



CONSTRUCTION
INDUSTRY COUNCIL
建造業議會

BIM



CIC BIM Standards

Mechanical, Electrical and Plumbing

(in line with ISO 19650)

Version 2 - 2021

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 as a substitute for such professional advice.

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Document Revision Tracking

Issue Date	Notes
August 2019	
2021	Align the terminology with CIC BIM Standards - General (Version 2.1 – 2021)

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Foreword

I am glad to see the release of Construction Industry Council (CIC) BIM Standards for Mechanical, Electrical and Plumbing (Version 2 – 2021). This CIC BIM Standards for Mechanical, Electrical and Plumbing was to be read in conjunction with the CIC BIM Standards General Version 2.1 – 2021, 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.

Background

In 2014, the CIC published a report named "Roadmap for the Strategic Implementation of Building Information Modelling (BIM) in Hong Kong's Construction Industry" with an aim to establishing a blueprint for the promotion and adoption of BIM in Hong Kong's Construction Industry. The BIM Roadmap suggested 17 initiatives in nine areas with three imminent actions. Establishment of a local BIM standards is one of the imminent actions aiming to set out a common platform and language for Hong Kong's BIM practitioners. The CIC's BIM Standards will be implemented in stages. The first Standards, renamed as CIC BIM Standards – General was published in September 2015.

Since then, BIM practitioners have gained more practical project experience, and there has been much wider adoption of BIM in various areas of the Architecture, Engineering, Construction, Owner and Operator (AECOO) industry in Hong Kong. With the release of the Technical Circular (Works) Nos. 7/2017, 18/2018, 9/2019 & 12/2020 by the Development Bureau (DEVB) of The Government of the Hong Kong Special Administrative Region (HKSAR), capital works projects with project estimates more than \$30 Million are mandated to use BIM from 1st January 2018 onwards. All along the CIC has been continuing to develop and establish the CIC BIM Standards for specific BIM usages and disciplines, and to conduct consultations with relevant stakeholders, as an established practice.

With the establishment of the Task Force on BIM Standards under the Committee on BIM on 21 November 2017, the CIC has been identifying and aligning the common practices as well as setting up new standards and guidelines to facilitate better implementation and adoption of BIM in project execution. The full suite of CIC BIM standards have been published and/or updated covering specific BIM usages or disciplines separately.

In response to demands 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, and underpinned by two Task Groups, namely Task Group 1 (BIM Specifications) and Task Group 2 (BIM Special Conditions of Contract & Services Agreement). The Task Force developed CIC BIM Exchange Information Requirements (EIR) Template (BIM Specifications), CIC BIM Special Conditions of Contract, and CIC BIM Services Agreements.

As at December 2021, the full suite of CIC BIM Standards is as follows:

- (i) CIC BIM Standards – General (August 2019); (Version 2 - December 2020) and (Version 2.1 - 2021);
- (ii) CIC BIM Standards for Architecture and Structural Engineering (Version 2 - December 2020); and (Version 2.1 - 2021);
- (iii) CIC BIM Standards for Underground Utilities (August 2019); and (Version 2 - 2021);
- (iv) CIC BIM Standards for Mechanical, Electrical and Plumbing (August 2019); and (Version 2 - 2021);
- (v) CIC BIM Standards for Preparation of Statutory Plan Submissions (December 2020); and (Version 1.1 - 2021);
- (vi) CIC Production of BIM Objects Guide – General Requirements (August 2019); and (Version 2 - 2021);
- (vii) CIC BIM Dictionary (December 2020); and (2021);
- (viii) CIC BIM Exchange Information Requirements (EIR) Template (December 2020); and (Version 1.1 - 2021);
- (ix) CIC BIM Special Conditions of Contract (September 2021);
- (x) CIC BIM Services Agreements (September 2021); and
- (xi) CIC BIM Guide for using BIM in generation of MEP digital drawings for statutory submissions (2021).

Feedback on the CIC BIM Standards for Mechanical, Electrical and Plumbing (Version 2 - 2021) from practitioners subsequent to the issuance of this publication will be considered in future revisions. On behalf of the CIC, I would like to thank everyone who has contributed to producing this CIC BIM EIR Template and subsequent updates, in particular to the members of the Task Force on BIM Standards.

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

December 2021

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 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

AECO	Architecture, Engineering, Construction and Operations
BIM	Building Information Modelling
CAD	Computer Aided Drafting
CIC	Construction Industry Council, Hong Kong
LOD	Level of Development
LOIN	Level of Information Need
MEP	Mechanical, Electrical and Plumbing
QTO	Quantity Take-offs

The above abbreviations are not exhaustive. Reference should be made to the CIC BIM Dictionary for additional abbreviations and definitions.

The CIC BIM Standards for Mechanical, Electrical and Plumbing (MEP) 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

1.1 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 MEP**. This Standards is a reference document which states minimum requirement. Appointing Party / Client should adjust the details to suit their specific project requirements.

1.2 Objectives

The objectives of this Standards are:

- 1.2.1. To provide the approach and direction to help Appointing Party / Client and the project team agree on the details and information on MEP elements that need to be provided in a project.
- 1.2.2. To provide a clear concept for Appointing Party / Client and the project team on the Level of Development – Graphics / Level of Graphics (LOD-G), Level of Development – Information / Level of Information (LOD-I) and Level of Documentation (DOC) requirements on different stages of a project.
- 1.2.3. To assist project Appointing Party / Client and the project team to define and specify the contents of Information Models during the implementation of BIM for MEP in a project.
- 1.2.4. 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 MEP at each stage of a project. The Appointing Party / Client should note the following points when developing or using the LOIN for MEP elements / objects;

- 1.2.5. 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.

- 1.2.6. The LOIN should be specified for individual model elements / objects, instead of for the entire model. For example, for as-built models, different elements may have different LOIN, 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 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 model and information details are essential for successful application of BIM in the project.

1.3 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 MEP 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 the MEP discipline.

Table 1 Document Structure

1.4 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.

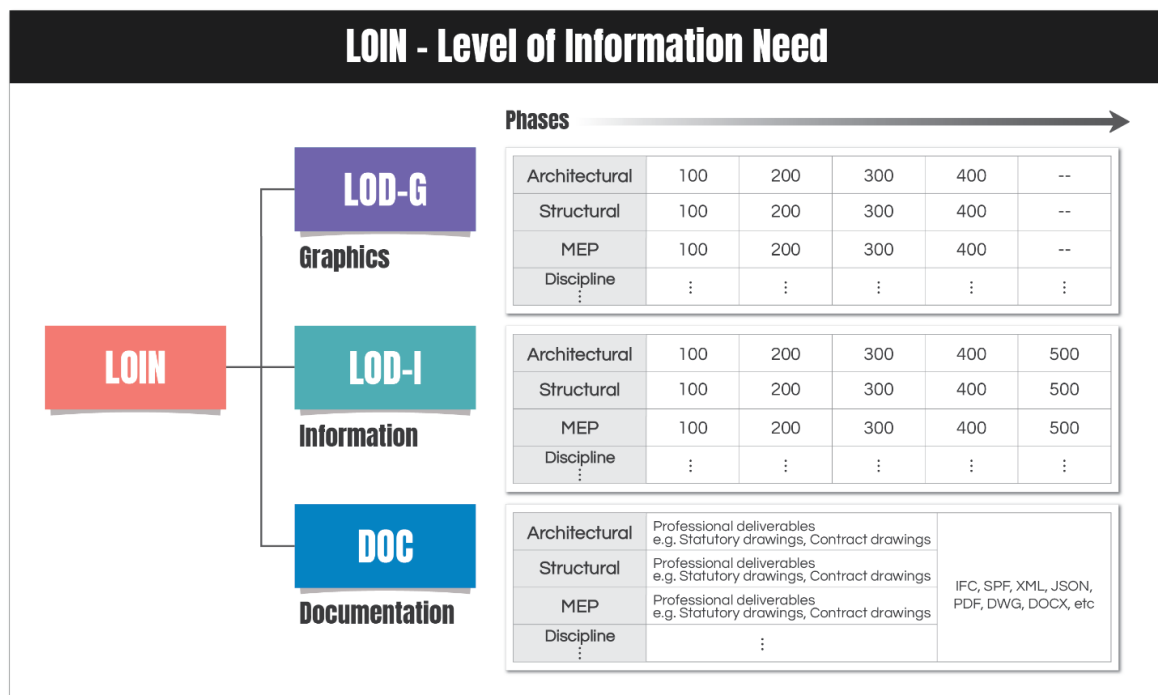


Figure 1 LOIN - Level of Information Need

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 a 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. The graphical representation can be recognised easily without further clarification.
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 1.6 for details.

Table 2 LOD-G Definition

Level of Information (LOD-I)

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 4.2 for the details of LOD-Information requirements.

It is recommended that the project Appointing Party / Client to define and specify BOTH the LOD-Graphics and LOD-Information of the Information model elements at each stage prior to the commencement of the project.

An Information model, especially with drawings, typically consists of a range of LOD-G and LOD-I. For example, during the construction stage, some elements need to be modelled to LOD-G 300 to show specific geometrical details while information at LOD-I 200 level is sufficient. However, there may be certain elements that need to be modelled to LOD-G 400 for fabrication with LOD-I 300.

During the as-built stage, it may not be necessary to model the elements with full fabrication details, hence LOD-G 300 may be sufficient but the relevant elements should be “field verified”. Users may truncate the Information Models 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 stage	LOIN definition recommendation
LOD 100	LOD-G 100 + LOD-I 100
LOD 200	LOD-G 200 + LOD-I 200
LOD 300	LOD-G 300 + LOD-I 300
LOD 400	LOD-G 400 + LOD-I 400
LOD 500	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 Appointing Party / Client.

1.5 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 3.6.17 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.

1.6 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 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 MEP 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	All project teams	Refer to “1.4 Definition of Level of Information Need (LOIN)”
4.	Understand more about LOD-G and LOD-I specification of the elements	Appointing Party / Client, Design consultants, Contractors	Refer to “4 LOD Elements Specification”
5.	Define the LOD-G, LOD-I and DOC of the model elements to be specified	Appointing Party / Client / Design consultants	Refer to “5 Recommended LOD”
6.	Identify the LOD requirements (both graphics LOD-G, information LOD-I and DOC)	Appointing Party / Client / Design consultants	Refer to “3 LOD Responsibility Matrix”
7.	Identify the responsible author or party for defining / specifying the model elements LOD-G, LOD-I and DOC.	Appointing Party / Client / Design consultants	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 / Design consultants	Refer to “3 LOD Responsibility Matrix”
9.	Production of Information Models	Design consultants / Contractors	Refer to “6 Common Practice for Information Modelling”

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 1.6 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

As stated in Section 1.6, 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.

Sample templates of LOD Responsibility Matrix are shown in **Appendix A**. The model elements included in the matrix are not exhaustive.

The classification of the model elements recommended in this Standards is the OmniClass® Table 23 (<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.

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 QA and review of models. OmniClass Table 23 system code* can be used for this field if no other specific requirements from the project client.
AUT	Model Author
G	LOD-Graphics
I	LOD-Information
V	Method for field verification of the object/equipment. It is subject to the agreement of the project 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

LOD Responsibility Matrix (sample format)

Model elements	Required	UOM	Classification	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 MEP model elements / objects. As there are innumerable types of individual model elements, only commonly used model elements are included, and are classified as different types from OmniClass®. In this way users should be able to understand the principles involved and apply them in defining LOD-Graphics and LOD-Information for other elements as required.

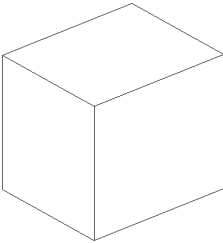
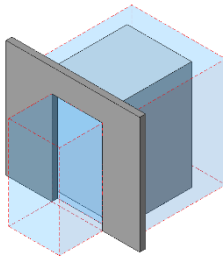
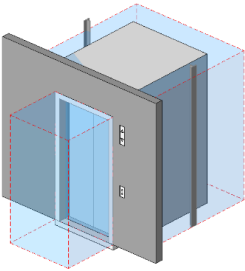

4.1 LOD-Graphics Requirements

The main MEP model elements / objects requiring LOD-G specification are classified in the following table:

Elements (classified according to OmniClass® table 23)
Conveying Systems and Material Handling Products <ul style="list-style-type: none"> • Elevators • Escalators
General Facility Services Products <ul style="list-style-type: none"> • Pumps • Piping • Air Treatment Components
Facility and Occupant Protection Products <ul style="list-style-type: none"> • Fire Hydrants • Fire Hose Equipment
HVAC Specific Products and Equipment <ul style="list-style-type: none"> • Commercial Boilers • Chillers • Cooling Towers • Fans • Fan Coil Units • Ventilation Ducts • Hangers for Air Ductwork
Electrical and Lighting Specific Products and Equipment <ul style="list-style-type: none"> • Electrical Generators • Uninterrupted Power Supply (UPS) Units • Electrical Distribution Control Panels • Switchboards

(Conveying Systems and Material Handling Products) Elevators

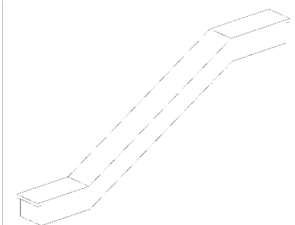
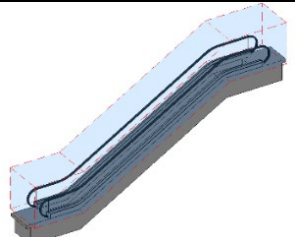
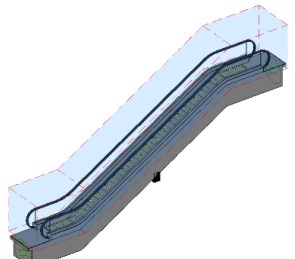

OmniClass: 23-23 11 11

LOD-G	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Lift car size, door frame, indication panel, power provision, lighting, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Lift car size, door frame, indication panel, power provision, lighting, finishes, space for access & maintenance, sufficient graphical details for fabrication	

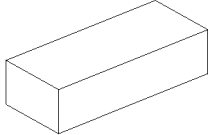
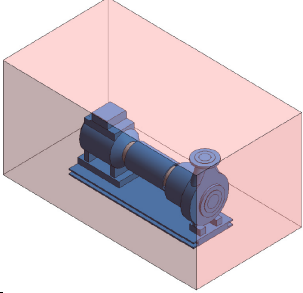
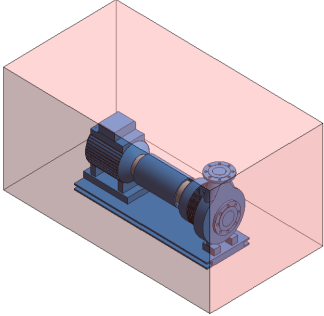
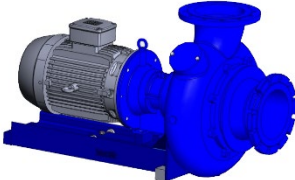
(Conveying Systems & Material Handling Products)

Escalators


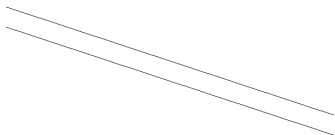
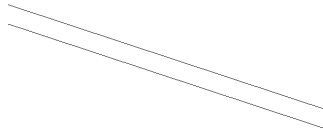
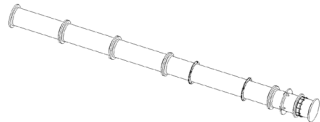
OmniClass: 23-23 11 13

LOD-G	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Generic element - Actual size, dimensions & orientation - Proposed location 	Steps, handrail, balustrade, equipment pit, power provision, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Steps, handrail, balustrade, equipment pit, power provision, space for access & maintenance, sufficient graphical details & dimensions for fabrication	

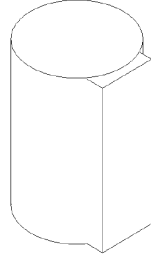
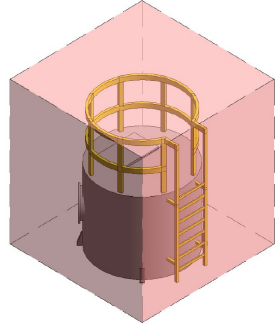
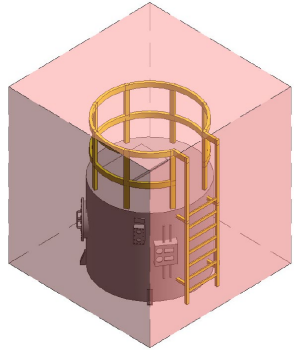
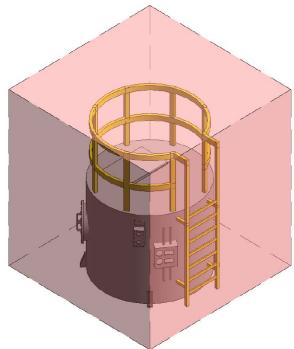
(General Facility Services Products)**Pumps***OmniClass: 23-27 17 00*

LOD-G	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, water inlet / outlet, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Power provision, water inlet / outlet size, anti-vibration footing, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Power provision, water inlet / outlet size, anti-vibration footing, space for access & maintenance, sufficient graphical details for fabrication	

(General Facility Services Products)**Piping***OmniClass: 23-27 39 00*

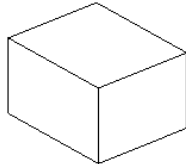
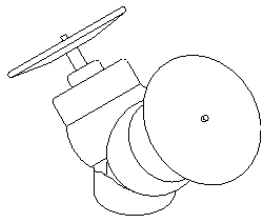
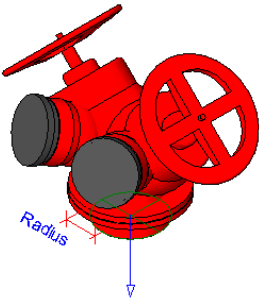
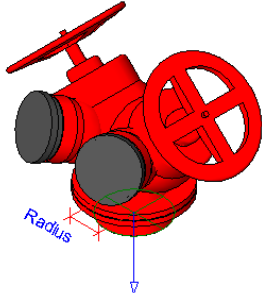
LOD-G	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	N/A	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location - According to product catalogue / BS EN standard nominal, outside, inside diameter 	Overall shape	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Overall shape, exact segment length, all flanges, space for access & maintenance, sufficient graphical details for fabrication	

(General Facility Services Products)**Air Treatment Components***OmniClass: 23-27 57 35 11*

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	N/A	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, cat ladder, hand railing, access panel, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Cat ladder, hand railing, detailed access panel, control panel, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow Product Catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Cat ladder, hand railing, detailed access panel, control panel, space for access & maintenance, sufficient graphical details for fabrication	

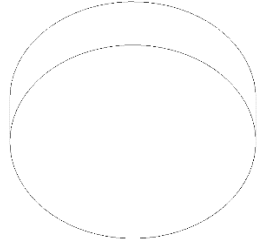
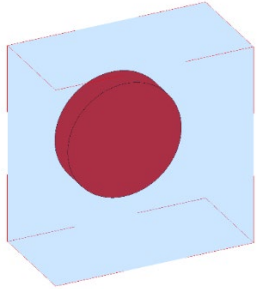
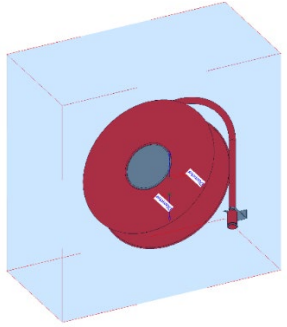

(Facility and Occupant Protection Products) Fire Hydrants

OmniClass: 23-29 25 13

LOD- Graphics	Requirements		Sample Image
100	- Conceptual, schematic element or symbol	Overall shape	
200	- Generic element - Nominal size, dimensions	Overall shape, space for access & maintenance	
300	- Specific elements - Actual size, dimensions & orientation - Proposed location	Water inlet, outlet & wheel size, space for access & maintenance	
400	- Specific elements - Actual dimensions & orientation - Follow Product Catalogue for graphical detail - Sufficient detail & accuracy for fabrication	Water inlet, outlet & wheel size, space for access & maintenance, sufficient graphical details for fabrication	

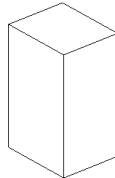
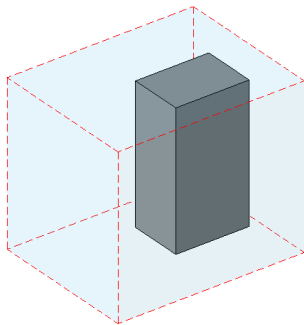
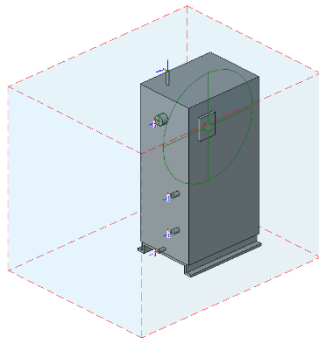

(Facility and Occupant Protection Products) Fire Hose Equipment

OmniClass: 23-29 25 15

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Front panel, back panel, stop cock valve, fire hose pipe, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow Product Catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Front panel, back panel, stop cock valve, fire hose pipe, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment) Commercial Boilers

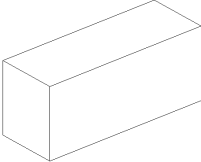
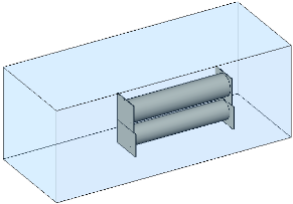
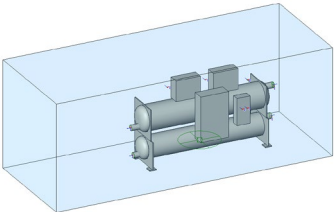
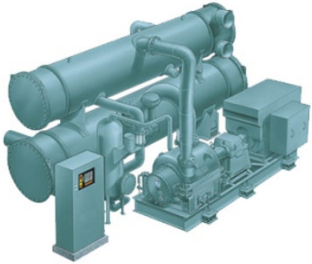
OmniClass: 23-33 11 00

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Power provision, water inlet / outlet, gas connection, chimney, relief pipe, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow Product Catalogue for graphical detail 	Power provision, water inlet / outlet, gas connection, chimney, relief pipe, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment)

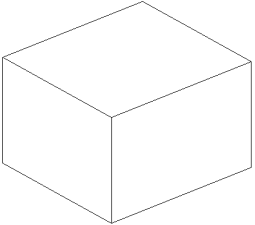
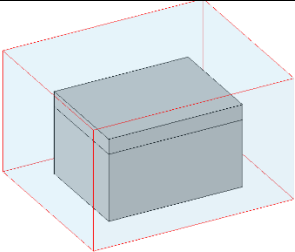
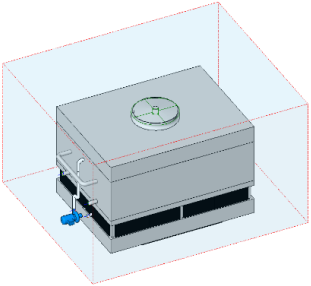

Chillers

OmniClass: 23-33 21 00

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Chilled water inlet / outlet, condense water inlet / outlet, anti-vibration footing, power provision, compressor, evaporator, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Chilled water inlet / outlet, condense water inlet / outlet, anti-vibration footing, power provision, compressor, evaporator, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment) Cooling Towers


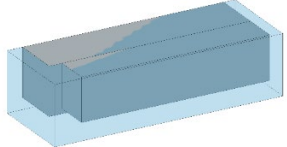
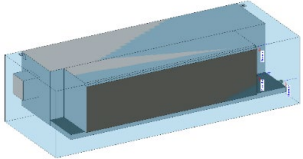

OmniClass: 23-33 23 00

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall Shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall Shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Water inlet / outlet, power provision, fill, fan, drift eliminator, supporting legs, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Water inlet / outlet, power provision, fill, fan, drift eliminator, supporting legs, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment)

Fan Coil Units

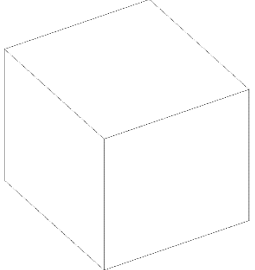
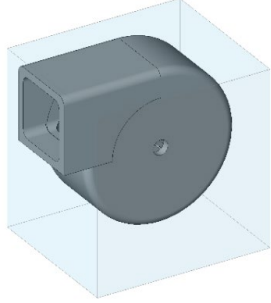
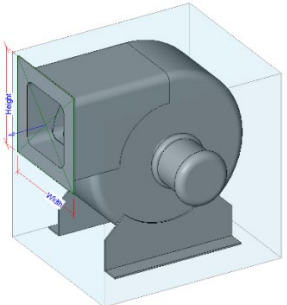

OmniClass: 23-33 33 00

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall Shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall Shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Water inlet / outlet, power provision, fan, drip tray & connection for condensate drain, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Water inlet / outlet, power provision, fan, drip tray & connection for condensate drain, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment)




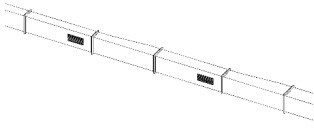
Fans

OmniClass: 23-33 31 19

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall Shape	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall Shape, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Fan housing, impellers fan casing, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Follow product catalogue for graphical detail - Sufficient detail & accuracy for fabrication 	Fan housing, impellers fan casing, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products and Equipment) Ventilation Ducts

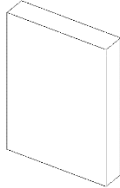
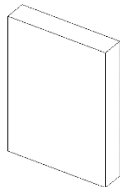
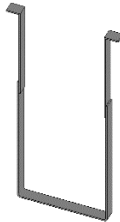
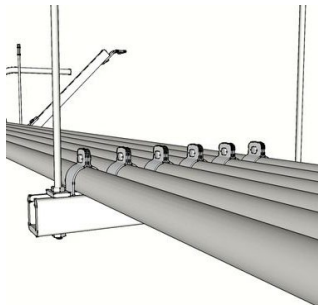
OmniClass: 23-33 49 13

LOD- Graphics	Requirements		Sample Image
100	- Conceptual, schematic element or symbol	N/A	
200	- Generic element - Nominal size, dimensions	Overall shape	
300	- Specific elements - Actual size, dimensions & orientation - Proposed location	Overall shape	
400	- Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication	Overall shape, exact segment length, all flanges, space for access & maintenance, sufficient graphical details for fabrication	

(HVAC Specific Products & Equipment)

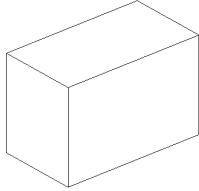
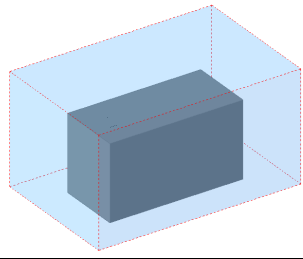
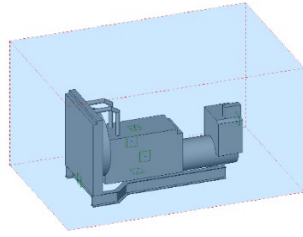
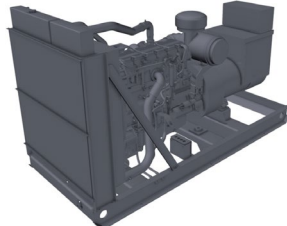
Hangers for Air Ductwork

OmniClass: 23-33 49 29 15

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	N/A	
200	<ul style="list-style-type: none"> - Generic element - Spatial requirement of the hangers 	Overall space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Specific components with actual dimension, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Specific components with actual dimension, exact location, space for access & maintenance, sufficient graphical details for fabrication	

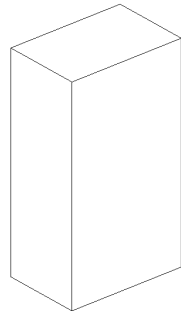
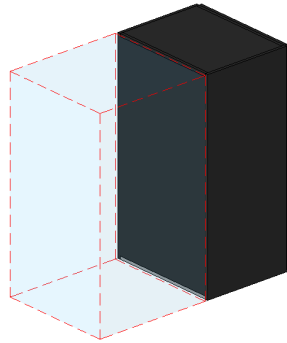
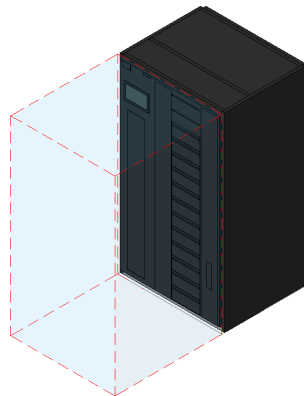

(Electrical and Lighting Specific Products and Equipment) Electrical Generators

OmniClass: 23-35 11 00

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shapes	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shapes, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Engine, alternator, regulator, radiator, fuel tank, exhaust gas, power connection, silencer, exhaust pipe, battery charger, anti-vibration footing, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Engine, alternator, regulator, radiator, fuel tank, exhaust gas, power connection, silencer, exhaust pipe, battery charger, anti-vibration footing, space for access & maintenance, sufficient graphical details for fabrication	

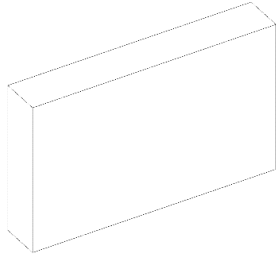
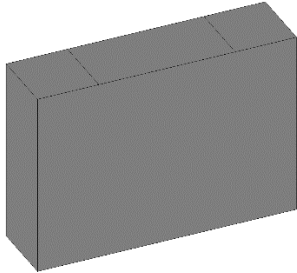
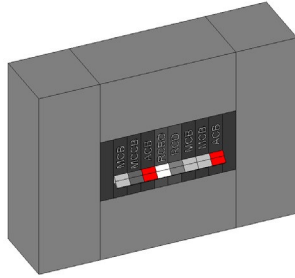

(Electrical and Lighting Specific Products and Equipment) Uninterrupted Power Supply (UPS) Units

OmniClass: 23-35 23 21

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shapes	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shapes, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Overall shapes, battery, power provision, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Overall shapes, battery, power provision, space for access & maintenance, sufficient graphical details for fabrication	

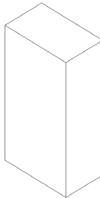
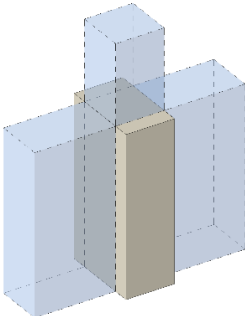
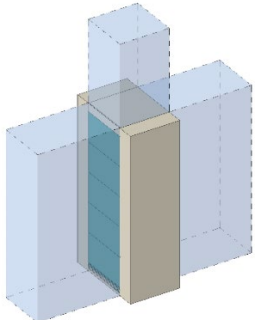

(Electrical and Lighting Specific Products and Equipment) Electrical Distribution Control Panels

OmniClass: 23-35 31 15

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shapes	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shapes	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Overall shapes	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Overall shapes, sufficient graphical details for fabrication	

(Electrical and Lighting Specific Products and Equipment) Switchboards

OmniClass: 23-35 31 29

LOD- Graphics	Requirements		Sample Image
100	<ul style="list-style-type: none"> - Conceptual, schematic element or symbol 	Overall shapes	
200	<ul style="list-style-type: none"> - Generic element - Nominal size, dimensions 	Overall shapes, space for access & maintenance	
300	<ul style="list-style-type: none"> - Specific elements - Actual size, dimensions & orientation - Proposed location 	Overall shapes, power provision, space for access & maintenance	
400	<ul style="list-style-type: none"> - Specific elements - Actual dimensions & orientation - Sufficient detail & accuracy for fabrication - Follow product catalogue for graphical detail 	Overall shapes, power provision, space for access & maintenance, sufficient graphical details for fabrication	

For the 2D representative symbols of the Information model elements / objects, refer to the “CAD Standard for Works Projects” by Development Bureau.

It is well noted that Appointing Parties / Clients may request the primary model elements / objects to be further broken down into several individual model element / object for asset management e.g. the “pump” break down into “pump casing”, “pump motor”, “pump impeller”, the project team should consider and agree with the Appointing Party / Client the approach whether the required information could be attached in the primary model element / object instead of breaking it down, otherwise the project team should agree and define clearly the individual model elements / objects in the responsibility matrix.

4.2 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 M means “Mandatory” and R means “Required”).

No.	Type	Attribute Name	Description	LOD-Information					Proposed Input Format
				100	200	300	400	500	
1	Project Information (Appointing Parties specific)	Organisation Name	Client name (per agreement/ contract)	M	M	M	M	M	Alphanumeric
		Project Issue Date	Project Commencement date	M	M	M	M	M	MMM YYYY (eg. Nov 2021)
		Project Address	The street address of the project	M	M	M	M	M	Alphanumeric
		Project Name	The project name as shown on the drawing sheet's title block	M	M	M	M	M	Alphanumeric
		Project Number	The project number as shown on the drawing sheet's title block	M	M	M	M	M	Alphanumeric
2	General Properties	CAT Code	Departmental category (see Remark 1)	R	R	R	R	R	Alphanumeric
		Locations	Location (e.g. district code for outdoor object)		R	R	R	R	Alphanumeric
		Departmental Unique ID	The unique ID for departmental information management		R	R	R	R	Alphanumeric
3	Design Properties	Material	Singular material or all materials pertaining to the assembly		R	R	R	R	Alphanumeric
		Material Grade	Material grade (e.g. concrete grade, steel grade)		R	R	R	R	Alphanumeric
		Design Capacity	Design capacity		R	R	R	R	Alphanumeric
		Number	Room Number		R*	R*	R	R	Alphanumeric

No.	Type	Attribute Name	Description	LOD-Information					Proposed Input Format
				100	200	300	400	500	
			(see Remark 2)						
		Name	Room Name (see Remark 2)			R*	R	R	Alphanumeric
4	Classification Properties (see Remark 3)	OmniClassCode	OmniClass code			R	R	R	Alphanumeric
		OmniClassTitle	OmniClass title			R	R	R	Alphanumeric
		OmniClassVersion	OmniClass version			R	R	R	Alphanumeric
5	Manufacturer's Equipment Properties	Brand Name	Brand name				R	R	Alphanumeric
		ManufacturerName	Manufacturer name				R	R	Alphanumeric
		Model Number of element / equipment	Model number				R	R	Alphanumeric
		EquipmentCapacity	Equipment capacity				R	R	Alphanumeric
		Asset ID	Asset ID				R	R	Alphanumeric
		Contract Number of the Equipment	The equipment's contract number				R	R	Alphanumeric
6	Condition Properties	Certified Completion Date	Certified completion date				R	R	MMM YYYY (eg. Nov 2021)
		Handover Date	Handover date				R	R	MMM YYYY (e.g. Nov 2022)
7	Verification Property	Verification	Verification method (input A for "field verified by visual inspection" and B for "field verified by a measured survey")					R	Text (e.g. A or B)

Remarks:

- Category (in the form of the shared parameter "CAT Code" under "General Properties") could facilitate grouping and data filtering. In addition, "category" may refer to:
 - The use of appropriate category or object types when creating BIM objects to minimize data loss (especially LOD-G) during open format exchange.
 - BIM Object naming's abbreviation code fields 1 & 2 to facilitate BIM object library management and consistency of information container ID naming.
- R* - Room Name and Room Number are required when statutory and contractual drawings are produced.
- Individual Appointing Party's classification(s) in addition to or instead of OmniClass could be defined by respective Appointing Parties.

4. It is recommended that a full list of element-specific LOD-I should be clearly defined before a project commences.
5. Design Properties should be defined in line with any agreement or Appointing Party / Client Information Requirements provided for individual projects.

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 are 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 HVAC Products and Equipment is 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) Major items of equipment should be defined by the project Appointing Party / Client, e.g. for the HVAC class of equipment
 - o Commercial Boilers, Heat Pumps, Chillers, Cooling Towers, Air Handling Units, Fans, Fan Coil Units, Air Conditioners, HVAC Condenser Units, HVAC Coolers, etc.
- d) 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

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

Example LOD Responsibility Matrix

HVAC Specific Product and Equipment																											
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		
Commercial Boilers	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Furnaces	N																										
HVAC Heating Units	Y			ABC	100	/			/	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A	
Heat Pumps	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Chillers	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Cooling Towers	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Air Handling Units	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Air Humidity Control Equipment	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
HVAC Dampers	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Air Circulators	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Fans	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
Exhaust Hoods	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Power Ventilators	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Fan Coil Units	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
HVAC Coils	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Refrigerant Condensing Units	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A
Air Conditioners	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	DEF	300	400	DEF	300	500	B		
High Pressure Air Conditioning	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	DEF	300	A

HVAC Specific Product and Equipment																									
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
Make Up Air Units	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
HVAC Air Terminals	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
HVAC Condenser Units	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	ABC	200	300	DEF	300	500	B
HVAC Coolers	Y			ABC	100	100	ABC	200	200	ABC	200	200	ABC	200	300	ABC	200	300	ABC	200	300	DEF	300	500	B
Ventilation Ducts	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300*	/	A
Ventilation Diffusers	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
Duct Access Panels	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
Duct Insulation	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
Grilles	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
Hangers for Air Ductwork	Y			ABC	/	/	ABC	/	/	ABC	200#	/	ABC	200#	/	ABC	200#	/	ABC	200#	/	DEF	300#	/	A
Supports for Air Ductwork	Y			ABC	100	/	ABC	200	/	ABC	200#	/	ABC	200#	/	ABC	200#	/	ABC	200#	/	DEF	300#	/	A
Solar Water Heating	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A
Heat Wheels	Y			ABC	100	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	ABC	200	/	DEF	300	/	A

* The LOD-G of Ventilation Ducts should be 400 if the BIM is intended to enable duct or pipe fabrication in the project.
NOT COMPULSORY. The final decision for modelling hangers should be made by and agreed with the Appointing Party / Client.

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 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 References

1. Electrical and Mechanical Services Department
BIM-AM Standards and Guidelines v2.0
2. Architectural Services Department
BIM Guide for BS Installation Ver1.0_Jun18
3. Drainage Services Department
BIM Modelling Manual (Second Edition)
4. Water Supplies Department
BIM Standards for Asset Management
5. Hong Kong Housing Authority and Housing Department
BIM Standards and Guidelines (Version 2.0)
6. BCA Singapore BIM Guide Version 2
7. Singapore BIM Essential Guides
8. CAD Standard for Works Projects (CSWP), Development Bureau
9. BIM Forum LOD Specification 2019
10. AEC (UK) BIM Protocol
11. Handbook for the introduction of Building Information Modelling by the European Public Sector
EU_BIM_Task_Group_Handbook_FINAL
12. NATSPEC National BIM Guide
NATSPEC_National_BIM_Guide_v1.0_Sep_2011

8 Acknowledgement

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- Airport Authority Hong Kong
- Architectural Services Department
- Buildings Department
- Civil Engineering and Development Department
- Development Bureau
- Drainage Services Department
- Electrical and Mechanical Services Department
- Highways Department
- Hong Kong General Building Contractors Association
- Hong Kong Housing Authority
- Hong Kong Housing Society
- Hospital Authority
- Lands Department
- The Association of Consulting Engineers of Hong Kong
- The Hong Kong Construction Association
- The Hong Kong Institute of Architects
- The Hong Kong Institution of Engineers
- The Hong Kong Institute of Surveyors
- The Hong Kong Institute of Building Information Modelling
- The Hong Kong University of Science and Technology
- Urban Renewal Authority
- Water Supplies Department

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9 Member List of the Task Force on BIM Standards

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Appendix A LOD Responsibility Matrix

(Please refer to separate document)

Feedback Form

CIC BIM Standards for Mechanical, Electrical and Plumbing (MEP)

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	Neutral	Disagree	Strongly
	Agree			Disagree	
Informative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Useful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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2. Does the publication enable you to understand more about the subject?	Yes	No	No Comment		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Have you made reference to the publication in your work?	Quite Often	Sometimes	Never		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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6. Other comments and suggestions, please specify (use separate sheets if necessary).					
Personal Particulars (optional):* Name: Mr. / Mrs. / Ms. / Dr. / Prof. / Ar. / Ir / Sr ^ Company: Tel: Address: E-mail:					

* The personal data in this form will be used only for this survey. Your data will be kept confidential and dealt with only by the Construction Industry Council.

^ Circle as appropriate.

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