ramp, roof **Rafters, Beams, and Joists** • Transfer Structure (transfer plate, truss) **Stairs** • Stairs (steps, risers, threads, landings) **Booms Braces**

Discipline	Elements (classified according to OmniClass table 23)*
	• Bracing **Scaffolding** • Temporary works, temporary structures, platforms **Tunnels and Bridges** • Tunnel Structure (Tunnel Box, Subway, Utilities Tunnel)
Mechanical, Electrical and Plumbing Model	• Refer to CIC BIM Standards for Mechanical Electrical and Plumbing (MEP).
Underground Utilities	• Refer to CIC BIM Standards for Underground Utilities (UU)
Bridges	**Bridges** • Bridge column/pier • Bridge abutment • Precast Bridge segment • Steel bridge segment **Marine Construction Waterways and Seaways** • Bridge deck
Marine Works	**Seawalls** • Seawall **Moles and Breakwater** • Breakwater **Jetties** • Pier, Jetty

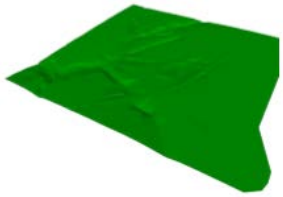
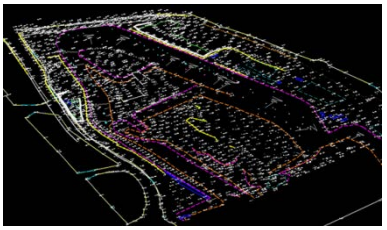
*Most of the model elements are classified according to OmniClass table 23 but some model elements are classified according to OmniClass table 14

4.2 LOD–G Specification

Site Model

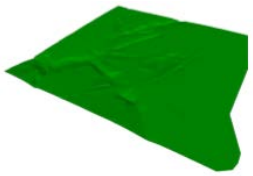
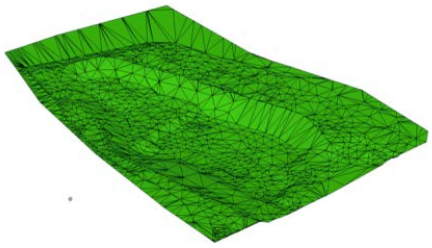
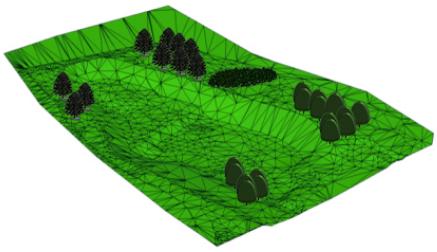
Site Topography (existing site and surrounding land use)

Topographical Spaces OmniClass: 14-34 11 01

LOD-G	Requirements		Sample Image
100	The site contours and key features are represented in 3D space based on the surveyors' information (spot levels, northing and easting).	Overall shape	
200	The site is represented as a 3D surface generated from the surveyors' information. Approximate size, shape and location of element	Overall shape Approximate size, shape and location of existing site surfaces, existing walls, stairs, surface drains, existing foundations, existing utilities, underground or buried structures	
300	The existing site model shall include: 3D surface generated from the surveyors' information Approximate size, shape and location of element Improved definition of element.	Overall shape Approximate size, shape and location of existing site surfaces, existing walls, stairs, surface drains, existing foundations, existing utilities, underground or buried structures Improved definition from supplemental site surveys	

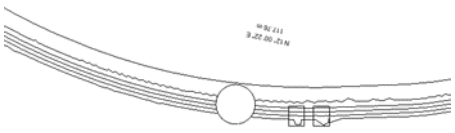
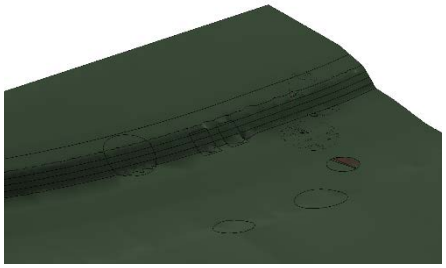
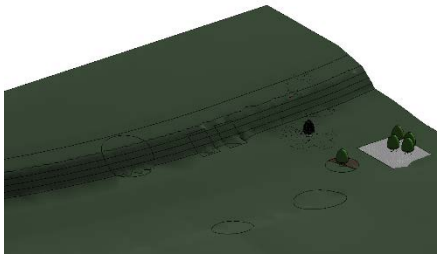
Topography (Site Formation)

(Topographical Spaces) OmniClass: 14-34 11 02

LOD-G	Requirements		Sample Image
100	Diagrammatic or schematic model	Overall shape	
200	The planned site formation shall be represented as a 3D surface to show the approximate site details The model may include the approximate size, shape and location of new element. The site boundary shall be marked based on the surveyors setting out information.	Overall shape 3D surface to show the approximate levels for excavation, cut and fill, blinding layers, backfill and site grading. Size, shape and location of new foundations and retaining walls, slope improvement works, access roads.	
300	The site formation shall be represented as complete and accurate 3D surfaces or objects to show approximate site details Approximate size, shape and location of new element may be included. The site boundary shall be marked based on the surveyors setting out information. Specific site model elements shall be modelled	Overall shape Site formation to shows the specific levels for excavation and site grading Model of site infrastructure for roads, curbs, pavements, car parking, access, hard landscaping and planter boxes. Models of trees may be included. For hard landscaped or paved areas, the model shall be modelled to falls and coordinated with the planned surface drainage model.	
400	Same as 300		

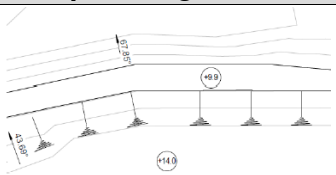
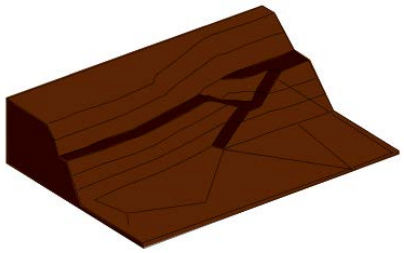
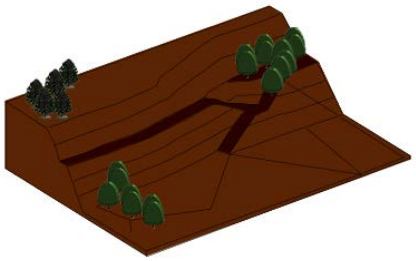
Natural Slope

(Topographical Spaces) OmniClass: 14-34 11 99 03

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate location and boundary	
200	Natural Slope modelling to include: Generic element Approximate boundary and toe line of the slope Approximate location of elements	Overall shape Approximate 3D boundary Approximate toe line of the slope Approximate location of the exposed rock head Approximate location of the soil nails	
300	Element modelling to include: Generic element Accurate boundary toe line of the slope Accurate location, size and orientation of elements Accurate layout and boundary of element Required non-graphic information associated with model elements includes: Surface Material type Unique Slope Identifier Maintenance party Unique Tree identifiers (Tree Numbers), species, crown, Diameter at Breast Height (DBH) and spread information Tree Health Status	Overall shape Accurate layout and boundary of the slope, including berm and toe lines Accurate location and size of the exposed rock head Accurate location and size of the existing retaining structure Accurate location, size and orientation of the slope nails Accurate location and size of existing trees	
400	Same as 300		

Artificial Slope

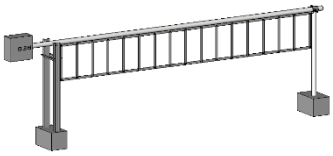
(Topographical Spaces) OmniClass: 14-34 11 99 03

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element	Approximate location and boundary, cut/fill requirements	
200	Artificial Slope modelling to include: Generic element Approximate boundary Toe line of the slope Location of elements	Overall shape Approximate 3D slope extend Approximate location of the exposed rock head Approxim toe line of the slope Approximate location of the soil nails Approximate location of settlement markers	
300	Artificial Slope modelling to include: Specific element Accurate boundary toe line of the slope Accurate location, size and orientation of elements Accurate layout and boundary of element Required non-graphic information associated with model elements includes: Surface Material type Unique Slope identifier Unique settlement marker identifier Unique soil nail identifier Slope Maintenance party Unique Tree identifiers and respective species information Unique Catch pit	Overall shape Accurate layout and boundary of the slope, including berm and toe lines, cut/fill slope and transition parameters Accurate location and size of the exposed rock head Accurate location and size of the u-channels/step-channels, catch pits, and maintenance access Accurate location, size, orientation and extend of the slope nails Accurate location and size of newly planted trees Accurate location and size of surfacing materials	

LOD-G	Requirements		Sample Image
	identifier		
400	Artificial Slope modelling to include: Specific element Accurate boundary toe line of the slope Accurate location, size and orientation of elements Accurate layout and boundary of element Required non-graphic information associated with model elements includes: - Excavation and refill Material Information - Tree crown and spread information	Overall shape Accurate size and shape of each layer of excavation and refill Accurate location and shape of benching and waterproof layer Accurate location of settlement markers Extend of the temporary works and working space	Same as 300

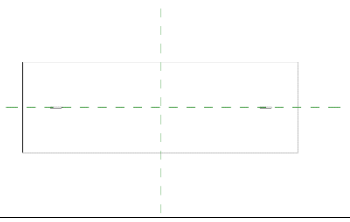
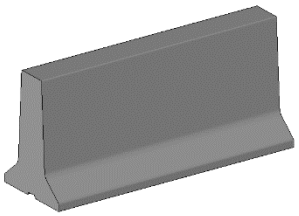
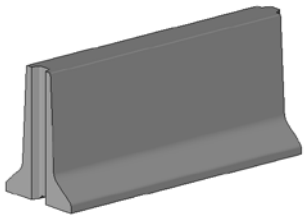
Flexible Barrier

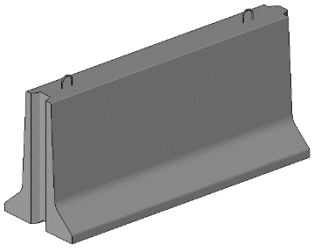
(Site Barrier Products) OmniClass: 23-11 25 00 01

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element	Approximate orientation, location and size of the elements using typical section or standard symbol	
200	Flexible Barrier modelling to include Generic element Approximate boundary Location of elements	Overall shape Approximate location and size of the pole and fencing systems	
300	Flexible Barrier modelling to include: Specific element Accurate location, size, shape and orientation of elements Required non-graphic information associated with model elements includes: Unique identifier of the ground anchor and its design load Material type	Overall shape Accurate size and orientation of the standing post and the base plate and post Accurate size and orientation of the foundation mass concrete and wedge foundation Accurate location and size of the flexible rockfall barrier Accurate location, size and shape of the adjoin cut/fill slope, stepped channel, u-channel, and soil nail (refer to LOD 300 of artificial slope	
400	Flexible Barrier modelling to include: Specific element Actual location, size, shape and orientation of elements	Overall shape Accurate location of the base plate and post Accurate location of the foundation mass concrete and wedge foundation Accurate location and size of the wire and anchor system	Same as 300

Rigid Barrier

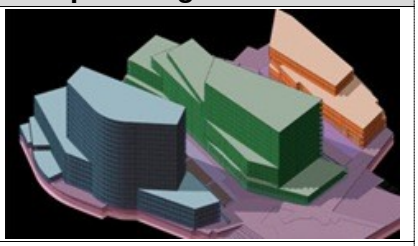
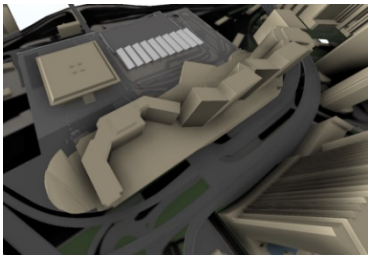
(Site Barrier Products) OmniClass: 23-11 25 00 02

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element	Approximate orientation, location and size of the elements using typical section or standard symbol	
200	Rigid Barrier modelling to include Generic element Approximate location and size of element	Overall shape approximate location and size barrier structure	
300	Rigid Barrier modelling to include: Specific element Accurate location, size, shape and orientation of elements Required non-graphic information associated with model elements includes: Unique identifier of the barrier Concrete grade	Overall shape Accurate location and orientation barrier structure Accurate location, size and shape of the cantilever slab, vertical slit, openings, concrete chamfer, concrete baffle Accurate size location and shape of the maintenance stairways, hand railing, trash grating Accurate location, size and shape of the adjoining cut/fill slope, stepped channel, u-channel, and soil nail (refer to LOD 300 of artificial slope)	

LOD-G	Requirements		Sample Image
400	Rigid Barrier modelling to include: Specific element Actual location, size, shape and orientation of elements and elements' components Required non-graphic information associated with model elements includes: Unique identifier of the barrier Concrete grade	Overall shape Accurate location of the barrier structure Location and size of reinforcements Extend of the temporary works and working space Locations of Construction Joints Locations of Movement Joints Locations of Box-out Openings	

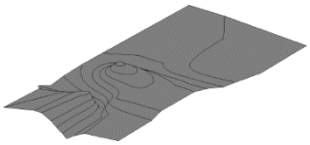
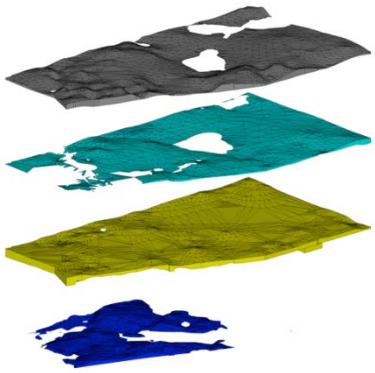
Massing models of adjacent or surrounding buildings

(Planning Modules) OmniClass: 14-31 11 11 01

LOD-G	Requirements		Sample Image
100	If existing buildings are not in BIM, 2D record drawings can be used to complement the project Information Model.	Approximate size, and proposed location shall be shown in 2D record drawing.	
200	Element modelling to include: Generic elements Approximate size, dimension and orientation of building Proposed location of building	Overall shape Surrounding buildings, bridges or other structures shall be modelled as mass elements to locate the project in relation to the local area.	
300	Same as LOD200		
400	Same as LOD200		

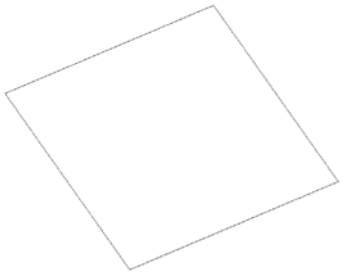
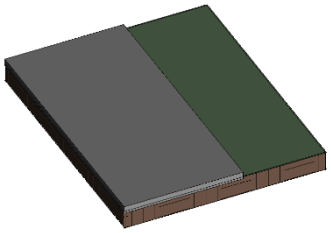
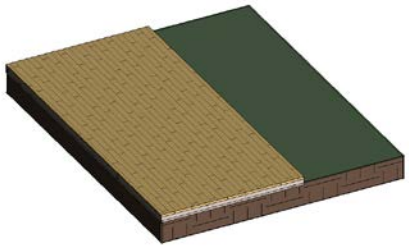
Geological model (soil, fill, rock)

(Legal and Geopolitical Space Designations) OmniClass: 14-37 00 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Element modelling to include: Generic element Approximate size, dimension of elements	Overall shape 3D model showing approximate layers of soil, fill, decomposed rock and hard rock.	
300	Element modelling to include: Specific element Actual size, dimension, location and orientation of the elements	Overall shape 3D model of layers of soil, fill, rock etc. based on bore hole logs from site investigations	
400	Same as 300		

Pavement (Carriageway, Footpath, Cycle Track)

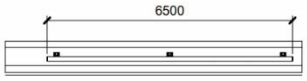
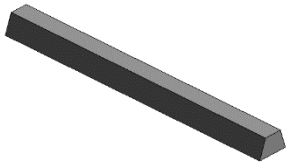
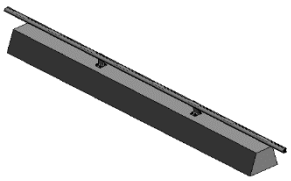
(Pavements) OmniClass: 23-11 21 00

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate alignment, width and spot levels of the paving surfaces	
200	Pavement modelling to include approximate 3D alignment, shape and width of pavement	Overall shape Approximate 3D alignment, shape and width of pavement	
300	Pavement modelling to include: Specific elements Actual size, dimensions & orientation of elements Actual super elevation and and longitudinal fall of elements' components Required non-graphic information associated with model elements includes: Polygon Feature Type * Surface Material Type * Paver Type * Headroom requirement (* to match Highways Department GIS requirement)	Overall shape Accurate size and geometry of every layer of paving components (frication course, wearing course, base-course, road-base, sub-base, etc.) that varies continuously along the road alignment Accurate super-elevation and longitudinal fall of the pavement components	

LOD-G	Requirements		Sample Image
400	Pavement modelling to include: Specific elements Actual size, dimensions & orientation of elements Actual super elevation and and longitudinal fall of elements' components Location of joints, opening and markings Required non-graphic information associated with model elements includes: Unique Identifier of construction bay	Overall shape Accurate size and geometry of every layer of paving components (frication course, wearing course, base-course, road-base, sub-base, etc.) that varies continuously along the road alignment Accurate super-elevation and longitudinal fall of the pavement components Locations of Construction Joints Locations of Movement Joints Locations of Box-out Openings Lane and Road markings	Same as 300

Profile Barrier, Parapet, Kerbs, Traffic island

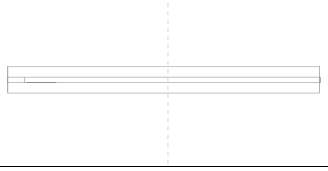
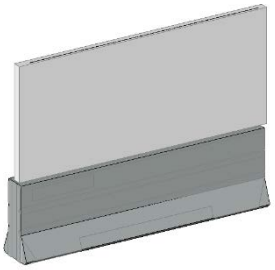
(Traffic Safety Barriers and Protections) OmniClass: 23-39 11 11

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate orientation, location and size of the elements using typical section or standard symbol	
200	Profile Barrier modelling to include Generic element Nominal size, shape, dimensions, orientation and location of the elements	Overall shape Approximate 3D orientation, shape and width	
300	Profile Barrier modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Required non-graphic information associated with model elements includes: Material type Concrete Grade	Overall shape Accurate size and geometry of every construction layer that varies continuously along the 3D road alignment Accurate cross-fall and longitudinal fall of the elements' components Accurate location and size of the foundation concrete	

LOD-G	Requirements		Sample Image
400	Profile Barrier modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Sufficient detail & accuracy for elements' components Location of joints and opening Required non-graphic information associated with model elements includes: Unique Identifier of construction bay	Overall shape Accurate size and geometry of every construction layer that varies continuously along the 3D road alignment Accurate cross-fall and longitudinal fall of the elements' components Accurate location and size of the foundation concrete Location and size of the Parapet rail and post Location and size of reinforcements Locations of Construction Joints Locations of Movement Joints Locations of Box-out Openings	Same as 300

Noise Barrier

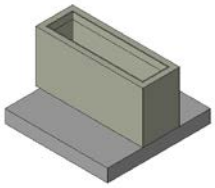
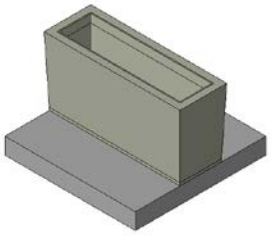
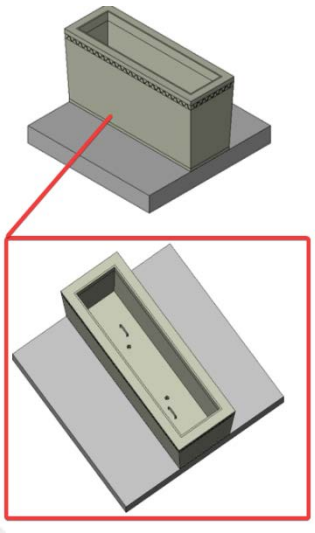
Noise Barriers (OmniClass: 23-39 11 11 13)

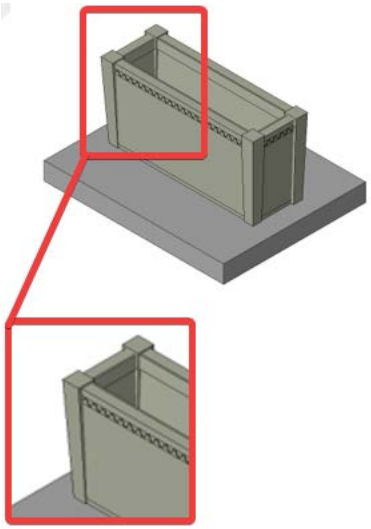
LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate orientation, location and size of the elements using typical section or standard symbol	
200	Noise Barrier modelling to include Generic element Nominal size, shape, dimensions, orientation and location of the elements	Overall shape Approximate location, size and shape of the poles and/or steel structure Approximate location, size and shape of the noise barrier panels	
300	Noise Barrier modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Required non-graphic information associated with model elements includes: Material type Concrete Grade Panel materials	Overall shape Accurate location, size, orientation and shape of the poles and/or steel structure Accurate size and shape of the noise barrier panels	

LOD-G	Requirements		Sample Image
400	Noise Barrier modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Sufficient detail & accuracy for elements' components Location of joints and opening Required non-graphic information associated with model elements includes: Material type Concrete Grade Panel materials	Overall shape Accurate location, size, orientation, and shape of the poles and/or steel structure Accurate size and shape of the noise barrier panels Size and shape of each noise barrier panels Locations of Construction Joints /Welding Locations of Movement Joints Location and size of the holding down bolt Location and size of the anchor system	

Planter

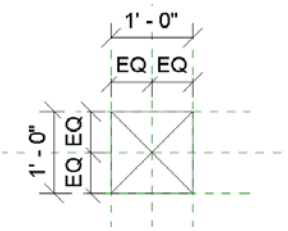
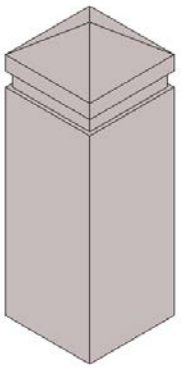
(Planters) OmniClass: 23-11 27 13 17

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate location and shape of the elements using typical section or standard symbol	
200	Planter modelling to include Generic element Nominal size, shape, dimensions, orientation and location of the elements	Overall shape Approximate location, shape and width of planter wall and footing	
300	Planter modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Sufficient detail & accuracy for elements' components Required non-graphic information associated with model elements includes: Material type Sub soil material Top soil material	Overall shape Accurate location, overall size and geometry of planter wall and footing Accurate cross-fall and longitudinal fall of the elements	

LOD-G	Requirements		Sample Image
400	Planter modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements Location of joints and opening Required non-graphic information associated with model elements includes: Material type Sub soil material Top soil material	Overall shape Accurate location, overall size and geometry of planter wall and footing Accurate cross-fall and longitudinal fall of the elements Locations of Construction Joints Locations of Movement Joints	

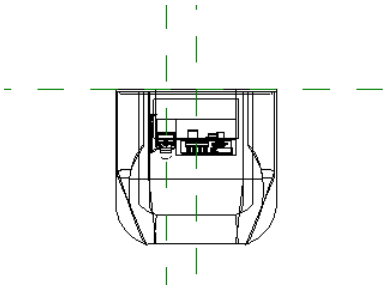
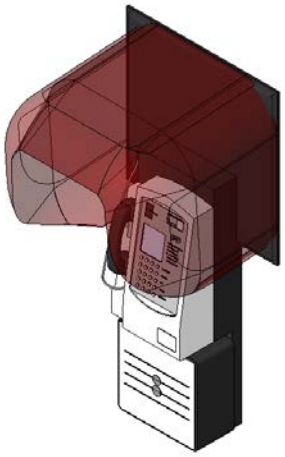
Bollard

Bollards (OmniClass: 23-11 29 35)

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate location, size and shape of the element using standard symbol	
200	Bollard modelling to include Generic element Nominal size, shape and dimensions of the elements	Overall shape Approximate location, size, shape and height of elements Required non-graphic information associated with model elements includes: Bollard Type Material Type Spacing and clearance requirements	

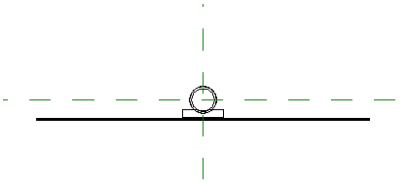
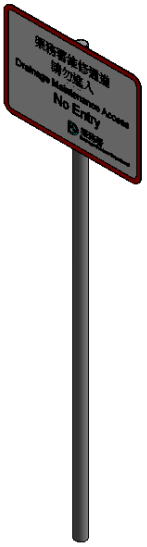
Phone Booth

(Telephone Booths) OmniClass: 23-19 15 21

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate location, size and shape of the element using standard symbol	
200	Phone Booth modelling to include Specific element Nominal size, shape and dimensions of the elements Required non-graphic information associated with model elements includes: Phone Booth Type Material Type Spacing and clearance requirements Unique identifier of Phone Booth	Overall shape Approximate location, size, shape and height of element	

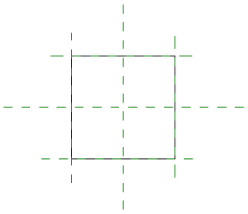
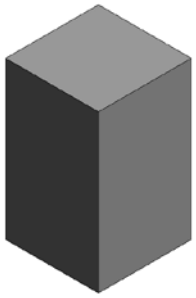
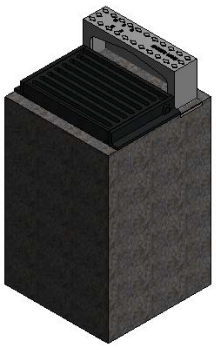
Signage

(Roadway Signage) OmniClass: 23-39 11 13

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate location, size and shape of the element using standard symbol	
200	Signage modelling to include Generic element Nominal size, shape and dimensions of the elements Required non-graphic information associated with model elements includes: Signage Type Unique identifier of Sign Plate Material Type Spacing and clearance requirements Unique identifier of Signage	Overall Shape Approximate location, size, shape and height.	

Gully

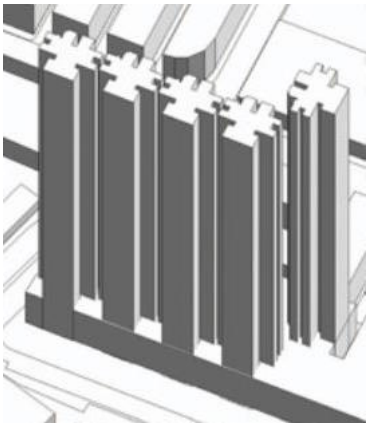
(Ground Anchorages) OmniClass: 23-11 00 00 01

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate location and shape of the elements using typical section or standard symbol	
200	Gully modelling to include Generic element Nominal size, shape, dimensions and location of the elements	Overall shape Approximate location, shape and width of elements.	
300	Gully modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Required non-graphic information associated with model elements includes: Gully Type Material Type Spacing and clearance requirements Unique identifier of Gully	Overall shape Accurate internal height of gully/gully former Accurate location and orientation of outlet pipe to main drain	
400	Gully modelling to include: Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Sufficient detail & accuracy for fabrication Required non-graphic information associated with model elements includes: Direction of Gully Grating Concrete Grade	Overall shape Accurate internal height of gully/gully former Accurate location and orientation of outlet pipe to main drain Location and size of gully grating Concrete surround Supplementary components required for fabrication and field installation	

Architectural Model

Building Massing Model

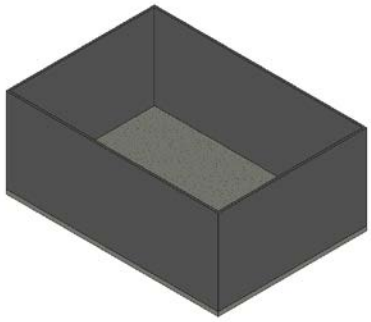
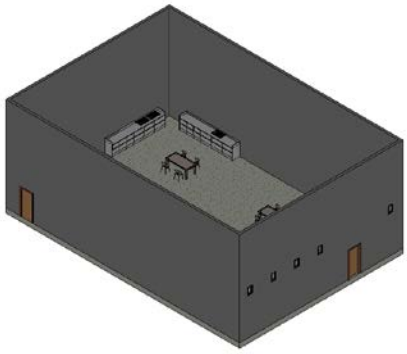
Planning Modules OmniClass: 14-31 11 11 02

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Overall shape Massing model with overall building volume, shape, location and orientation. Schematic wall elements.	
200	Same as LOD100		

Note: the conceptual massing model shall be converted into normal building elements of floors, walls, doors, window etc. at the scheme design stage.

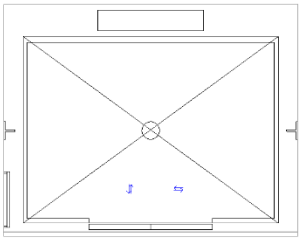
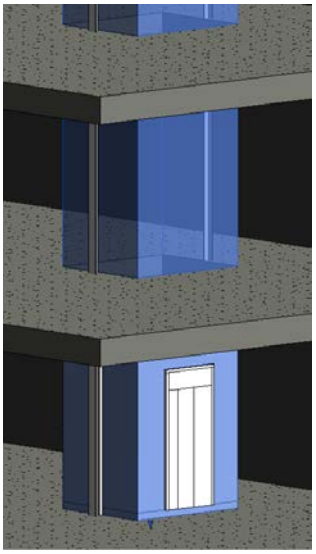
Rooms, spaces, corridors, plant & equipment rooms

(Room Units) OmniClass: 23-19 31 00

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Room or space functions or purposes may be indicated by symbol or text.	
200	Spaces shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Approximately size, function, location and orientation of space Each space shall have a unique ID and name based on the room function which can be used to locate the space.	
300	Spaces shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components	Overall shape Space height shall be modelled from FFL to soffit of exposed slab or suspended ceiling above.	
400	Same as 300		

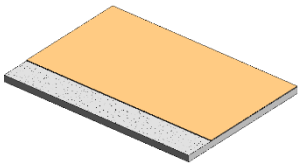
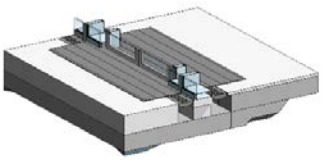
Elevator shaft spaces

(Lift Shaft Components) OmniClass: 23-19 29 11 11 11

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Lift shaft location may be indicated by symbol or text	
200	Lift shafts shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Approximately to show size, location and orientation of the elements Each shaft shall have a name based on the lift allocation which can be used to locate the space.	
300	Lift shafts shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components	Overall shape Lift motor room space requirements may be modelled to allow building services engineers coordinate with the electrical model.	Same as 200
400	Same as 300		

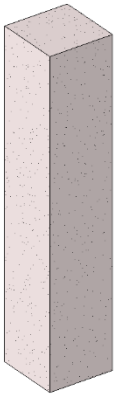
Basic floor slabs, ramps, roofs & associated architectural finishes

(Interior and Finish Products) OmniClass: 23-15 00 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Floor slabs shall be modelled as Generic element Nominal size, function, dimension, thickness and location of the elements	Overall shape Floor element with approximate dimensions and overall thickness including structural depth and finishes. Include approximate supporting framing members. The primary grids shall be defined.	
300	Floor slabs shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Details shall be based on the information by structural engineer	Overall shape Detail of floor slabs shall be modelled as per the structural engineers' information. Finishes materials shall be accurately modelled based on specific types (tiles, wood etc.) All structural floor elements shall be replaced by using a reference model from the structural engineer.	
400	Floor slabs shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Details are based on manufacturers information	Overall shape The floor finishes details may be updated with manufacturers information such as pattern layouts, expansion/control joints, dividing strips, edge details etc.	

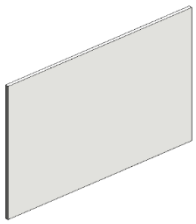
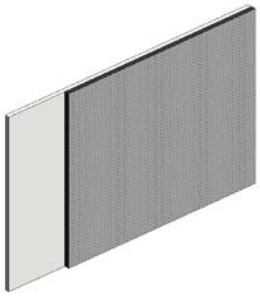
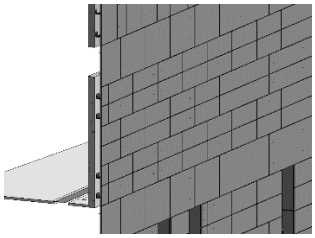
Basic structural columns & walls

(Columns) OmniClass: 23-13 35 11 13 11 01

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Structural column shall be modelled as Generic element Nominal size and dimension of the elements	Overall shape Include basic structural element with approximate dimensions. The primary grids shall be defined.	
300	Structural column shall be modelled as Specific elements Actual size, shape, dimension and material of the elements and elements' components Details are based on the information by structural engineer	Overall shape Structural elements shall be modelled as per the structural engineers' information.	Same as LOD 200
400	For construction stage, structural element in Architectural model shall be shifted to Structural model. For further details of structural elements, structural model shall be referred. For column finishes as architectural elements, refer to LOD-G 400 description of "Interior Wall and Ceiling Cladding".		

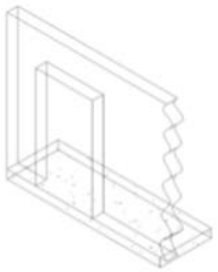
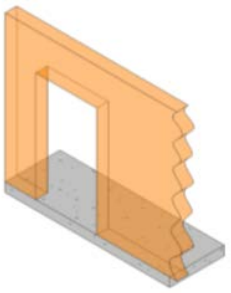
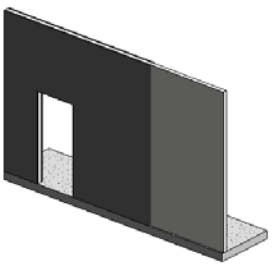
Exterior walls

(Exterior Wall Assemblies) OmniClass: 23-13 33 17 11

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Exterior Wall element shall be modelled as Generic element Nominal size, function, dimensions and thickness of the elements	Overall shape Approximate dimensions and overall thickness including structural width and finishes. The model may include approximate supporting framing members. The primary grids shall be defined.	
300	Exterior Wall shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material of the elements and elements' components Details shall be based on information by structural engineer	Overall shape Structural walls shall be modelled as per the structural engineers' information. Finishes materials shall be accurately modelled based on specific types (tiles, stone, plastered, painted etc.). Stone/GRC cladding may be modelled as mass elements of overall thickness	
400	Exterior Wall shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Wall opening shall be included. Details shall be based on manufacturers information	Overall shape Accurate wall finishes details including tiling, stone, cladding or screed only. The wall finishes details may be updated with manufacturers' information such as pattern layouts, expansion/control joints, dividing strips, edge details etc. Openings for mechanical vents, louvers or other builders' works requirements shall be included. For cladding systems, the fixing details, secondary structures may be modelled	

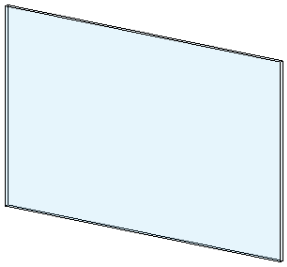
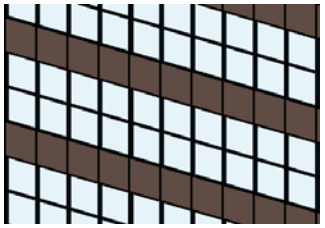
Interior walls / Partitions / Non-structural walls

(Interior Wall and Ceiling Cladding) OmniClass: 23-15 13 13

LOD-G	Requirements		Sample Image
100	N/A		
200	Internal walls shall be modelled as Generic element Nominal size, dimension and thickness of the elements	Overall shape Wall element with approximate dimensions	
300	Internal walls shall be modelled as Specific elements Actual size, shape, dimensions, thickness of the elements and elements' components	Overall shape Internal walls shall be modelled from floor slab to soffit of beam or slab above.	
400	Internal walls shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Wall opening shall be included. Details shall be based on manufacturers information	Overall shape Internal walls shall be modelled from floor slab to soffit of beam or slab above. Accurate wall finishes details including tiling, stone, cladding or screed only. The wall finishes details may be updated with manufacturers' information such as pattern layouts, expansion/control joints, dividing strips, edge details etc. Openings for building services builders' works requirements shall be included. If required by the BEP, studs and layers may be modelled for dry wall construction.	

Curtain walls, including shading devices

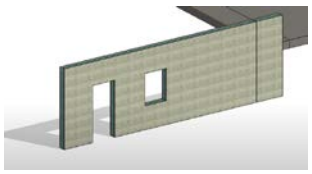
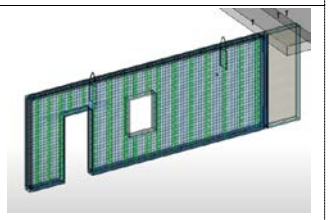
(Curtain Walls) OmniClass: 23-13 33 27 11

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Curtain walls shall be modelled as Generic element Nominal size, dimension and thickness of the elements	Overall shape Modelled as generic wall objects with approximate overall curtain wall thickness represented as a single assembly.	
300	Curtain walls shall be modelled as Specific elements Actual size, shape, dimensions, thickness of the elements and elements' components Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output.	Overall shape Modelled accurately as an assembly with a specific thickness that accounts for structure, spacing and location of mullions and transoms, insulation, air space and any interior or exterior skins and shading devices. Operable components defined (windows, louvers and doors) and included in the model. Penetrations are modelled to nominal dimensions for major openings such as doors, mechanical elements or structures.	

LOD-G	Requirements		Sample Image
400	Curtain walls shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Operable components shall be included. Details shall be based on manufacturers information Sufficient detail & accuracy for fabrication Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output.	Overall shape Modelled accurately as an assembly with a specific thickness that accounts for structure, spacing and location of mullions and transoms, insulation, air space and any interior or exterior skins and shading devices. Mullion and transom shapes and geometry defined. Façade brackets, embeds, fixings, cast-ins, secondary sub-frames shall be modelled in actual locations for coordination with structure. Operable components defined (windows, louvers and doors) and included in the model. All curtain wall elements are modelled to support fabrication and installation. Update the models with specific manufacturers' information including section or extrusion profiles, glazing sub-components, etc	

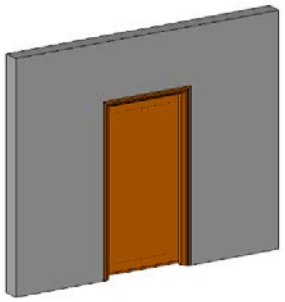
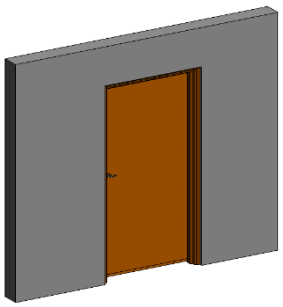
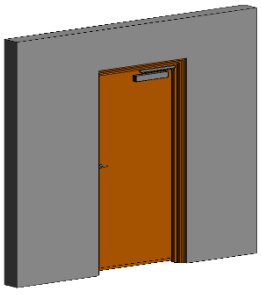
Precast Facades

(Precast Concrete Façade) OmniClass: 23-13 33 19

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Precast Facades shall be modelled as Generic element Nominal size, dimension and thickness of the elements	Overall shape Model facades with approximate dimensions.	
300	Precast Facades shall be modelled as Specific elements Actual size, shape, dimensions, thickness of the elements and elements' components Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output. Identify exterior and interior by type.	Overall shape Model facades accurately based on specific types. Material of concrete, grc, fibreglass,aluminium or other should be specified. Penetrations are modelled to nominal dimensions for major openings such as doors, windows, mechanical elements or structures.	
400	Precast Facades shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Ironmongery and other components shall be included or may be included as data for schedule output. Identify exterior and interior by type. Details shall be based on manufacturers information	Overall shape Model facades accurately based on specific types. Material of concrete, grc, fibreglass, aluminium or other should be specified. Penetrations are modelled to nominal dimensions for major openings such as doors, windows, mechanical elements or structures. Façade brackets, embeds, fixings, cast-ins, secondary sub-frames shall be modelled for coordination with structure. Update with specific manufacturers information.	

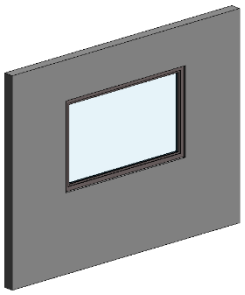
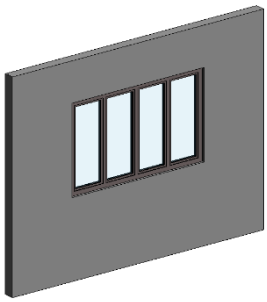
Doors

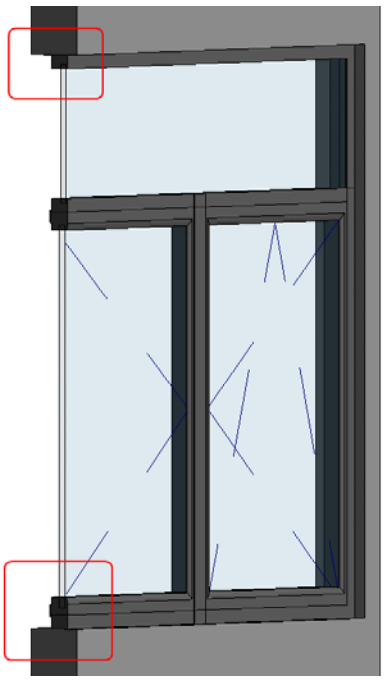
(Doors) OmniClass: 23-17 11 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Door shall be modelled as Generic element Nominal size, dimension and thickness of the elements	Overall shape Model doors with approximate dimensions in terms of location, size, count and type of elements .	
300	Door shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Each door shall have a unique ID based on the room or space which it is used to access. Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output. Identify exterior and interior by type and by function.	Overall shape Model doors accurately based on specific types. Accurate dimensions in terms of location, size, count and type of elements.	
400	Door shall be modelled as Specific elements Actual size, shape, dimensions, material and location of the elements and elements' components Details shall be based on manufacturers information	Overall shape Accurate dimensions in terms of location, size, count and type of elements. Model doors accurately based on specific types Update with specific manufacturers information.	

Windows

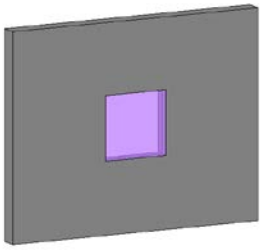
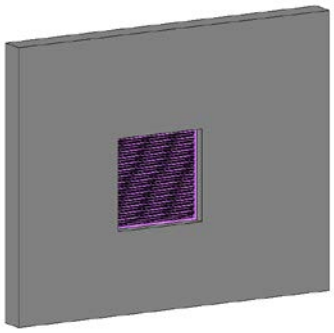
(Windows) OmniClass: 23-17 13 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Windows shall be modelled as Generic element Nominal size, dimension and thickness of the elements	Overall shape Model windows with approximate dimensions in terms of location, size, count and type.	
300	Windows shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output. Identify exterior and interior by type and by function. Functionality of the window (fixed, double/single hung, pivot, sliding) etc.	Overall shape Model windows accurately based on specific types, specified location and nominal size. The outer geometry of the window frame elements and glazing modelled to within 3mm precision. Each window shall have a unique ID based on the room or space which it is used to enclose.	

LOD-G	Requirements		Sample Image
400	Windows shall be modelled as Specific elements Actual size, shape, dimensions, material and location of the elements and elements' components Ironmongery and other components shall be included or may be included as data for schedule output. Identify exterior and interior by type and by function. Details shall be based on manufacturers information Sufficient detail & accuracy for fabrication Each window shall have a mark based on the room or space which it is used to enclose.	Overall shape Model windows accurately based on specific types, specified location and nominal size. The outer geometry of the window frame elements and glazing modelled to within 3mm precision. Brackets, embeds, fixings, cast-ins, secondary sub-frames shall be modelled for coordination with structure. Update with specific manufacturers information including frame profiles, glazing sub-components.	

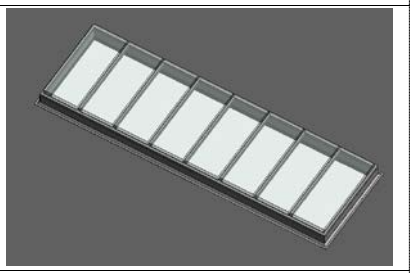
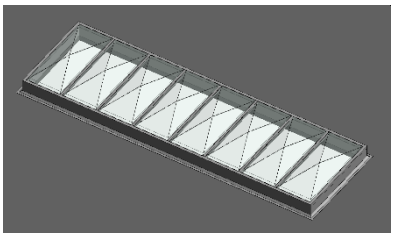
Louvers

(Exterior Louvers and Grilles) OmniClass: 23-17 21 11 15

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Louver shall be modelled as Generic element Nominal size, dimension and location of the elements	Overall shape Generic model element that is indicative of approximate area and location of intended louver or vent.	
300	Louver shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Performance level defined in non-graphic information associated with model elements (e.g. storm proof or not, free air).	Overall shape Louver assembly modelled by type, indicative of area and location of intended louver/vent and includes accurate frame (boundary dimensions) and blades. Opening for louver is cut from host wall.	
400	Louver shall be modelled as Specific elements Actual size, shape, dimensions, material and location of the elements and elements' components Details shall be based on manufacturers information Performance level defined in non-graphic information associated with model elements (e.g. storm proof or not, free air).	Overall shape Louver assembly modelled by type, indicative of area and location of intended louver/vent and includes accurate frame (boundary dimensions) and blades. Opening for louver is cut from host wall. Update with specific manufacturers information including frame profiles, blade profiles and sub-components.	Same as 300

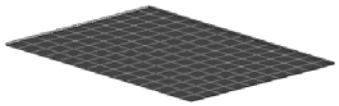
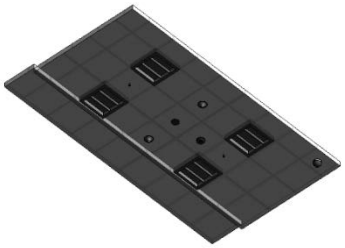
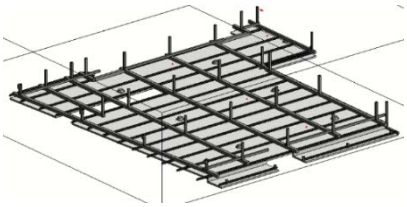
Skylights

(Skylights) OmniClass: 23-17 17 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Skylights shall be modelled as Generic element Nominal size, dimension and location of the elements	Overall shape Model skylights with approximate dimensions in terms of location, size, count and type.	
300	Skylights shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Each skylight shall have a unique ID based on the room or space which it is used to enclose. Functionality of the window (fixed, double/single hung, pivot, sliding) etc.	Model skylights accurately based on specific types, specified location and nominal size. The outer geometry of the frame elements and glazing modelled to within 3mm precision. Ironmongery (handles, locks, hinges etc.) may be included as data for schedule output. Identify exterior and interior by type and by function.	
400	Skylights shall be modelled as Specific elements Actual size, shape, dimensions, material and location of the elements and elements' components Ironmongery and other components shall be included or may be included as data for schedule output. Identify exterior and interior by type and by function. Details shall be based on manufacturers information Functionality of the window (fixed, double/single hung, pivot, sliding) etc	Model skylights accurately based on specific types, specified location and nominal size. The outer geometry of the frame elements and glazing modelled to within 3mm precision. Each skylight shall have a unique ID based on the room or space which it is used to enclose. Update with specific manufacturers information including frame profiles, glazing sub-components.	Same as 300

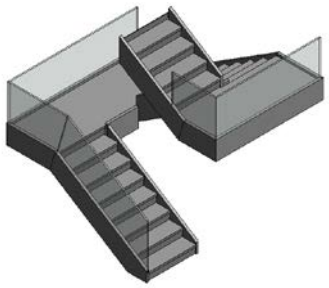
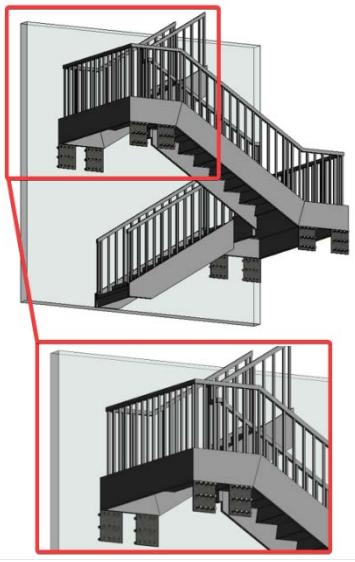
Ceilings

(Ceilings) OmniClass: 23-15 19 23

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Ceiling shall be modelled as Generic element Nominal size, dimension and location of the elements	Overall shape Model ceiling approximately to show overall scope and thickness or system depth of suspended ceiling.	
300	Skylights shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Penetrations shall be modelled	Overall shape Overall assembly modelled to specific system thickness including framing. Major penetrations are modelled. Location of expansion or control joints may be indicated, but not modelled.	
400	Windows shall be modelled as Specific elements Actual size, shape, dimensions, material and location of the elements and elements' components Penetrations and assembly components shall be modelled Details shall be based on manufacturers information	Overall shape Overall assembly modelled to specific system thickness including framing. Major penetrations are modelled. Location of expansion or control joints may be indicated, but not modelled. All assembly components are modelled including tees, hangers, support structure and ceiling tiles.	

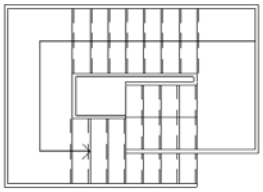
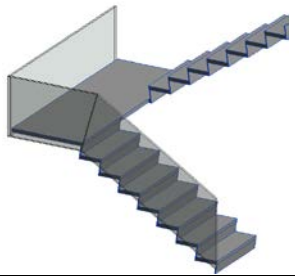
Stairs, Steps

(Stairs) OmniClass: 23-17 23 17

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Stair shall be modelled as Generic element Nominal size, dimension and location of the elements	Overall shape Generic model element with simple threads and risers with approximate plan (length & width) and vertical (levels, landings) dimensions.	
300	Stair shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Threads, risers, goings are modelled Specific object for stair shall be included.	Overall shape Threads, risers, goings are modelled accurately to indicate stringers and nosing. Create specific objects or components for staircases or steps with special shapes or geometry when the standard default stairs in the BIM authoring tool are not sufficient.	
400	Stair shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Threads, risers, goings are modelled Specific object for stair shall be included. Sufficient detail & accuracy for fabrication	Overall shape Threads, risers, goings are modelled accurately to indicate stringers and nosing. Create specific objects or components for staircases or steps with special shapes or geometry when the standard default stairs in the BIM authoring tool are not sufficient. All stair elements are modelled to support fabrication and installation.	

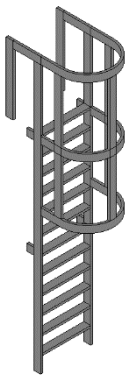
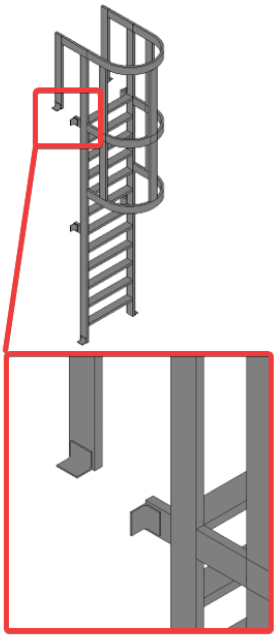
Railings & balustrades

(Guardrails) OmniClass: 23-17 25 11

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element or symbol	Approximate alignment and location of the element using standard symbol	
200	Railing and balustrades shall be modelled as Generic element Nominal size, dimension and location of the elements	Overall shapes Generic model elements without articulation of materials of structures	
300	Railing and balustrades shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Modelling assemblies shall be modelled	Overall shapes Model assemblies by type to include railings, posts and supports. Element modelling to include: Accurate horizontal alignment Accurate length and height of railings	
400	Railing and balustrades shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Modelling assemblies shall be modelled Sufficient detail & accuracy for fabrication Required non-graphic information associated with model elements includes: - Railing Type - Material Type - Spacing and clearance requirements	Model assemblies by type to include railings, posts and supports. Element modelling to include: Accurate horizontal alignment Accurate length and height of railings All elements are modelled to support fabrication and installation.	Same as 300

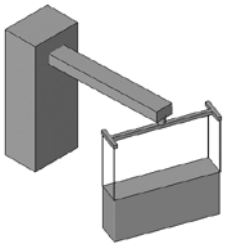
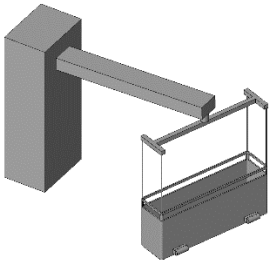
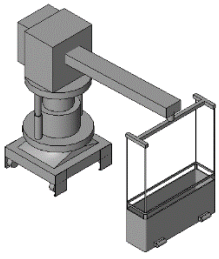
Access ladders and catwalks

(Ladders) OmniClass: 23-17 23 15

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Access ladders modelling to include Generic element Nominal size, shape, dimensions and material the elements	Overall shape Generic model elements without articulation of materials of structures	
300	Access ladders modelling to include Specific elements Actual size, shape, dimensions and location of the elements and elements' components Modelling assemblies shall be modelled	Overall shape Actual size, shape, dimensions, orientation and location of the elements and elements' components Model assemblies by type to include, steps railings, posts and supports.	
400	Access ladders modelling to include Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Sufficient detail & accuracy for fabrication	Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Secondary railing support elements are modelled including bracing or supports. All elements are modelled to support fabrication and installation.	

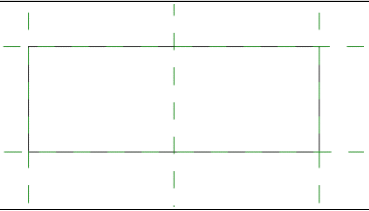
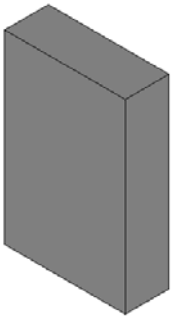
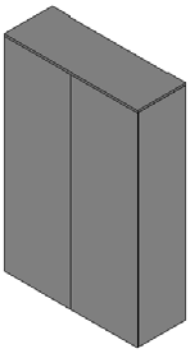
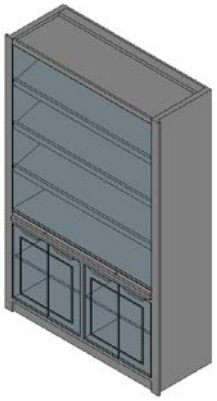
Building Maintenance Unit

(Building Maintenance Equipment) OmniClass: 23-27 71 00

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Building Maintenance Unit shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall shape Generic representation of the BMU envelope, including critical path of travel zones.	
300	Building Maintenance Unit shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Specific system elements modelled by type, including all path of travel/boom swing zones. Lay-down/pick-up zones are modelled. Major structural support elements modelled. Connections to mechanical or electrical services.	
400	Building Maintenance Unit shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details shall be based on manufacturers information Supplementary components shall be modelled	Overall shape Specific system elements modelled by type, including all path of travel/boom swing zones. Lay-down/pick-up zones are modelled. Major structural support elements modelled. Connections to mechanical or electrical services. Sizing adjusted to the actual manufacturer specifications. Model shall include guiding tracks/rails and service/access zones All connections, supports, framing, and other supplementary components shall be modelled.	

Furniture, fixtures & fittings, desks, workstations, casework, cabinets, appliances

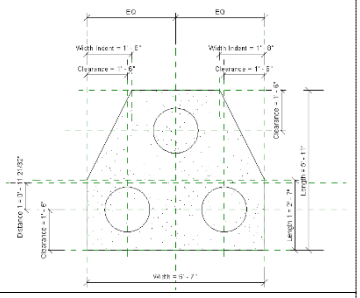
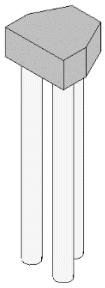
(Furnishings, Fixtures and Equipment Products) OmniClass: 23-21 00 00

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	A schematic model element or symbol that is not distinguishable by type or material.	
200	Furniture, fixtures & fittings shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall shape Generic model elements with approximate nominal size.	
300	Furniture, fixtures & fittings shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Modelled types with specific dimensions, locations, and quantities.	
400	Furniture, fixtures & fittings shall be modelled as Actual size, shape, dimensions, orientation and location of the elements and elements' components Applicable service or installation clearances and point shall be modelled. Sufficient detail & accuracy for fabrication	Overall shape Modelled types with specific dimensions, locations, and quantities. Include any applicable service or installation clearances. Include any applicable support or connection points. Supplementary components added to the model required for fabrication and field installation.	

Structure Model

Foundations (piles, pile caps, tie/ground beams & footings)

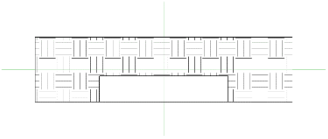
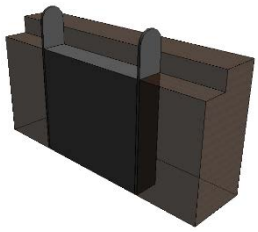
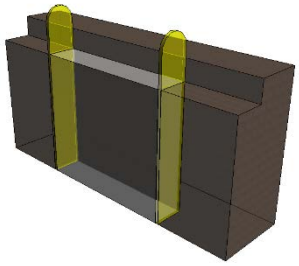
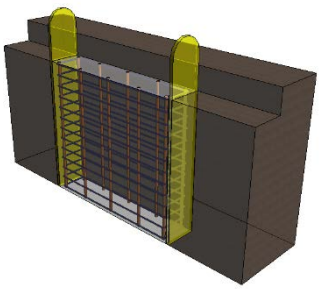
(Foundations) OmniClass: 23-13 29 00

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate location, size and shape of the element using typical section or standard symbol	
200	Foundations shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall shape Model the elements using approximate sizes and shapes of foundation components. The primary structural grids shall be defined.	
300	Foundations shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Elements shall be modelled to the design-specified size and shape of the foundation with accurate size, geometry and location of the foundation element Assumed bearing depth, foundation depth, pile cut-off depths shall be modelled. Concrete Grade Steel Ratio Unique identifier of individual Pile and Pile Cap.	

400	Foundations shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Elements modelling shall include: Location of sleeve penetrations Pour joints & Expansion joints All elements needed for cross-trade collaboration Exposed embeds or reinforcement Penetrations detailed and modelled	Overall shape Assumed bearing depth, foundation depth, pile cut-off depths shall be modelled. The model will be updated with as-constructed levels by the foundation contractor Rebar detailing Chamfer Finish Waterproofing	Same as 300

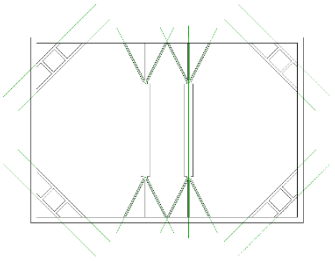
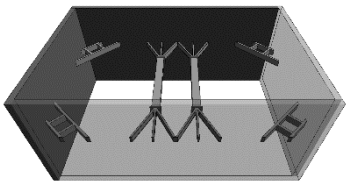
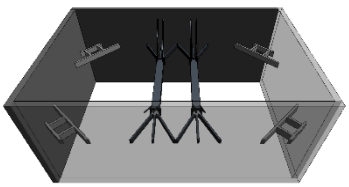
Diaphragm walls & retaining walls

(Retaining Walls) OmniClass: 23-11 17 13

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate orientation, location and size of the elements using typical section or standard symbol.	
200	Elements shall be modelled as Generic element Nominal size, shape, dimensions and material the elements.	Overall shape Model the elements using approximate sizes and shapes of foundation components including retaining walls and footings.	
300	Diaphragm walls and retaining walls shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Assumed bearing depth, foundation depth, pile cut-off depths shall be modelled. Elements shall be modelled to the design-specified size and shape and location of elements Element modelling to include: Accurate location, size, shape and orientation of the retaining wall and footing	
400	The model will be updated with as-constructed levels by the foundations contractor. Elements modelling shall include: Location of sleeve penetrations Pour joints & Expansion joints All elements needed for cross-trade collaboration Exposed embeds or reinforcement Penetrations detailed and modelled Rebar detailing Chamfer Finish Waterproofing	Detail of walls shall be modelled as per the structural engineers' information. The wall finishes details may be updated with manufacturers' information such as pattern layouts, expansion/control joints, dividing strips, edge details etc.	

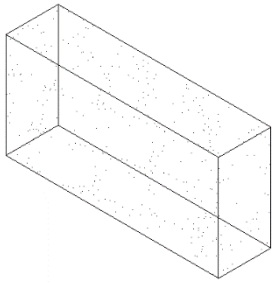
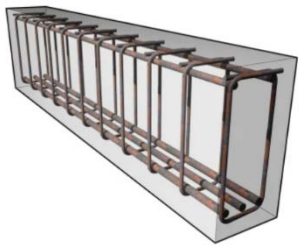
Excavation & lateral stability systems

(Ground Anchorages) OmniClass: 23-11 11 00

LOD-G	Requirements		Sample Image
100	N/A		
200	Elements shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall shape Model the elements using approximate sizes and shapes of foundation components.	
300	Elements shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Model the elements using approximate sizes and shapes of foundation components. Elements shall be modelled to the design-specified size and shape of the supports with accurate size, geometry and location of the elements	
400	Elements shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Model the elements using approximate sizes and shapes of foundation components. The model will be updated with as- constructed levels by the foundations' contractor .	

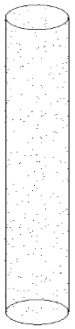
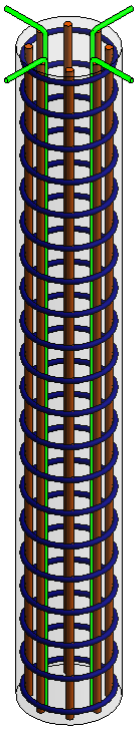
Beams

(Beams) OmniClass: 23-13 35 11 13 13

LOD-G	Requirements		Sample Image
100	N/A	N/A	
200	Beams shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete system and approximate geometry (e.g. depth) of structural elements	
300	Beams shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation, slope and elevation Concrete or steel grade defined as per spec (strength, aggregate size, etc.) All sloping surfaces included in model element	
400	Beams shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation, slope and elevation Concrete or steel grade defined as per spec (strength, aggregate size, etc.) All sloping surfaces included in model element Finishes, camber, chamfer, etc. For structural steel models, welds, coping, all plates, bolts, washers, nuts and assembly elements shall be modelled.	

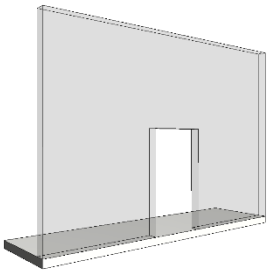
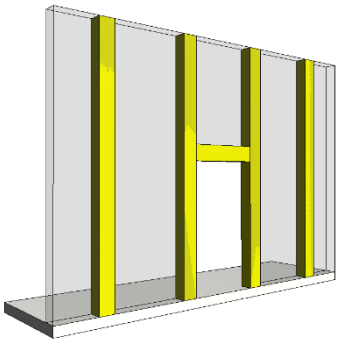
Columns, posts & hangars

(Columns) OmniClass: 23-13 35 11 13 11 02

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Columns, posts and hangars shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete system and approximate geometry (e.g. size) of structural elements	
300	Columns, posts and hangars shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Element modelling to include: Size and location of elements Concrete grade of elements	Overall shape Size and location of elements Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation; Concrete grade defined as per spec (strength, aggregate size, etc.)	
400	Columns, posts and hangars shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Element modelling to include: All reinforcement including post tension elements detailed and modelled Finishes, camber, chamfer, etc.	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation Concrete grade defined as per spec (strength, aggregate size, etc.) Reinforcement called out, modelled if required by the BEP, typically only in congested areas. Embeds and cast-ins Reinforcing Any permanent forming or shoring components	

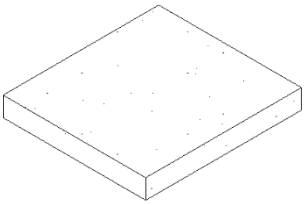
Walls

(Structural Walls) OmniClass: 23-13 35 21

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Walls shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete system and approximate geometry (e.g. size) of structural elements	
300	Walls shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Concrete grade of elements	Overall shape Specific sizes and locations of structural walls modelled per defined structural grid with correct orientation; Concrete grade defined as per spec (strength, aggregate size, etc.) Model the walls from structural floor level to soffit of structural slab or beams above.	Same as 200
400	Walls shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Concrete grade of elements	Overall shape The walls finishes details may be updated with manufacturers' information such as pattern layouts, expansion/control joints, dividing strips, edge details etc. Finishes, camber, chamfer, etc.	

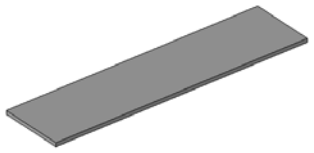
Slabs, floors, ramps, roofs

(Column Slab Frames) OmniClass: 23-13 35 11 13

LOD-G	Requirement		Sample Image
100	N/A		
200	Slabs, floors, ramps and roofs shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete system and approximate geometry (e.g. depth) of structural elements	
300	Slabs, floors, ramps and roofs shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components Concrete grade of elements	Overall shape Specific sizes and locations of main concrete structural members modelled per defined structural grid with correct orientation Concrete grade defined as per spec (strength, aggregate size, etc.) All sloping surfaces included in model element	
400	Slabs, floors, ramps, and roofs shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details are based on manufacturers information Supplementary components shall be modelled All reinforcement including post tension elements detailed and modelled Finishes, camber, chamfer, etc	Overall shape Penetrations for MEP Reinforcement called out, modelled if required by the BEP, typically only in congested areas Shear reinforcement Pour joints and sequences to help identify reinforcing lap splice locations, scheduling, etc. Expansion Joints Embeds and cast-ins Reinforcing Post-tension profiles and strand locations. Post-tension profile and strands modelled if required by the BEP Any permanent forming or shoring components	

Transfer Structure (transfer plate, truss)

(Rafters, Beams, and Joists) OmniClass: 23-13 35 19 01

LOD-G	Requirement		Sample Image
100	N/A		N/A
200	Transfer structure shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete system and approximate geometry (e.g. depth) of structural elements	
300	Transfer structure shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation Concrete or steel grade defined as per spec (strength, aggregate size, etc.) All sloping surfaces included in model element	
400	Transfer structure shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details shall be based on manufacturers information Supplementary components shall be modelled	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation Penetrations for MEP Reinforcement called out, modelled if required by the BEP , typically only in congested areas Shear reinforcement Embeds and cast-ins Any permanent forming or shoring components Reinforcing post-tension profiles and strand locations. Post-tension profile and strands modelled if required by the BEP All reinforcement including post tension elements detailed and modelled Finishes, camber, chamfer, etc	Same as 300

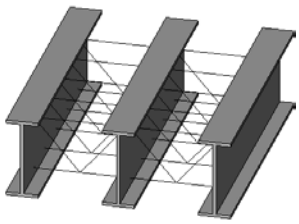
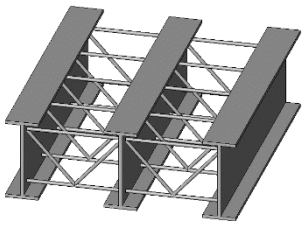
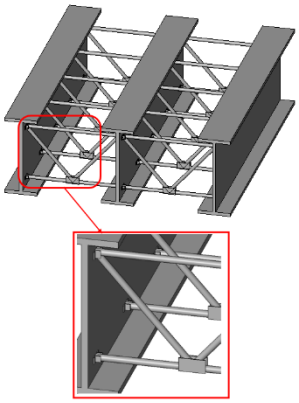
Stairs (steps, risers, threads, landings)

(Stairs) OmniClass: 23-17 23 17

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Stairs shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural concrete or steel system and approximate geometry (e.g. depth) of structural elements	
300	Stairs shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components	Overall shape Specific sizes and locations of main structural members modelled per defined structural grid with correct orientation Concrete or steel grade defined as per spec (strength, aggregate size, etc.)	Same as 200
400	Stairs shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details are based on manufacturers information Supplementary components shall be modelled	Overall shape Element modelling to include: All reinforcement including post tension elements detailed and modelled Finishes, camber, chamfer, etc Penetrations for MEP Reinforcement called out, modelled if required by the BEP, typically only in congested areas Pour joints and sequences to help identify reinforcing lap splice locations, scheduling, etc. Expansion Joints Embeds and cast-ins Any permanent forming or shoring components Reinforcing post-tension profiles and strand locations. Post-tension profile and strands modelled if required by the BEP	

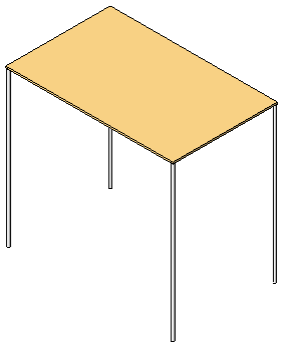
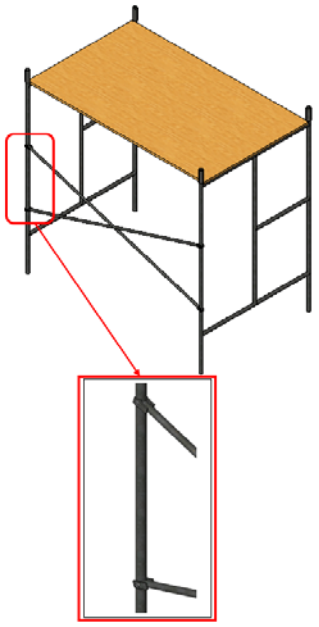
Bracing

(Booms Braces) OmniClass: 23-13 35 15 11

LOD-G	Requirements		Sample Image
100	N/A		
200	Bracing shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of structural bracing system and approximate geometry (e.g. size) of structural elements	
300	Bracing shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Required non-graphic information associated with model elements includes: Structural steel materials	Overall shape Specific sizes of main structural braces modelled per defined structural grid	
400	Bracing shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details are based on manufacturers information Required non-graphic information associated with model elements includes: Structural steel materials Supplementary components shall be modelled	Overall shape Specific sizes of main structural braces modelled per defined structural grid Bracing modelling shall be included: Welds Bolts, washers, nuts, etc. All assembly elements	

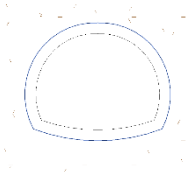
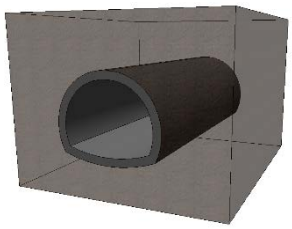
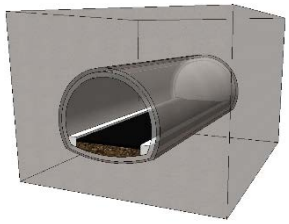
Temporary works, temporary structures, platforms

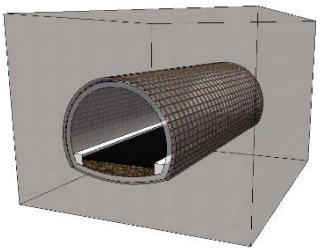
Scaffolding (OmniClass: 23-23 25 00)

LOD-G	Requirements		Sample Image
100	N/A		N/A
200	Temporary works, temporary structures and platforms shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include the type of temporary works system and approximate geometry (e.g. size) of structural elements	
300	Temporary works, temporary structures and platforms shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components	Overall shape Specific sizes of main structural elements modelled per defined structural grid	
400	Temporary works, temporary structures and platforms shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Details shall be based on manufacturers information Supplementary components shall be modelled	Overall shape Specific sizes of main structural elements modelled per defined structural grid Element modelling to include: Welds Bolts, washers, nuts, etc. All assembly elements	

Tunnel Structure (Tunnel Box, Subway, Utilities Tunnel)

Tunnels and Bridges (OmniClass: 23-39 13 00)

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location, size and assumed elevation of the element using typical section or standard symbol	
200	Tunnel Structure shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shape Element modelling to include approximate 3D alignment, location, size and shape	
300	Tunnel shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Required non-graphic information associated with model elements includes: - Concrete Grade	Overall shape Accurate location, overall size and geometry of element (roof and base slab, lining, ventilation duct, etc.) that varies continuously along the alignment Accurate cross-fall and longitudinal fall of the element component	

400	Tunnel shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Location of elements shall be modelled. Required non-graphic information associated with model elements includes: Unique Identifier of construction bay	Overall shape Accurate location, overall size and geometry of element (roof and base slab, lining, ventilation duct, etc.) that varies continuously along the alignment Accurate cross-fall and longitudinal fall of the element component Location and size of the panel walls Location and size of the waterproof membrane Locations of Construction Joints Locations of Box-out Openings Location and size of reinforcements Supplementary components required for fabrication and field installation	

Mechanical, Electrical and Plumbing Model

For MEP model elements, refer to CIC BIM Standards for Mechanical Electrical and Plumbing (MEP).

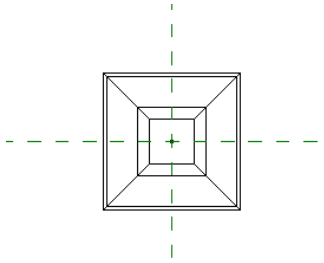
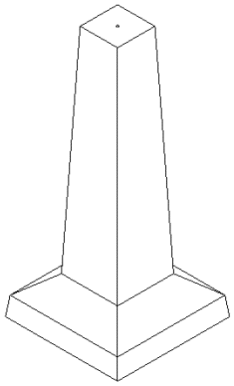
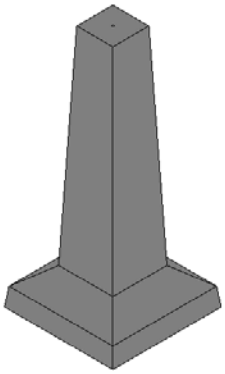
Underground Utilities Model

For UU model elements, refer to CIC BIM Standards for Underground Utilities (UU).

Bridges

Bridge Column/Pier

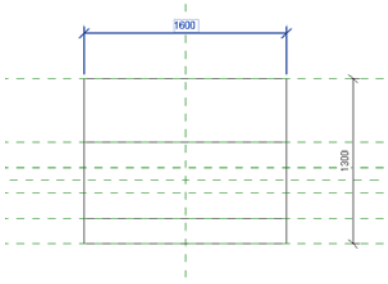
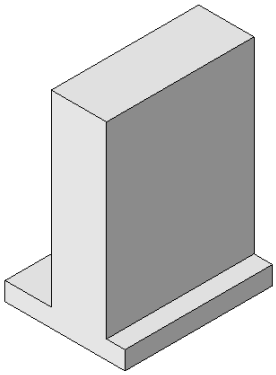
(Bridges) Omni Class: 23-39 13 13

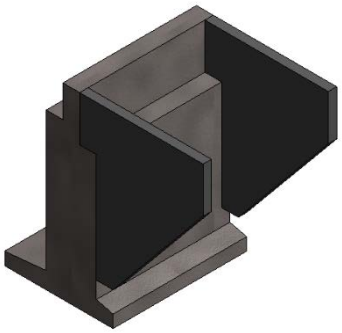
LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate location, size and shape of the element using typical section or standard symbol	
200	Bridge Column shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall Shape Element modelling to include approximate 3D location, size and shape	
300	Bridge Column shall be modelled as Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall Shape Specific sizes and locations of piers modelled per defined grid with correct orientation. Concrete grade defined as per spec (strength, aggregate size, etc.) Accurate size and location of soffit	

LOD-G	Requirements		Sample Image
400	Bridge Column modelling to include: Specific elements Actual size, shape, dimensions and location of the elements and elements' components Sufficient detail & accuracy for location of joints and elements' components	Overall Shape Specific sizes and locations of piers modelled per defined grid with correct orientation. Concrete grade defined as per spec (strength, aggregate size, etc.) Accurate size and location of soffit All reinforcement including post tension elements detailed and modelled Finishes, camber, chamfer, etc. Location and size of Bearings component Location and size of reinforcements Locations of Construction Joints	Same as 300

Bridge Abutment

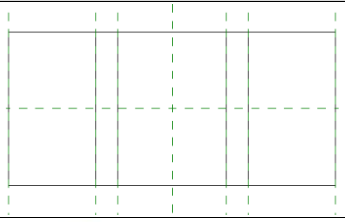
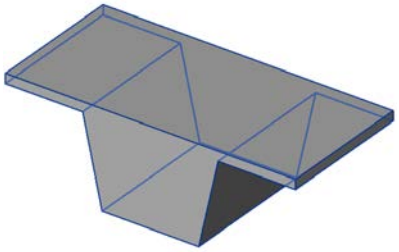
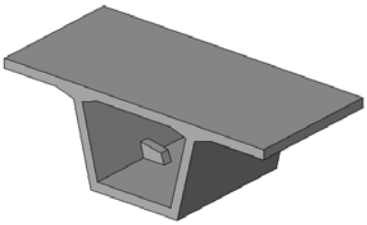
(Bridges) Omni Class: 23-39 13 13 01

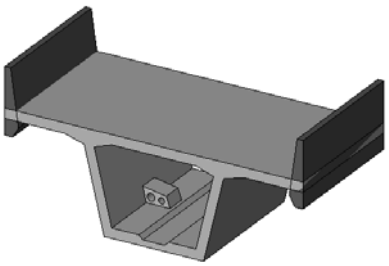
LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate location and size of the element using typical section or standard symbol	
200	Bridge Abutment shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall Shape Element modelling to include approximate location, size and shape of the abutment	
300	Bridge Abutment modelling to include: Specific elements Actual size, shape, dimensions and location of the elements and elements' components	Overall Shape Accurate location, size and shape of the abutment, wing-walls, and back-wall Accurate location and shape of the compacted and granular filled	

LOD-G	Requirements		Sample Image
400	Bridge Abutment modelling to include: Specific elements Actual size, shape, dimensions and location of the elements and elements' components Supplementary components required for fabrication and field installation Concrete Grade Compacted filled and granular fill material Unique identifier of the abutment	Overall Shape Accurate location, size and shape of the abutment, wing-walls, and back-wall Accurate location and shape of the compacted and granular filled Locations of Construction Joints Locations of Movement Joints Location and size of reinforcements Location and size of bearings components Sufficient graphical details for fabrication and field installation	

Precast Bridge Segment

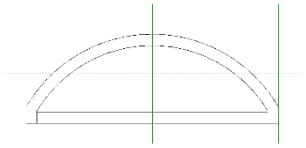
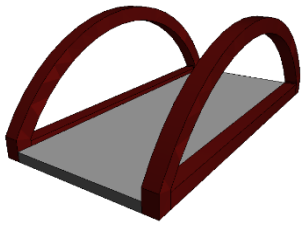
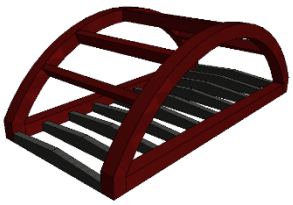
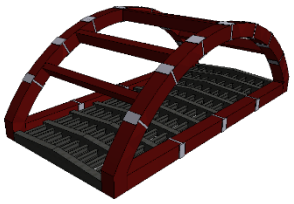
(Bridges) Omni Class: 23-39 13 13 02

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location and size of the element using typical section or standard symbol	
200	Precast Bridge shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall Shape Element modelling to include approximate alignment, location, size and shape	
300	Precast Bridge modelling to include: Specific elements Actual size, shape, dimensions and location of the elements, elements' components and surfacing materials.	Overall Shape Accurate location, overall size and geometry (top slab, bottom slab, parapet, profile barrier, etc.) of element that varies continuously along the 3D setting out alignment Accurate size and location of the surfacing materials Accurate cross-fall and longitudinal fall of the element components Required non-graphic information associated with model elements includes: Concrete Grade Unique identifier of the bridge segment Unique identifier of the Segment Type	

LOD-G	Requirements		Sample Image
400	Precast Bridge Segment modelling to include: Specific elements Actual size, shape, dimensions and location of the elements, elements' components and surfacing materials. Sufficient detail & accuracy for location of the joints, opening, blister and elements' components Supplementary components required for fabrication and field installation	Overall Shape Accurate location, overall size and geometry (top slab, bottom slab, parapet, profile barrier, etc.) of element that varies continuously along the 3D setting out alignment Accurate cross-fall and longitudinal fall of the element components Locations of Construction Joints Locations of Expansion Joints Locations of Box-out Openings, Gully, catch pits and downpipes, Recess and drainage pipes Location and size of reinforcements Control points for the segment launching Size and location of the openings, blister for pre-stress tendon Sufficient graphical details for fabrication and field installation	

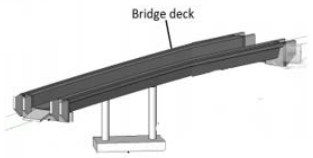
Steel bridge segment

(Bridges) Omni Class: 23-39 13 13 03

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location and size of the structural element or using standard symbol	
200	Steel bridge segment shall be modelled as Generic element Nominal size, shape, dimensions and material the elements	Overall Shape Element modelling to include approximate alignment, location and geometry of structural elements	
300	Steel bridge segment modelling to include: Specific elements Actual size, shape, dimensions and location of the elements, elements' components and surfacing materials.	Overall Shape, Accurate overall size and geometry of structural elements along the 3D alignment Accurate cross-fall and longitudinal fall of the element components	
400	Steel bridge segment modelling to include: Specific elements Actual size, shape, dimensions and location of the elements, elements' components and surfacing materials. Actual fall of elements' components Sufficient detail & accuracy for location of the joints, opening and elements' components Supplementary components required for fabrication and field installation	Overall Shape Accurate overall size and geometry of structural elements along the 3D alignment Accurate cross-fall and longitudinal fall of the element components Locations of construction joints, expansion joints, box-out openings, gully, catch pits and downpipes, recess and drainage pipes Location and size of stiffeners, control points for the segment erection Sufficient graphical details for fabrication and field installation	

Bridge Deck

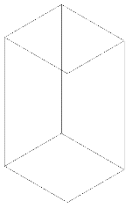
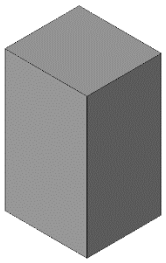
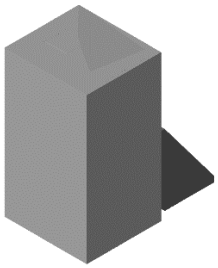
(Marine Construction Waterways and Seaways) OmniClass: 23-39 21 00 01

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location and size of the element using typical section or standard symbol	
200	Refer to pavement tables in Site Model		Same as LOD100

Marine Works

Seawall

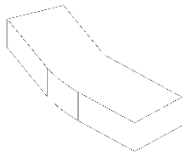
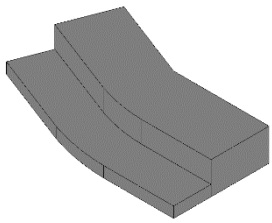
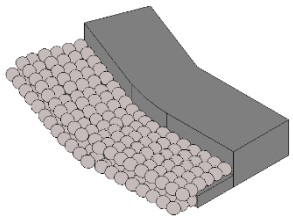
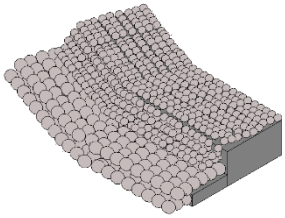
(Seawall) OmniClass: 23-39 21 15 13

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location, size and shape of the elements using typical section or standard symbol	
200	Seawall shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shapes Element modelling to include approximate 3D alignment, size and shape	
300	Seawall shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Material type Concrete Grade	Overall shapes, Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate location, size and shape of individual seawall block Accurate gradient of filled sloping surface Accurate gradient of seawall block placement	

LOD-G	Requirements		Sample Image
400	Seawall column shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Details are based on manufacturers information Element modelling to include: Accurate overall size, location, surface gradient, geometry, and shape of elements Sufficient detail & accuracy for location of the joints and elements' components Material type Concrete Grade Unique Identifier of construction bay	Overall shapes, Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate location, size and shape of individual seawall block Accurate gradient of filled sloping surface Accurate gradient of seawall block placement Locations of Construction Joints Locations of Movement Joints Location and size of reinforcements	

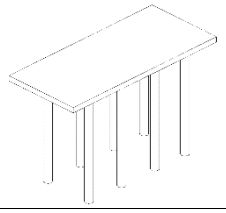
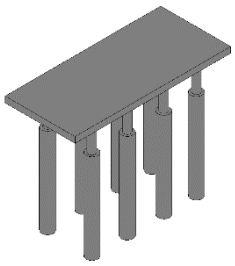
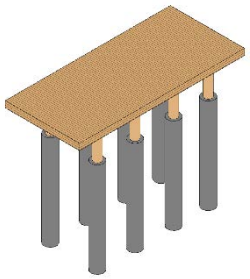
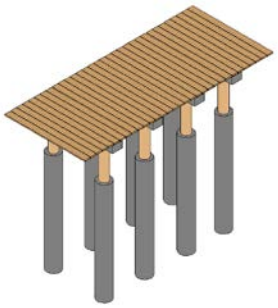
Breakwater

(Moles and Breakwater) OmniClass: 23-39 21 15 15

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location and shape of the elements using typical section or standard symbol	
200	Breakwater shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shapes Element modelling to include approximate 3D alignment, shape and width	
300	Breakwater shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components Element modelling to include: Accurate overall size, location, surface gradient, geometry, and shape of elements, material type, concrete grade	Overall shapes Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate gradient of filled sloping surface and berm	
400	Breakwater column shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Details are based on manufacturers information - Material type - Concrete Grade - Unique Identifier of construction bay	Overall shapes Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate gradient of filled sloping surface and berm Locations of Construction Joints Locations of Movement Joints Location and size of reinforcements	

Pier/Jetty

(Jetties) OmniClass: 23-39 21 11 19

LOD-G	Requirements		Sample Image
100	Conceptual, schematic element.	Approximate alignment, location and shape of the elements using typical section or standard symbol	
200	Pier/Jetty shall be modelled as Generic element Nominal size, function, dimension, orientation and location of the elements	Overall shapes Element modelling to include approximate alignment, shape and width	
300	Pier/Jetty shall be modelled as Specific elements Actual size, shape, dimensions, orientation and location of the elements and elements' components, Material type, Concrete Grade	Overall shapes Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate cross-fall and longitudinal fall of the elements components	
400	Pier/Jetty column shall be modelled as Specific elements Actual size, shape, dimensions, thickness and material and location of the elements and elements' components Sufficient detail & accuracy for location of joints and elements' components Material type Concrete Grade Unique Identifier of construction bay	Overall shapes Accurate overall size and geometry of every layer of elements that varies continuously along the 3D alignment Accurate cross-fall and longitudinal fall of the elements components Locations of Construction Joints Locations of Movement Joints Location and size of reinforcements	

4.3 LOD–I Requirements

This section describes the LOD-I required for an Information Model, it is well noted that project Appointing Parties / Clients may have their own requirement for LOD-I. This section sets out a software-neutral approach for determining LOD-I, using samples instead of attempting to giving an exhaustive list of requirements.

The BIM standards developed by HKSAR Works Departments should be referred to for further details. These and other relevant publications are given in the CIC BIM Portal https://www.bim.cic.hk/en/resources/publications for relevant publications.

The following table lists the attributes commonly attached to individual model elements / objects. (where R means “Required”.)

Type	Description	Example of Attributes	LOD-Information				
			100	200	300	400	500
General Properties	General information of the object may include identification of its category / type, name and locations, etc.	Category / Type	R	R	R	R	R
		Name	R	R	R	R	R
		Locations		R	R	R	R
Design Properties	Design information varies among different types of BIM objects.	Material (for architectural and structural elements)		R	R	R	R
		Concrete Grade (for structural elements)		R	R	R	R
		Cooling Capacity (for Chiller)		R	R	R	R
		Rated power input (for MEP equipment)		R	R	R	R
		Ironmongery Set (for door)			R	R	R
Classification Properties	Classification title and code to be adopted	Classification title			R	R	R
		Classification No./ System Code			R	R	R
Manufacturer’s Equipment Properties	Manufacturer’s equipment information and parameters of the objects. In general, they are essential during construction stage but not necessarily required during design stage.	Brand Name				R	R
		Manufacturer Name				R	R
		Model Number of element / equipment				R	R
Condition Properties	Installation information	Commission Date				R	R
		Installation Date				R	R

Type	Description	Example of Attributes	LOD-Information				
			100	200	300	400	500
	including month/year, latest testing / commissioning month/year, life expectancy	Life expectancy				R	R
Verification Properties	Field-verification method used for verifying the as-built element	Laser Scanning (Yes/No)					R

5 Recommended LOD

This section recommends LOD-G and LOD-I to be used at different stages of a project. The LOD-G and LOD-I defined should fit the purpose and care should be taken to avoid over specification. Users can adjust or define a higher LOD-G / LOD-I for required model elements to suit their project needs. Users should be aware that creating model elements with higher LOD-G or LOD-I than the recommended level will require more effort and time. Appropriate LOIN that fits the purpose and not over-specified are the most effective.

The LOIN described in this section is a combination of LOD-G and LOD-I, the final decision on LOD requirements will depend on the availability of relevant information and should be confirmed by the project Appointing Party / Client.

An example of recommended LOD for Architectural model, structural model, site model, bridge model and marine works model elements are given on the following pages. The following points should be noted:

a) The same principle and approach should be applied to set out the LOD for other elements which are not included or listed.

b) The appropriate Unit of Measurement (UOM) for each model element / object depends on the project specification / requirement to enable correct QTO from the Information Model, and should be decided by project Appointing Party / Client.

c) Field verification methods used for the project should be defined by the project Appointing Party / Client, e.g.:

Method	Description
A	Field verified by visual inspection
B	Field verified by a measured survey

d) The tolerance of the field verification results should be defined / confirmed by the project Appointing Party / Client.

Example LOD Responsibility Matrix

Site Model (Topography, Slopes, Roadworks, Landscape, Street Furniture)

Model Element List	Required	UOM	Classification	Concept, Feasibility, Planning			Preliminary, Scheme			Detailed Design			Submission to approval authority			Tender			Construction			As-Built			
				AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	V
Topography (Existing Site and surrounding land use)	Y/N	m^2	14-34 11 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Topography (Site Formation)	Y/N	m^2	14-34 11 02	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Natural Slope	Y/N	m^2	14-34 11 99 03	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Artificial Slope	Y/N	m^2	14-34 11 99 03	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Flexible Barrier	Y/N	m^2	23-11 25 00 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Rigid Barrier	Y/N	m^2	23-11 25 00 02	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Massing model of adjacent areas or surrounding buildings	Y/N	-	14-31 11 11 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Geological model (soil, fill, rock)	Y/N	m^3	14-37 00 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Pavement (Carriageway, Footpath, Cycle Track)	Y/N	m^2	23-11 21 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Profile Barrier, Parapet, Kerbs, Traffic island	Y/N	m^2	23-39 11 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Noise Barrier	Y/N	m^2	23-39 11 11 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Planter	Y/N	No.	23-11 27 13 17	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Bollard	Y/N	No.	23-11 29 35	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Phone Booth	Y/N	No.	23-19 15 21	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Signage	Y/N	No.	23-39 11 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A
Gully	Y/N	No.	23-11 00 00 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	A

Architectural Model

Model Element List	Required	UOM	Classification	Concept, Feasibility, Planning			Preliminary, Scheme			Detailed Design			Submission to approval authority			Tender			Construction			As-Built			
				AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	V
Building Massing Model	Y/N	m^2	14-31 11 11 02	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Room space, corridor, plant & equipment room	Y/N	m^2	23-19 31 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Elevator shaft space	Y/N	-	23-19 29 11 11 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Floor, slab, ramp, roof	Y/N	m^2	23-15 00 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Basic structural columns and walls	Y/N	-	23-13 35 11 13 11 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Exterior wall	Y/N	m^2	23-13 33 17 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Interior wall / Partition / Non-structural wall	Y/N	m^2	23-15 13 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Curtain wall, including shading devices	Y/N	m^2	23-13 33 27 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Precast Facade	Y/N	m^2	23-13 33 19	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Door	Y/N	No.	23-17 11 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Window	Y/N	No.	23-17 13 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Louver	Y/N	No.	23-17 21 11 15	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Skylight	Y/N	No.	23-17 17 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Ceiling	Y/N	m^2	23-15 19 23	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Stairs, Steps	Y/N	m^2	23-17 23 17	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Railing, balustrade, handrail	Y/N	No.	23-17 25 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Access ladder and catwalk	Y/N	No.	23-17 23 15	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Building Maintenance Unit	Y/N	No.	23-27 71 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Furniture, fixtures & fittings including desks, workstations, casework, cabinets, appliances, loose equipment	Y/N	No.	23-21 00 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	

Structure Model

Model Element List	Required	UOM	Classification	Concept, Feasibility,			Preliminary, Scheme			Detailed Design			Submission to approval authority			Tender			Construction			As-Built			
				AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	V
Foundations (piles, pile caps, tie/ground beams & footings)	Y/N	m^3	23-13 29 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Diaphragm wall, retaining wall	Y/N	m^3	23-11 17 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	B
Excavation & lateral stability system	Y/N	m^3	23-11 11 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Beam	Y/N	m^3	23-13 35 11 13 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Column, post, hangar	Y/N	m^3	23-13 35 11 13 11 02	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Wall	Y/N	m^2	23-13 35 21	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Slab, floor, ramp, roof	Y/N	m^2	23-13 35 11 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Transfer Structure (transfer plate, truss)	Y/N	m^2	23-13 35 19 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Stairs (steps, risers, threads, landings)	Y/N	m^2	23-17 23 17	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Bracing	Y/N	Ton	23-13 35 15 11	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Temporary works, temporary structures, platforms	Y/N	Ton	23-23 25 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Tunnel Structure (Tunnel Box, Subway, Utilities Tunnel)	Y/N	m^3	23-39 13 00	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	

Mechanical, Electrical and Plumbing Model

For MEP model elements, refer to CIC BIM Standards for Mechanical Electrical and Plumbing (MEP) Engineering.

Underground Utilities Model

For UU model elements, refer to CIC BIM Standards for Underground Utilities (UU).

Bridges

Model Element List	Required	UOM	Classification	Concept, Feasibility, Planning			Preliminary, Scheme			Detailed Design			Submission to approval authority			Tender			Construction			As-Built			
				AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	V
Bridge column/pier	Y/N	m^3	23-39 13 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Bridge abutment	Y/N	m^3	23-39 13 13 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	B
Precast bridge segment	Y/N	m^3	23-39 13 13 02	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Steel bridge segment	Y/N	m^3	23-39 13 13 03	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Bridge deck	Y/N	m^3	23-39 21 00 01	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	

Marine Works

Model Element List	Required	UOM	Classification	Concept, Feasibility,			Preliminary, Scheme			Detailed Design			Submission to approval authority			Tender			Construction			As-Built			
				AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	AUT	G	I	V
Seawall	Y/N	m^3	23-39 21 15 13	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	
Breakwater	Y/N	m^3	23-39 21 15 15	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	B
Pier, Jetty	Y/N	m^3	23-39 21 11 19	ABC	100	100	ABC	200	200	ABC	200	200	ABC	300	300	ABC	300	300	DEF	400	400	DEF	300	500	

6 Common Practice for Information Modelling

This section briefly summarises the key steps commonly practised for high-quality modelling in Hong Kong:

1. The origin point and orientation of the Model should refer to the HK1980 Grid System defined by the HKSAR Lands Department.
2. Elevations should refer to Hong Kong Principal Datum.
3. The Information Model should be set up using the metric system.
4. To ensure the accuracy of the Information Model and enhance multidisciplinary coordination, the tolerances between disciplines and model elements should be defined and agreed among the whole project team.
5. The creation of Information Model elements / objects should follow the "CIC Production of BIM Object Guide - General Requirements".
6. Line weight/ pattern /style, symbols, text, annotation, dimension and object style should follow the standard according to the Appointing Party's / Client's requirement.
7. All unused views should be purged and unused Information Model elements / objects removed before submission or publishing.
8. BIM files should be kept to the minimum size, with due consideration given to the capability and performance of the project software and hardware.
9. The Information Models can be divided into zones, disciplines or systems by agreement among the project team.
10. The presentation style should follow the colour scheme according to the Appointing Party's / Client's requirement, or as agreed among the project team. If no specific requirements from the project Appointing Party / Client are given, the colour scheme stated in the latest "EMSD BIM-AM Standards and Guidelines" is recommended for MEP Information Models.
11. The equipment / pipework / ductwork / cabling of each system should be connected as completely as practicable in the Information Models.

7 Reference

1. EN 17412-1:2020, Building Information Modelling – Level of Information Need Part 1: Concepts and principles (November 2020)
2. Architectural Services Department
   BIM Guide for Architectural Design (Version 1.0, 2019)
   BIM Guide for Facilities Upkeep (Version 1.1, 2019)
   BIM Guide for Structural Engineering (Version 1.0, 2018)
3. Electrical and Mechanical Services Department
   BIM-AM Standards and Guidelines (Version 2.0)
4. Drainage Services Department
   BIM _Modelling Manual (Second Edition)
5. Water Supplies Department
   BIM Standard for Asset Management
6. Hong Kong Housing Authority and Housing Department
   BIM Standards and Guidelines (Version 2.0)
7. Development Bureau
   CAD Standard for Works Project (CSWP)
8. BCA Singapore
   Singapore BIM Guides Version 2.0
   Singapore VDC Guide Version 1.0
9. BIM Forum LOD Specification 2019
10. AEC (UK) BIM Protocol
11. The European Public Sector
    Handbook for the introduction of Building Information Modelling
    EU_BIM_Task_Group_Handbook_FINAL
12. NATSPEC National BIM Guide
    NATSPEC_National_BIM_Guide (Version 1.0,2011)

8 Acknowledgement

The CIC would like to acknowledge the assistance of the following organisations for providing valuable comments for the CIC BIM Standards - General enhancement:

- Alliance of Built Asset & Environment Information Management Association Company Limited HK
- Architectural Services Department
- Buildings Department
- Civil Engineering and Development Department
- Development Bureau
- Drainage Services Department
- Electrical and Mechanical Services Department
- Highways Department
- Hong Kong Housing Authority
- Hong Kong Institute of Utility Specialists and Building Services Operation
- Hospital Authority
- Lands Department
- Planning Department
- The Airport Authority Hong Kong
- The Association of Consulting Engineers of Hong Kong
- The Hong Kong Construction Association
- The Hong Kong Federation of Electrical & Mechanical Contractors Limited
- The Hong Kong Institute of Architects
- The Hong Kong Institute of Building Information Modelling
- The Hong Kong Institution of Engineers
- The Hong Kong Institute of Surveyors
- The Mass Transit Railway Corporation
- The Real Estate Developers Association of Hong Kong
- The West Kowloon Cultural District
- Urban Renewal Authority
- Vircon Limited
- Water Supplies Department

The CIC thanks all stakeholders who have participated in the Stakeholders Consultation Seminars and/or Forums and offered opinions.

9 Committee on Building Information Modelling

The Task Force on BIM Standards

Membership List

	Member	Representing Organisation / Remarks
1.	Jack CHENG (Chairperson)	The Hong Kong University of Science and Technology
2.	Ada FUNG	Chairperson of the Com-BIM
3.	Clement CHUNG	The Association of Consulting Engineers of Hong Kong / Chairperson of the Task Force on BIM Training
4.	CHANG Kwok-fai	Lands Department
5.	Aaron CHAN	The Hong Kong Institute of Architects
6.	Vincent CHOW	Development Bureau
7.	Thomson LAI	The Hong Kong Institute of Building Information Modelling
8.	Mark LAI	Buildings Department
9.	Kelvin WONG	Airport Authority Hong Kong / Co-chairperson of Contract & Services Agreement

10 Membership List of The Task Force on BIM Standards - General Enhancement

Membership List

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Mr. Vincent CHOW	Development Bureau
Mr. Ben CHAN Mr. CHANG Kwok-fai	Lands Department
Mr. Mark LAI	Buildings Department
Mr. Kelvin WONG	Airport Authority Hong Kong
Mr. Aaron CHAN	The Hong Kong Institute of Architects
Mr. Clement CHUNG	The Association of Consulting Engineers of Hong Kong
Mr. Neo CHAN Mr. Thomson LAI	The Hong Kong Institute of Building Information Modelling

Convenor and Secretary Mr. Alex Ho Mr. Ron Ng Mr. Elvis Chiu Mr. Lok Fung	Construction Industry Council

LOD Responsibility Matrix

(Please refer to separate document)

CONSTRUCTION INDUSTRY COUNCIL
建造業議會

Feedback Form

CIC *Building Information Modelling Standards – Architecture & Structural Engineering*

To improve future editions of this publication, we would be grateful to have your comments.

(Please put a "✓" in the appropriate box.)

1. As a whole, I feel that the publication is:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Informative	❑	❑	❑	❑	❑
Comprehensive	❑	❑	❑	❑	❑
Useful	❑	❑	❑	❑	❑
Practical	❑	❑	❑	❑	❑
2. Does the publication enable you to understand more about the subject?	Yes		No		No Comment
	❑		❑		❑
3. Have you made reference to the publication in your work?	Quite Often		Sometimes		Never
	❑		❑		❑
4. To what extent the publication benefits you?	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Supply chain Information/data integrity	❑	❑	❑	❑	❑
Work efficiency	❑	❑	❑	❑	❑
Project Collaborations	❑	❑	❑	❑	❑
5. Overall, how would you rate our publication?	Excellent	Very Good	Satisfactory	Fair	Poor
	❑	❑	❑	❑	❑
6. Other comments and suggestions, please specify (use separate sheets if necessary).					

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