

**Building Information Modelling (BIM)
Standards Manual
for
Development and Construction Division
of
Hong Kong Housing Authority**



**(Version 1.0)
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Prepared by Business Information Technology Unit
Development & Construction Division
Housing Department

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1. Introduction

Development and Construction Division (DCD) of Hong Kong Housing Department (HD) is responsible for

- Monitoring Public Housing Construction Programme
- Monitoring Housing Monitoring Information System
- Commenting on territorial / district / local planning studies and planning standards and guidelines
- Reviewing and formulating strategies and policies as well as preparing and implementing pertinent legislation with regard to construction of public housing
- Formulating and implementing corporate procurement, safety and environmental management strategies

DCD is a multi-disciplinary setup with professionals from Architecture, Structural Engineering, Building Services Engineering, Civil Engineering, Geotechnical Engineering, Quantity Surveying, Landscaping, etc. With the implementation of Building Information Modelling (BIM) in DCD, electronic models would be developed and carried throughout the project lifecycle from feasibility studies, schematic design, details design, analysis, construction and maintenance. Standards and guidelines are important for effective model building, electronic file exchange, data and information compatibility, people communication, not only for in-house staff, but also for our consultants and contractors.

During our development of in-house BIM Standards in year 2008, there was no standards and guidelines widely accepted as the de-facto standards in the industry in Hong Kong. It was prepared based on existing HD CAD standards which has been used, updated and proved to be workable for more than 20 years, also incorporated inputs and best practice from industry. New elements were added in developing this guideline to include additional features provided in BIM which did not exist in two-dimensional (2D) environment. The BIM Standards developed was meant to be software neutral and applicable to any BIM software.

We had removed unnecessary details and retain only essential elements so that make the guideline simple to read and follow. By no mean this guideline is perfect and comprehensive. We wish this could form a basis for continuous improvement as we anticipate that the BIM technology will be changing quickly. We welcome suggestions and expert advice from in-house staff as well as industry practitioners.

Suggestions, comments and other matters related to this document can be written to Mr. David Mak, Senior Manager / Business Information Technology (Construction) (email: davidsk.mak@housingauthority.gov.hk) of Housing Department.

2 Referencing & Naming Convention

2.1 Referencing for Modelling

A standardized file numbering system is used for easy identification of models.

2.1.1 File Name Convention

File name of BIM drawings consists of 24 alphanumeric characters and separated into 8 fields.



Below are some examples:

2.1.1.1 Project Number – Public Housing Development Programme (PHDP) Project Reference (4 characters)

- Project Number here is referred as the first 4 characters of the Project Number in HOMES (i.e. without 5th and 6th characters). E.g. TM18

Project								Description
1234	12	1234	1	123	123456	1	123	
FL07	--	----	-	---	-----	-	---	Fanling Area 47B
HK16	--	----	-	---	-----	-	---	Hing Wah
KL33	--	----	-	---	-----	-	---	Upper Ngau Tau Kok
TM18	--	----	-	---	-----	-	---	Tuen Mun Area 18
TK13	--	----	-	---	-----	-	---	Tseung Kwan O

2.1.1.2 Phase Number (2 characters)

- To denote phase number of the project, align with PHDP

								Description
1 2 3 4	12	1234	1	123	123456	1	123	
----	01	----	-	---	-----	-	---	Phase 1
----	02	----	-	---	-----	-	---	Phase 2
----	03	----	-	---	-----	-	---	Phase 3

2.1.1.3 Building Type (4 characters)

- To define the types of building. E.g. block no., carpark, etc. Recommend that the code should reflect the meaning of the blocks/ facilities

								Description
1234	12	1234	1	123	123456	1	123	
Examples of Individual Blocks/Buildings								
----	--	BLK1	-	---	-----	-	---	Block 1
----	--	BLK2	-	---	-----	-	---	Block 2, etc...
----	--	CC	-	---	-----	-	---	Commercial Centre
----	--	CP	-	---	-----	-	---	Car Park
----	--	CH	-	---	-----	-	---	Community Hall
----	--	FB	-	---	-----	-	---	Footbridge
----	--	LP	-	---	-----	-	---	LP Gas Store
----	--	LT	-	---	-----	-	---	Lift Tower
----	--	MT	-	---	-----	-	---	Market
----	--	RCP	-	---	-----	-	---	Refuse Collection Point
Examples of other Facilities/Information								
----	--	PRJ	-	---	-----	-	---	Project (* usually a link file for integration of the whole project)
----	--	SITE	-	---	-----	-	---	Site profile
----	--	EXWK	-	---	-----	-	---	External Works

2.1.1.4 Disciplines

- A single character represents the discipline. If there is a need for a discipline other than that list below, please contact us.

								Description
1234	12	1234	1	123	123456	1	123	
----	--	----	A	---	-----	-	---	Architectural
----	--	----	B	---	-----	-	---	Building Services Engineering
----	--	----	C	---	-----	-	---	Civil Engineering
----	--	----	G	---	-----	-	---	Geotechnical Engineering
----	--	----	L	---	-----	-	---	Landscaping
----	--	----	P	---	-----	-	---	Planning
----	--	----	Q	---	-----	-	---	Quantity Surveying
----	--	----	S	---	-----	-	---	Structural Engineering
----	--	----	V	---	-----	-	---	Land Surveying

2.1.1.5 Reference (File Types Indicator) (3 characters)

- To define the type of file. e.g. linked file, model file & template

								Description
1234	12	1234	1	123	123456	1	123	
----	--	----	-	-L-	-----	-	---	Link File
----	--	----	-	-M-	-----	-	---	Model File
----	--	----	-	-T-	-----	-	---	Template File

2.1.1.6 Code (Brief description for the content of file) (6 characters)

- Further describe the content of the Building Type (as stated in 2.1.1.3). For example, 1st floor of a block, Football court of external work.

								Description
1234	12	1234	1	123	123456	1	123	
General								
----	--	----	-	---	MASTER	-	---	File for the whole project
----	--	----	-	---	ALL	-	---	File for individual block/area
----	--	----	-	---	PA01	-	---	Play area 01
----	--	----	-	---	FBC	-	---	Football Court
----	--	----	-	---	GF	-	---	Ground Floor
----	--	----	-	---	1F	-	---	First Floor
----	--	----	-	---	TF	-	---	Typical Floor
----	--	----	-	---	TFC01	-	---	Typical Floor with different colour 01
----	--	----	-	---	TFZ01	-	---	Typical Floor Zone with different design 01
----	--	----	-	---	RF	-	---	Roof

2.1.1.7 Revision

- Drawings to be issued to external parties e.g. contractor, FSD must carry a revision letter (A to Z).

								Description
1234	12	1234	1	123	123456	1	123	
----	--	----	-	---	-----	A	---	Revision A
----	--	----	-	---	-----	B	---	Revision B

2.1.1.8 Modification No.

- This field is used while modification has been made within a revision. The field should be started with 000 while a new revision is made but the older revision should be kept.
- This field is used in Drawing Management System (DMS) and should be removed if the models are to be issued.

								Description
1234	12	1234	1	123	123456	1	123	
----	--	----	-	---	-----	-	001	Modification 001
----	--	----	-	---	-----	-	002	Modification 002

Examples of Model Referencing

- File name : TM18__PRJ_A-L-MASTER_____
Description : Link file for the project Tuen Mun Area 18
- File name : TM18__BLKAA-M-GF_____
Description : Architectural Model of Tuen Mun Area 18, Block A, Ground Floor
- File name : TM18__BLKAS-M-GF_____
Description : Structural Model of Tuen Mun Area 18, Block A, Ground Floor
- File name : KL3301BLKAS-M-GF_____
Description : Structural Model of Upper Ngau Tau Kok Phase 1, Block A, Ground Floor
- File name : TM18__BLKAA-M-TFC01_____
Description : Architectural Model of Tuen Mun Area 18, Block A, Typical Floor with colour 01 (e.g odd number floors in blue colour)
- File name : TM18__BLKAA-M-TFC02_____
Description : Architectural Model of Tuen Mun Area 18, Block A, Typical Floor with colour 02 (e.g even number floors in green colour)
- File name : TM18__BLKAA-L-ALL_____
Description : Link file of Tuen Mun Area 18, Block A, Whole Block
- File name : TM18__EXWKA-M-PA01_____
Description : Architectural Model of Tuen Mun Area 18, External Works, Play Area zone 01
- File name : TM18__RCP_A-M-_____
Description : Architectural Model of Tuen Mun Area 18, Refuse Collection Point
- File name : TM18__RCP_A-M-_____A 002
Description : Architectural Model of Tuen Mun Area 18, Refuse Collection Point, Revision A, Modification No.002
- File name : KL3301_____A-T-_____
Description : Architectural Project Template of Upper Ngau Tau Kok Phase 1

3 Project Folders Structure

3.1 Folders Structure

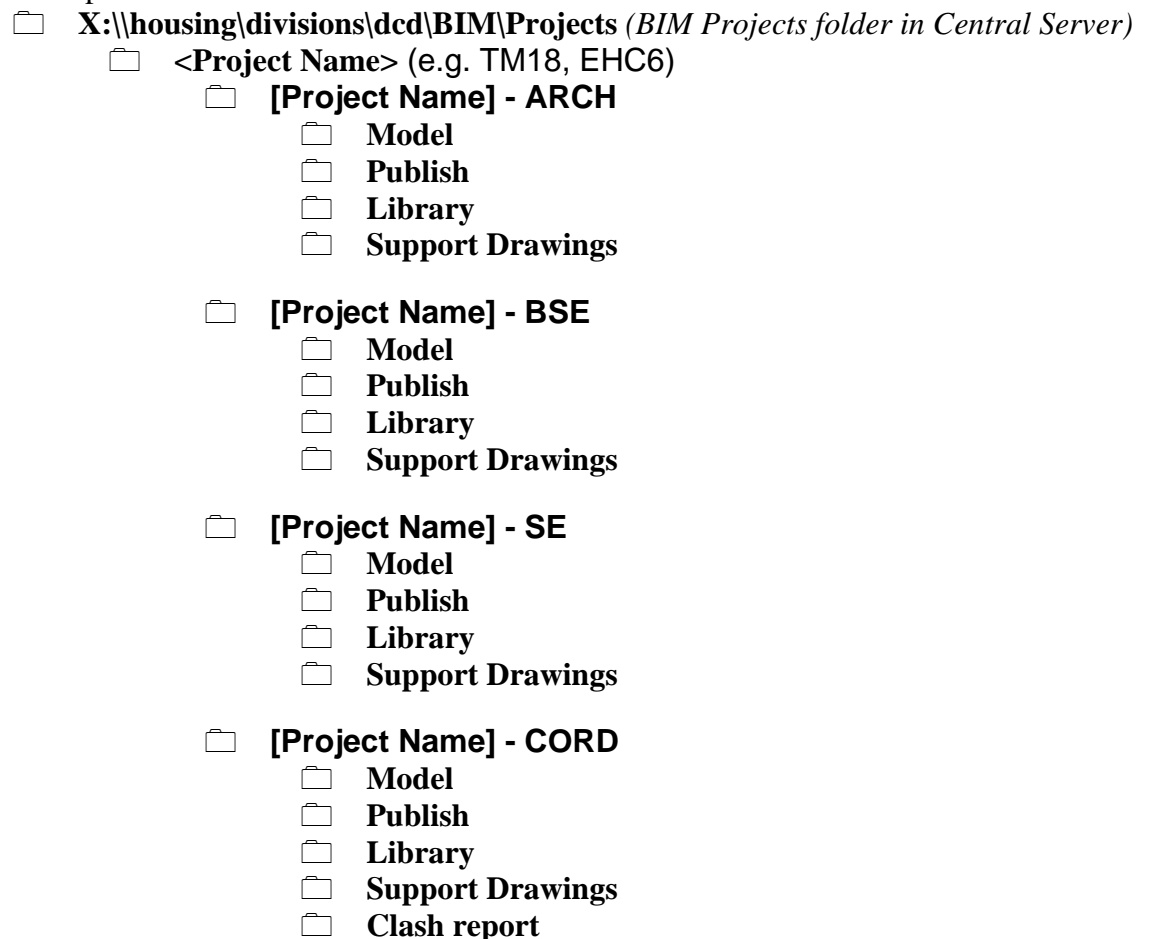
All project drawing files, regardless of project size or type, are organized and filed into a standard folder structure on central servers. During daily working of a model, a copy of the model could also be placed in the local workstation.

3.1.1 Central Server folder structure

All models should be filed in the central server since backup and disaster recovery facilities are provided to safeguard the models.

Subfolders structure under the central server is standardized and setup by the System Administrator. In general, other users are restricted from modifying them. If there is any special needs, project team can discuss with the administrator to setup optional subfolders. A general folder structure is shown as follows. The content of each folder is described in 3.2.

Example

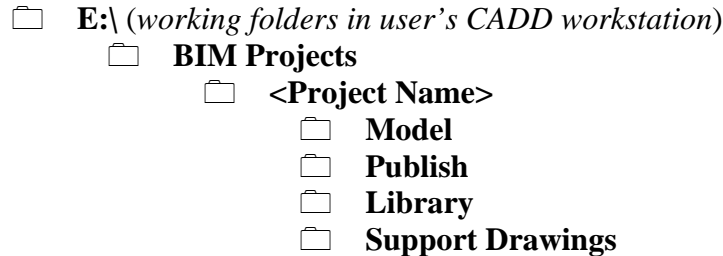


Where [Project Name] = Project Number (PHDP) + Phase Code. E.g. TM18RR01

3.1.2 Local workstation folder structure

A similar folder structure is recommended to be setup at local workstation for easy matching. The working models at local workstation should be filed back to the central server on daily basis to avoid loss of data. The standard folder structure is shown below.

Example



3.2 Folder Contents

Top level – “BIM Projects”

- Central Server : Folder tree for all the projects stored in central server
- Local workstation : This folder should be at the root of the local workstation drive (e.g. Drive E of CADD workstations)

Second level – “Project Name”

- Central Server : Folder of a specific project. Project Name is the short name of the project title e.g. EHC6, TM18
- Local workstation : Same name as in the central server.

Third level – “Discipline” and “CORD”

- Central Server : Discipline subfolder only accessible by specific discipline e.g. Arch, SE, BSE Files
 - : CORD : Latest version of linked models for sharing among disciplines. This folder is managed by project BIM coordinator
- Local workstation : There is no “Discipline” or “CORD” folder.

Fourth level –

(a) Model

- Central Server : Folder to store all working models.
- Local workstation : Folder to store all working models. Models should be copied from central server at the start of the day and file back to server by end of the day.

- (b) **Publish** : Folder to store all files to be issued to other parties, e.g. 2D drawings, 3D dwf generated from the BIM models.

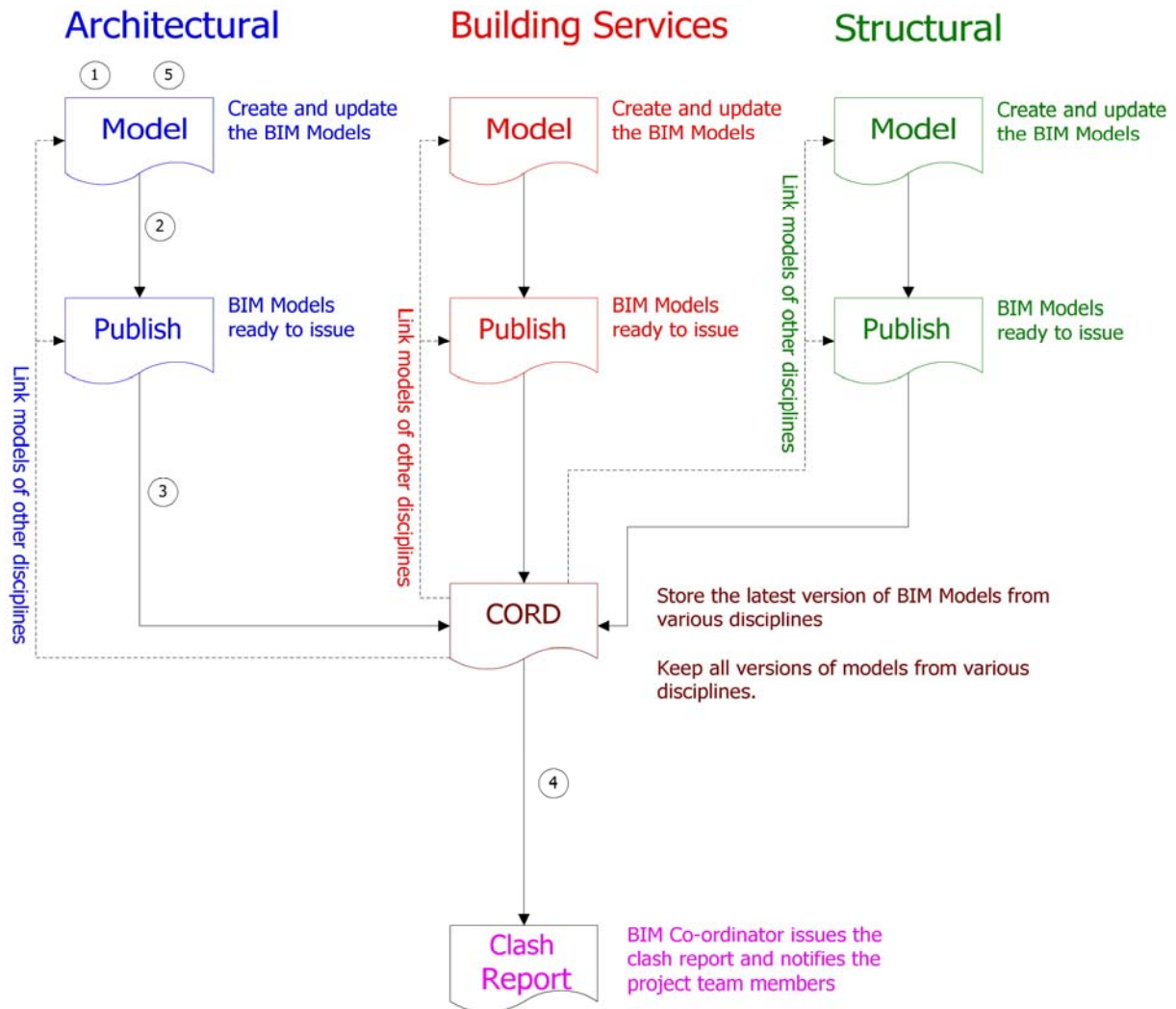
- (c) **Library** : Folder to store discipline and project specific families.

- (d) **Support Drawings** : Folder to store all supporting documents (e.g. linked DWG; Jpeg images, etc.) for project reference.

(e) **Clash Report** (Only available under CORD in central server)

Folder used for carrying out clash analysis and clash reports. This folder is only accessible by project BIM coordinator.

3.3 **Models coordination among disciplines**



Example of Workflow

Steps

①	Create the models in <i>Model Folder</i> .
②	Copy the models to <i>Publish Folder</i> when it is ready to issue and then notifies the BIM co-ordinator
③	BIM co-ordinator collects the models from <i>Publish Folder</i> and copies to <i>CORD Folder</i> . Keep version control of models and collaborate the models from various disciplines and then generate the clash report.
④	BIM co-ordinator issues clash reports to <i>Clash Report folder</i> and notifies the project team members. Project team members meet together to resolve the clashes.
⑤	Update the models in <i>Model Folder</i> and link models of other disciplines in <i>CORD Folder</i> .

4. Hierarchy of Models

For a BIM project, it is NOT recommended to create a single huge model and embeds all details. We should divide the project into logical groups (e.g. by discipline, by trade) and link the models in logical hierarchy for easy handling.

Recommended Models Hierarchy for a BIM project.

4.1 Architectural discipline

(a) Model of site profile and external works +

(b) Models of domestic blocks +

For each domestic block, it was combined with the G/F model + First Floor model + Typical Floor model + Roof model. If there are some non-standard floors in that domestic block, we need to create individual models for those floors and insert in suitable levels.

(c) Models for non-domestic blocks +

4.1.1 For simple non-domestic blocks – carport
Refuse collection Point
Small size commercial centre
Community Hall
Market
Etc.

We should create individual models for each non-domestic block

4.1.2 For complex non-domestic blocks – Large size commercial centre
We should create models floor by floor, similar to the domestic block

4.2 Building Services discipline

(a) Base model from Architectural discipline +

(b) Models for individual installation

Model of Fire Service
Model of Plumbing Service
Model of Electrical
Model of Air Conditioning
etc.

Example of Model Hierarchy

