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ADVANCED
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INFORMATION
DEVELOPMENT

BIM Standard

V1.2

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BUILDING INFORMATION MODELING MANUAL

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The following pages have been revised and are now included in this version of the Procedure.	
Page (s)	Date of Revision

	JOB TITLE	NAME	SIGNATURE
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The standards and information contained in this document are built upon the existing AEC (UK) BIM Standard and AEC (UK) BIM Standard for Autodesk Revit.

TABLE OF CONTENT

1. INTRODUCTION

1.1 Background

A.C.I.D. Operations started investigating BIM (Revit) platform since 2006 and several testing modules had been set up to test the applications on A.C.I.D. operation projects. In 2010, A.C.I.D. Operations has started implementing BIM (Revit) to the station network in Hong Kong. As such, there is a need to control all the BIM models, drawings and other deliverables to conform to the same standard to ensure integrity, quality and consistency.

1.2 Scope

The A.C.I.D. BIM Standard for Revit builds on procedures and methodologies from a broad consensus of experienced users from all disciplines, as well as consultants, in addition to guidelines defined by other Hong Kong and world-wide standardization initiatives.

This Standard focuses primarily on adaptation of those standards for practical and efficient application of Revit Architecture, Revit Structure and Revit MEP. Terminology and reference to functionality is based around the Autodesk Revit platform.

The objectives are:

1. To maximize production efficiency through adopting a coordinated and consistent approach to working in BIM.

2. To define the standards, settings and best practices that ensure delivery of high quality and uniform drawing output across an entire project.

3. To ensure that digital BIM files are structured correctly to enable efficient data sharing whilst working in a collaborative environment across multi-disciplinary teams both internally and in external BIM environments.

When working as a project team, communication is paramount. This Standard looks to ensure that all parties speak the same language.

1.3 Update Procedure

Proposed changes and additions to this standard should be submitted in writing with accompanying examples, discussion, or other supportive material to committee. Feedback will be gathered and continuously reviewed; they will be collated to form new revisions at appropriate intervals.

It is expected that this standard will undergo a relatively rapid evolution process, as the industry adapts to the implications and advantages of BIM methodology.

1.4 Copyright Notice:

It is important to note that this standard will only become truly useful if as many project participants adopt it as possible. To that extent, it may be freely distributed and used in any format necessary.

1.5 References

This standard is written with reference to the following documents:

- AEC (UK) BIM Standards 2009
- AEC (UK) BIM Standard for Autodesk Revit 2010
- CSWP

1.6 Definitions

The following terms define the concepts of BIM and data structures used in this Standard.

Project BIM Coordinator	Responsible for setting and implementing Project BIM Strategy, this person would usually be the most experienced Revit user.
BIM	Building Information Modelling (BIM): Data beyond graphics. The creation and use of coordinated, internally consistent, computable information about a building project in design and construction.
Component/ Family	A component (known as a family in Revit) is an individual element that can be reused in a number of situations. Examples include doors, stair cores, furniture, façade panels, columns, walls etc. Components are typically inserted and moved/rotated into required position.
Assembly	A collection of components and/or modelled elements arranged to define part or all of a building model such as groups or sub-models in Revit. An assembly typically contains information that can be referenced without repositioning.
Container	An optional repository which can be used to compile assemblies and components for specific purposes including export and publication. A container can exist for each individual profession/discipline or for multiple disciplines, for buildings or a complete project.
WIP	Work In Progress (WIP): each individual company or discipline's own work. This information has not been approved or verified fit to share across the project team.
Shared	Information that has been checked and approved and is made available across the project team such as information for data exchange between BIM software, like gbXML, CIS/2 and IFC files.

Published	Published information refers to documents and other data generated from Shared information. Typically this will include contract drawings, reports and specifications.
Views/ Output files	A generated rendition of graphical or non-graphical information plan, section, elevation, schedule, or other view of a project).

2. BEST PRACTICE

To achieve technical excellence and a successful outcome to a project, it is essential that BIM working and subsequent drawing production output is carefully planned. This must involve explicit attention to management, display and quality of the design data. Below are a number of best practice key principles that will aid efficient, high quality working.

2.1 BIM

- A Project BIM Co-ordinator shall be appointed for every project.
- A Project BIM Strategy shall be put in place that identifies key project tasks, outputs and model configuration.
- BIM Project Reviews should be agreed and take place regularly to ensure model integrity and project workflow is maintained.
- Develop clear guidelines for internal and external collaborative working which maintain the integrity of electronic data.
- Identify clear ownership of model elements through the life of the project.
- Understand and clearly document what is to be modeled and to what level of detail. Do not over model.
- Sub-divide models between disciplines, and within single disciplines to avoid file sizes becoming over ~100MB. Refer to Section 5.
- All changes to the model shall be carried out as 3D modifications, rather than 2D patches to maintain the integrity of the model.
- Outstanding warnings shall be reviewed regularly and important issues resolved.
- The Central file shall never be opened, only copied to create local files.
- The Central file should be recreated at regular intervals in order to eliminate redundant data retention.

2.2 Drawing Production

- A drawing shall contain design information solely for the purpose of the intended use of the drawing.
- To maximise efficiency a policy of minimum detailing without compromising quality and integrity shall be adopted.
- Numbers of drawings should be kept to an absolute minimum and organised in a logical manner.
- Avoidance of view duplication is essential to ensure drawings maintain their integrity as the iterative design process progresses and amendments are made.
- Efficient minimum detailing and above all the elimination of detail repetition shall be the method adopted.

3. PROJECT BIM STRATEGY

3.1 Project BIM Co-ordinator

- The Project BIM Co-ordinator shall:
- Develop and implement a Project BIM Strategy document which shall record key information on how BIM will be implemented and used on a project,
- Keep the Project BIM Strategy document updated over the life of the project.
- Ensure all stakeholders (internal and external) are in alignment with the Project BIM Strategy,
- Facilitate / identify appropriate levels of staff training in order to comply with the Project BIM Strategy,
- Take a leading role in planning, setup and maintaining models

3.2 Project BIM Strategy Document

A Project BIM Strategy pro-forma and a complementary Project BIM Strategy Guidance Note are available and shall be used to ensure consistency between projects. Larger and more complex projects may warrant additional clarification; the strategy document will expand accordingly.

The Project BIM Strategy document shall address as a minimum the following key items:

- Standards: The BIM standard used in the project and any deviation from that standard
- Software Platform: Defines BIM software to be utilised and how interoperability issues will be addressed.
- Stakeholders: Identifies project leadership and additional stakeholders and their roles and responsibilities.
- Project Deliverable: Defines the project deliverable and the format in which it is delivered and exchanged.
- Project Characteristics: Number of buildings, size, location etc. Division of the work and schedule.
- Shared Coordinates: Defines the common coordinate system for all BIM data. Details modifications to imported DWG/DGN coordinates.
- Data Segregation: Addressing such issues as workset and linked file organisation to enable multi-discipline, multi user access and project phasing as well as ownership of project BIM data.
- Checking/Validation: Defines the checking/validation process of drawings and BIM data.

- Data Exchange: Defines the communication protocols along with the frequency and form of data exchange.
- Project Review Dates: Sets out key dates for reviews of the Revit model which all teams buy in to (both internal to the company and externally with the full design team)

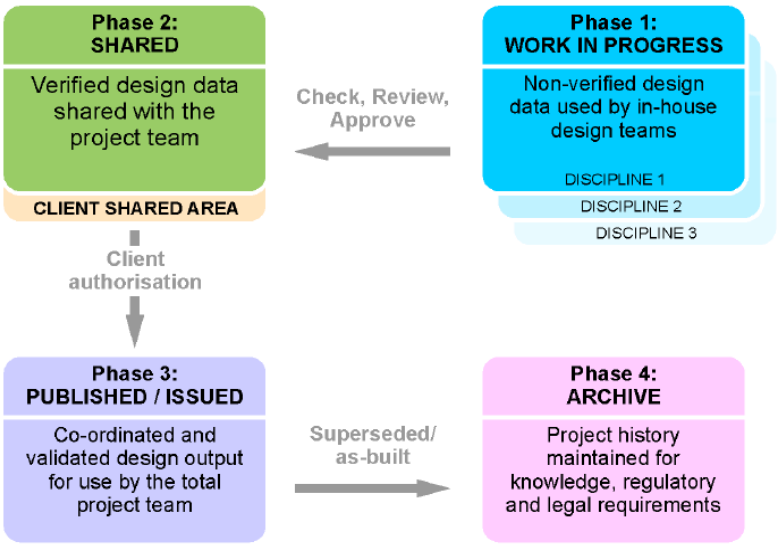
4. COLLABORATIVE BIM DATA SHARING

A major constituent of collaborative environments is the ability to communicate, re-use and share data efficiently without loss or misinterpretation.

4.1 Common Data Environment (CDE)

A Common Data Environment (CDE) approach allows information to be shared between all members of the project team.

There are four phases to CDE as illustrated below:



4.2 CDE Phase 1: Work in Progress (WIP)

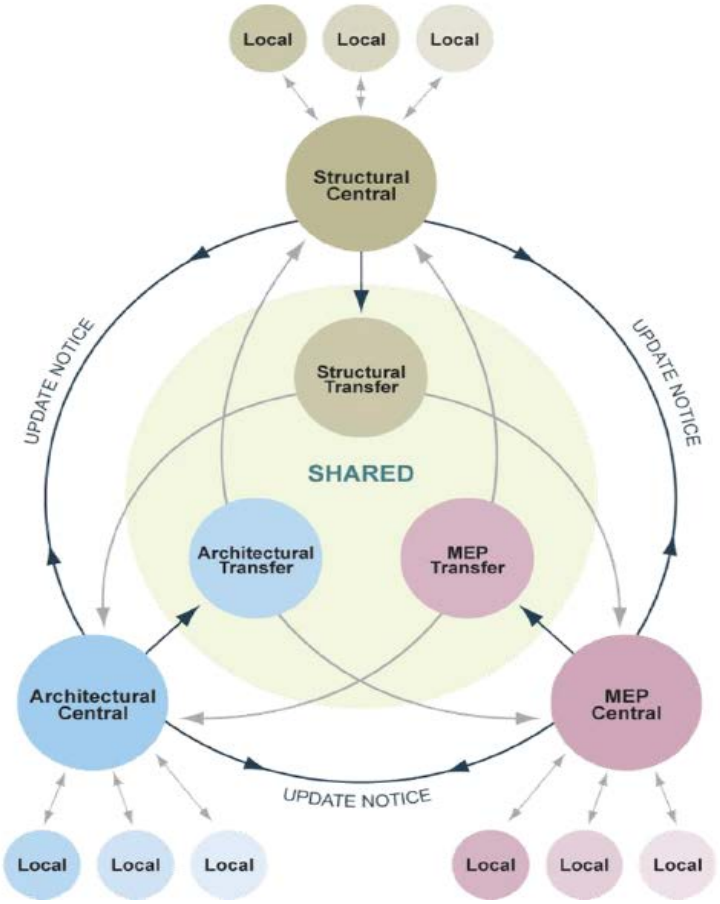
Data described as Work in Progress is that which is currently in production and has not yet been checked and verified for use outside of the authoring team.

- WIP model files shall be developed in isolation and contain information for which each stakeholder is responsible.
- These shall be stored in, and worked on from the team's WIP section of the filing system.

4.3 CDE Phase 2: Shared

To facilitate co-ordinated, efficient working, each party shall make their design data available for project-wide formal access through a shared repository or exchange protocol. These files shall be accessible by all from a central location, or replicated in the Shared Area of the project folder structure of each party. Prior to sharing, the data shall be checked, approved and validated as fit for co-ordination in line with workflow.

- Only BIM files validated, “fit for co-ordination" shall be transferred to the Shared Area (see section 4.6 for validation process).
- Sharing of models shall be carried out on a regular basis in order that other disciplines are working to latest validated information as defined in the Project BIM Strategy document.
- Model files shall be issued in conjunction with verified 2D document submissions to minimise the risk of errors in communication.
- The Shared Area shall also act as the repository for formally issued data provided by external organisations that is to be shared across the project.
- Changes to the shared data shall be effectively communicated to the team through drawing issue, change register or other suitable notice, such as e-mail, as defined in the Project BIM Strategy document.



For indicative purposes, the Shared area is shown here as a single shaded region. This may, in truth be synchronised locations for each stakeholder.

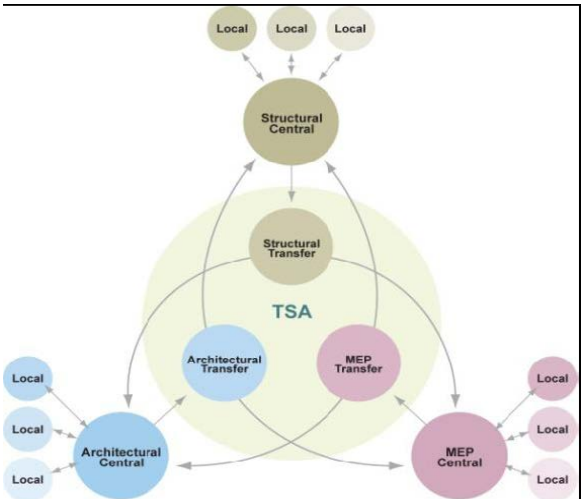
4.3.1 Inter-Discipline Access to WIP

On occasion, project time-frames do not accommodate the delays associated with the checking and verification of information originating from another discipline or company. Where necessary however, protocols which provide access to other party's WIP models may be applicable through either "Direct Access" (real-time) or a "Temporary Shared Area" (TSA) (near real-time).

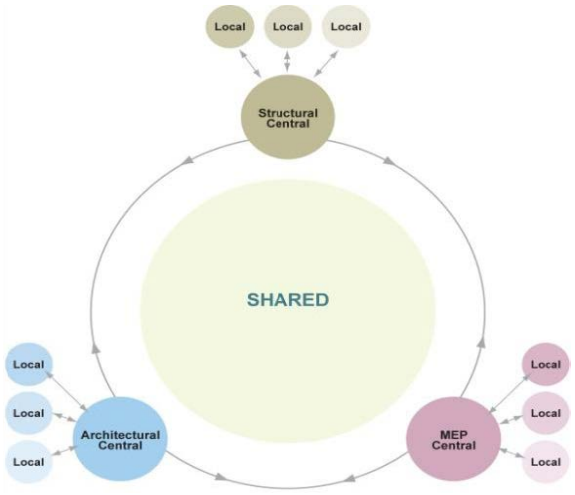
- Both of these methods carry risk as they involve the use of non-verified data as the basis for design decisions.

- The BIM Co-ordinator, in liaison with the design team, shall decide whether to permit access to the WIP models, and if so whether to utilise real-time or near real-time data sharing.

Access via the **"TSA"**



"Direct Access" via the WIP



Medium Risk	High Risk
Data is transferred at pre-defined intervals into a repository for linking by other teams.	Referenced data is live and subject to fluid design change, without notice or delay.
Allows for an amount of un-official communication of model changes avoids use of rapidly changing data.	Used when the time available to a design team is too restrictive to wait for validated information to emerge.
Internal / external use	Appropriate only for internal use in multi-disciplined design and engineering practices
The temporary shared area will reside in WIP under WIP_TSA repository (see section 8.2 - Project Folder Structure).	This method requires that permissions be granted such that other disciplines can access the WIP.

Warning!

Access to model data held within the WIP will contain un-validated data. It will be subject to rapid change and should be used with caution. Neither of these methods are a replacement for the verified sharing of data defined in section 4.3

4.4 CDE Phase 3: Publication and Document Issue

2D DWF or PDF drawings and sheets shall be stored in the Published Area of the folder structure once formally checked, approved and authorised in accordance with corporate quality procedures.

- Revision/Issue control shall follow the Document Control systems established for the project.
- A record of all issued deliverables shall be maintained in softcopy and hardcopy where appropriate.
- Information within a BIM is inter-dependent and changes in one view may affect other views. As such the BIM files and all associated views shall be treated as Work In Progress or shared as un-controlled documents until such time as they leave the BIM environment in a non-editable format.
- Only those drawings which it has been deemed necessary to revise will be re-issued following modification work.

Note:

At this stage of the industry adoption of BIM, contract deliverable will, in general, be a 2D drawing. Issuing of BIM data to external organisations shall be issued with a disclaimer **ISSUED FOR INFORMATION ONLY**. No liability is implied for such data and how it is subsequently utilised.

4.5 CDE Phase 4: Archiving

- Archiving of all output data from the BIM shall be stored in the Archive section of the project folder, including published, superseded and “As Built” drawings and data.
- Additionally, at key stages of the design process, a complete version of the BIM data and associated drawing deliverables shall be copied into an archive location.
- Archived data shall reside in logical folder repositories that clearly identify the archive status e.g. 20091211 Stage D Design.

4.6 Validation

Sheets from the BIM shall be published to DWF (preferred), PDF or other non-editable format, where they can be checked, approved, issued and archived as traditional documents.

- Validation of the BIM data prior to sharing shall check that.
- All drawing sheets and extraneous views shall be removed from the BIM.
- Model file has been audited, purged and compressed.

- File format and naming conventions conform to project Data Exchange protocols.
- Data segregation conforms to the agreed project BIM methodology.
- Model files are up-to-date, containing all users local modifications.
- Model files are detached from central file.
- Any linked reference files have been removed and any other associated data required to load the model file is made available.
- Model is correctly assembled through visual inspection.
- Any changes since the last issue are communicated to the project team.

4.7 Data Security & Saving

- All BIM project data shall reside on network servers which are subject to regular back-ups.
- Staff access to BIM project data held on the network servers shall be through controlled access permissions.
- Maximum number of Revit back-ups shall be set to 3.
- Revit LOCAL files shall be saved back to CENTRAL hourly.
- Revit save reminder interval shall be set to 30mins.
- A “Splash Page” is included in the associated templates. These shall be retained and the file information completed. The note may be discarded or replaced with project-specific information if required.
- Users shall open the Splash Page view and close all others when saving in order to improve the efficiency of file opening.

4.8 Project Issue Logging and Resolution System

Coordination discrepancies discovered during the collaboration review process shall be logged and managed. These issues shall be communicated to the relevant parties in a report which provides the following as a minimum:

- Specific location of any clash, including 2D and 3D images where possible
- Element ID's of the objects in question, where relevant
- A detailed description of the problem
- Details of the date/revision/origin of the linked information being cross-referenced
- Suggested solutions or actions to be taken, by whom and by what date
- Author of the issue and the distribution list for information or resolution
- Confirmation that the resolution has been tested in the model
- Issue status – pending response / overdue / unsuitable response / closed
- Items with an unsuitable response shall be re-logged as a new issue to avoid confusion over whether the issue has been resolved. The original issue shall then refer to a new issue number.
- Outstanding issues shall be discussed at the project co-ordination meetings. This process may be aided by using Navisworks on larger projects to keep the 3D information manageable.

4.9 Reviewing BIM Data

Untrained users shall not open Revit models directly. Instead, the model shall be exported as a 3D DWF and the freely available Autodesk Design Review software shall be used for interrogation and mark-up.

5. INTEROPERABILITY

5.1 Introduction

Interoperability between software products is of paramount importance for successful BIM working. Whether it is output to 2D CAD for subsequent drawing production or output for 3D visualisation or analysis, the preparation and methods adopted to compose the BIM will ultimately determine its successful application within other software packages and technologies.

5.2 Incoming CAD/BIM Data Management

- All incoming CAD/BIM data shall be logged in accordance with the project's data management procedures.
- A copy of incoming CAD/BIM data shall be stored in its original format within the project Incoming sub-folder.
- The project BIM Co-ordinator shall verify the suitability of incoming data prior to making available project-wide through the project Shared area.
- Modifications of incoming CAD/BIM data shall be kept to the absolute minimum and only be carried out where the received data format prevents design progress. Modifications shall only be carried out with the approval of the project BIM Co-ordinator.
- Data shall be cleansed prior to importing or linking to the BIM model to remove any irrelevant or extraneous data which may destabilise the BIM database.
- CAD data may need be shifted to 0,0,0 prior to import – see section 7.4.
- Details of the changes made in cleansing a file shall be fully documented in the Project BIM Strategy.
- Ownership of this cleansed data is transferred from the originator to the cleansing discipline. Cleansed data is stored within the discipline's WIP area unless deemed appropriate to share project-wide, in which case it is stored in the Shared area.
- Responsibility for ensuring that cleansed data is current lies with the party making the modifications.

5.3 Fit For Purpose Modelling

BIM data shall be prepared "fit for purpose", taking into account the requirements of any recipient software applications, to ensure that error free, reliable data is exchanged (e.g. link to analysis packages or interface with GIS).

Example:

When modelling structural frames, some analysis software may dictate that columns need to be stopped at each floor level regardless of whether, in reality they continue as a single length.

5.4 Data Transfer between Packages

Prior to data transfer between packages, the following tasks shall be carried out:

- Requirements and limitations of the target software/hardware system shall be understood in order that BIM data can be prepared appropriately for exchange.
- 2D output from the BIM shall be constructed in a manner that is usable to the team, reasonably complies with project CAD Standards, and allows easy manipulation of the data held within the file, e.g. layering.
- Data exchange protocol between different software/hardware systems shall be verified through sample testing to ensure data integrity is maintained.
- The appropriate export layer tables shall be used during export to CAD.

6. DATA SEGREGATION (WORKSETS & LINKING)

6.1 General Principles

A number of methods exist which enable collaborative working in a BIM environment, including working practices and team management as well as the technological solutions covered by the remit of this document.

This section deals with the principles of subdividing a model for the purposes of:

- multi-user access,
- operational efficiency on large projects,
- inter-disciplinary collaboration.

The terminology refers primarily to the Revit subjects of Worksets and Linking (sections 6.2 & 6.3), both of which are referred to herein as model sub-division. The following practices shall be followed:

- The methods adopted for data segregation shall take into account, and be agreed by, all internal and external disciplines to be involved in the modelling.
- In line with the model development methodology described in section 7, models shall initially be created as isolated, single-user files. The model will be sub-divided as it becomes larger or additional members of the design team are introduced.
- No more than one building shall be modelled in a single file.
- A model file shall contain data from one discipline / project stakeholder only (although exceptions may apply for Building Services where multiple disciplines converge).
- Further segregation of the geometry may be required to ensure that model files remain workable on available hardware. (As a basic guide, files exceeding 50MB shall be reviewed with respect to performance and possible further sub-division. Ideally files shall not exceed 100MB; for projects containing more than 1200 sheets within a single project, the performance of the “synchronize with central” will dramatically decrease).
- In order to avoid duplication or co-ordination errors, clear definition of the data ownership throughout the life of the project shall be defined and documented. Element ownership may transfer during the project time-line – this shall be explicitly identified in the Project BIM Strategy Document.
- Where multiple models make up a single project, a container model should be considered, whose function is to link the various assemblies together for coordination/clash detection purposes.

Example of Data Segregation:

Discipline *(Linking)*	**Breaks in Design** *(Linking or Worksets)*
Architecture	Floor by floor or groups of floors
Structure	Major geometry splits such as east-wing or west-wing
Mechanical	Construction joints such as podium and tower
Electrical	Work packages and phases of work
Civil	Document sets
Work allocation such as core, shell and interiors	

6.2 Worksets

Worksets allow multiple users to simultaneously work on a model file through use of a CENTRAL file and synchronised LOCAL copies. Properly utilised, worksets can significantly improve efficiency and effectiveness on large and multi-user projects.

- Appropriate worksets shall be established and elements assigned, either individually or by category, location, task allocation, etc.
- To improve hardware performance only the required worksets shall be opened. Revit ensures that elements contained in closed worksets are still updated if changes made in open Worksets impact them during model regeneration.
- Once worksets are enabled, filenames shall be suffixed with either –CENTRAL or –LOCAL as defined in section 8.4.
- A LOCAL copy of the model shall be created by COPYING the original onto a local hard-drive via Windows Explorer – not by opening the CENTRAL file and doing a “Save As”. See section 8.2.1 for local folder structure.
- From release 2010 onwards, automated features allow the user to generate a local file with a reduced likelihood of accidental opening of the CENTRAL file. These new tools are to be encouraged, although the above points still apply.
- From release 2010 onwards, automated features allow the user to generate a local file with a reduced likelihood of accidental opening of the CENTRAL file. These new tools are to be encouraged, although the above points still apply.

Warning!

At no point after creation should the CENTRAL file be opened or edited directly. All required operations can be, and therefore shall be, performed via the LOCAL files.

6.2.1 Division

- Workset allocation shall be done in a logical manner that allows for other members of the design team to collaborate and/or assist with the model development without recourse to complicated introductions to the project methodology.
- A project shall be broken into a sufficient number of Worksets to avoid congestion in workflow.This also provides the means for adequate control over the efficiency of the model.
- The BIM Co-ordinator shall define how the model is split into worksets, such as described in the above table.
- The BIM Co-ordinator shall manage the borrowing permissions and workset ownership.
- Worksets shall be named following the conventions defined in section 8.5.

6.2.2 Saving on Multiuser Projects

- All team members shall “Save to Central” hourly.
- The Project BIM Co-ordinator shall allocate a pre-defined, unique slot for each team member to “Save to Central”. This avoids machines hanging whilst several users try to save simultaneously.
- The “Work-sharing Monitor” tool could be used to coordinate “Save to Central” commands across the team.
- Users shall not leave the save to central process unattended, and shall resolve any issues which arise to avoid delays to other team members.

6.2.3 Borrowing or Workset Ownership

Two methods exist for setting permissions which enable multi-user access to a model file through use of worksets:

Two methods exist when using worksets to enable multi-user access to a model file: “borrowing elements” and “owning worksets”. Typically “**borrowing**” shall be used. However, “**ownership**” shall be used when:

- Restricting access of a particular aspect of the building to a single user,
- A user needs to operate away from the network and still be able to work, although caution is required to ensure that only “owned” worksets are edited,
- Working collaboratively over a slow or remote network.

In practice, these methodologies take the following form:

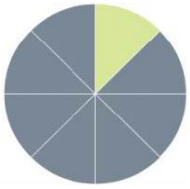
Element Borrowing

- Users work as though in isolation on a single-user file.
- Permission to modify an element is sought and either given or denied by a live link to the Central file.
- All permissions collated in this manner are relinquished during the Save to Central process.

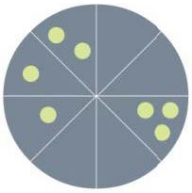
Workset Ownership

- A user takes ownership of an entire workset.
- The LOCAL file does not need to query the CENTRAL file for permission to modify any element allocated to that workset.

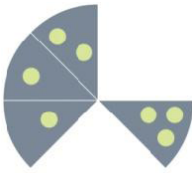
Take **OWNERSHIP** of an entire workset



BORROW elements from workset as required



NB/ Users only need to open required worksets



6.3 File Linking

Linking enables additional geometry and data to be referenced into a model. This may be either other parts of a project which are too big to manage in a single file, or data from another discipline or external company.

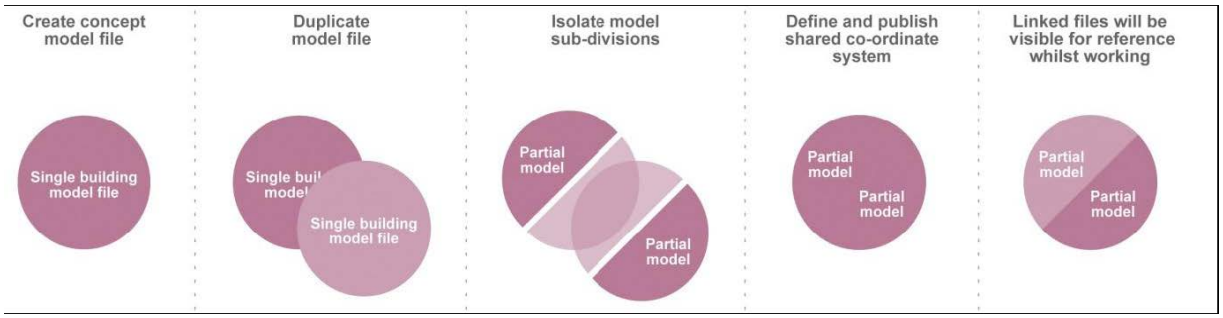
6.3.1 Single Discipline Linked Files

Some projects require that models of single buildings are split into multiple files and linked back together in order to maintain manageable model file size.

In some large projects it is possible that all the linked models may never be brought together as one. Various container files will exist to bring model files together for different purposes.

- Task allocation shall be considered when dividing the model so as to minimise the need for users to switch between models.
- Division shall be determined by the lead architect / engineer in conjunction with the BIM Co-ordinator.
- How and when the model is split shall be defined in the Project BIM Strategy document.

- Model Lines shall be used to create cross-hairs in open space prior to duplication of the model. They then serve as a quick-check to ensure that the sub-models are aligned after Linking.
- When first linking the models back together, “Origin to Origin” shall be used as the insertion mechanism.
- Before split and linked models are shared with the rest of the team:
    - The real-world co-ordinates of a point on the project shall be defined and published to all linked models using the Shared Coordinate tools in Revit,
    - Each sub-model shall be reopened and the other sub-models Linked in as required using the By Shared Coordinates insertion method.
    - The relationship between True North and Project North is correctly established.
- When splitting a file into sub-models the below workflow shall be followed:



6.3.2 Inter-Disciplinary Model Linking

Each separate discipline whether internal or external, involved in a project shall have its own model and is responsible for the contents of that model. A discipline can Link in another discipline’s Shared model for reference.

- Shared Coordinates and Project North rotation shall be agreed and documented at the outset. No deviation from these shall occur without permission of the BIM Co-ordinator.
- Details of any discipline-specific requirements, such as the difference between Finished Floor Level (FFL) and Structural Slab Level (SSL), shall be fully documented in the Project BIM Strategy.
- The Copy and Monitor tools in Revit shall be used to duplicate and relate Levels and Grids only.
- The Copy Monitor tools shall not be used for other element categories without a full understanding of limitations, such as the creation and update of certain elements is not reflected in the monitoring process.
- Ownership of elements shall be properly communicated and tracked through the project time-line (e.g. floors may be created by the Architectural team, but are then adopted by the Structural team to form part of the load-bearing structure).

- Each discipline shall be conscious that referenced data has been produced from the perspective of the author and may not be modelled to the required specification for other purposes. In this case, all relevant parties, with input from the BIM Manager(s) shall convene to discuss the potential re-allocation of ownership.

- Should a team develop a “starter model” for a partner discipline, such as defining the structural model in conjunction with the architecture, this shall be done in a separate model which shall then be linked in.

- This starter model may be passed to the partner discipline who shall then assume ownership of it. The partner discipline shall open this starter model and link in, by shared co-ordinates, the originator’s model as a reference.

- With models produced for Building Services, several disciplines may be collated in a single model, as a single piece of equipment may require connection to various services. In this scenario, the model may be split in various ways. The BIM Co-ordinator shall be consulted in defining the project-specific strategy.

7. MODELLING METHODOLOGY

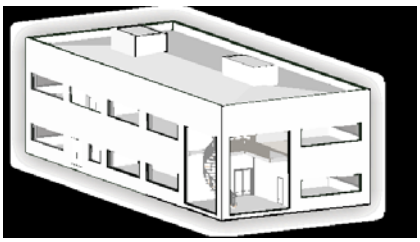
This section defines the methodologies for BIM working that enables efficient use and re-use of BIM data.

7.1 Model Development Methodology

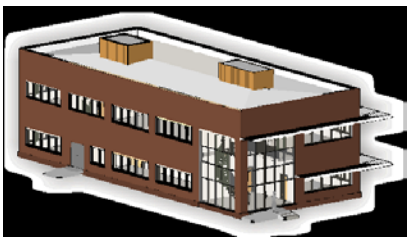
Standard templates have been created to facilitate, a Model Development Methodology which shall be used to develop projects in early stages as it enables rapid model development and allows for very large models to be created with low hardware requirements.

- The templates provide only one example of each element, such as “Doors”. These concept (Grade 1 - see section 7.2) elements shall be used to form categorised place-holders in the model.
- As the design develops, and precise materials and components are chosen, these concept objects shall be swapped, individually or en-masse, for more specific Grade 2 or Grade 3 variants.
- For Structural Analytical components, sample columns and framing members which are representative of steel or concrete elements shall be provided in the template.
- The frame shall be constructed from these placeholders. If the section size is known from an early stage it can be chosen from the libraries, but no assumptions shall be made by opting for the default section.

EXCEPTION for MEP System components. Errors can occur in swapping one MEP system component for another and so the above methodology shall be used only on components which are not system related.



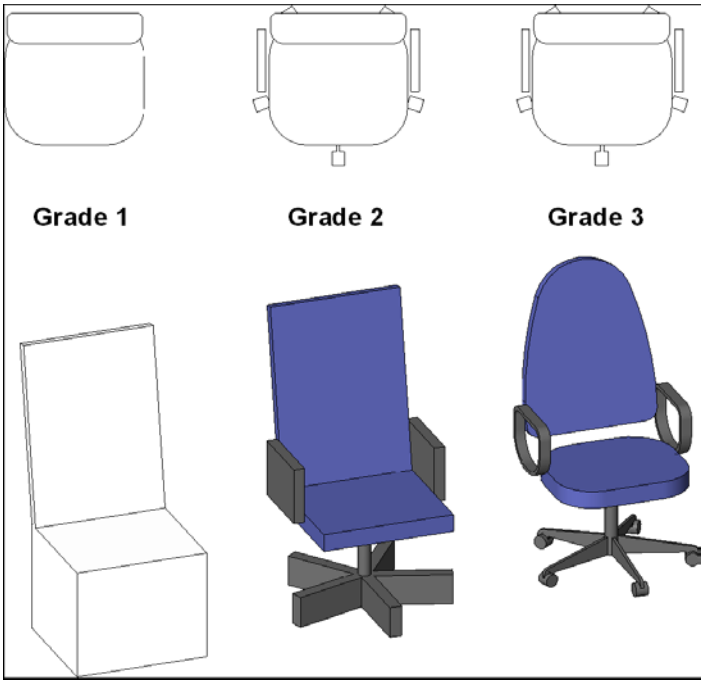
Model initially created using concept grade components.



Concept components substituted for Grade 2 or 3 components as design progresses.

7.2 Graded Component Creation

In line with the Model Development Methodology, all components created, or otherwise obtained shall be graded, named and stored accordingly in the project or central folder structure. Elements shall be graded as follows:



Component Grade 1 – Concept

- Simple place-holder with absolute minimum level detail to be identifiable, e.g. as any type of chair.
- Superficial dimensional representation.
- Generic in terms of manufacturer information and technical data.
- Created from consistent material: either “Concept–White” or “Concept–Glazing”.

Component Grade 2 – Defined

- Contains all relevant meta-data and technical information, and is sufficiently modelled to identify type of chair and component materials.
- Typically contains level of 2D detail suitable for the “Preferred” scale.
- Sufficient for most projects.

Component Grade 3 – Rendered

- Identical to the Grade 2 version if scheduled or interrogated by annotation. Differs only in 3D representation.
- Used only when a 3D view at a sufficient scale deems the detail necessary due to the object’s proximity to the camera.

Important!

When in doubt, users should opt for less 3D geometry, rather than more, as the efficiency of the BIM is largely defined by the performance of the components contained within.

Adherence to the above grading and Model Development Methodology may result in multiple versions of the same element existing at different grades. This is accommodated in the object naming strategy defined in Section 8.6.

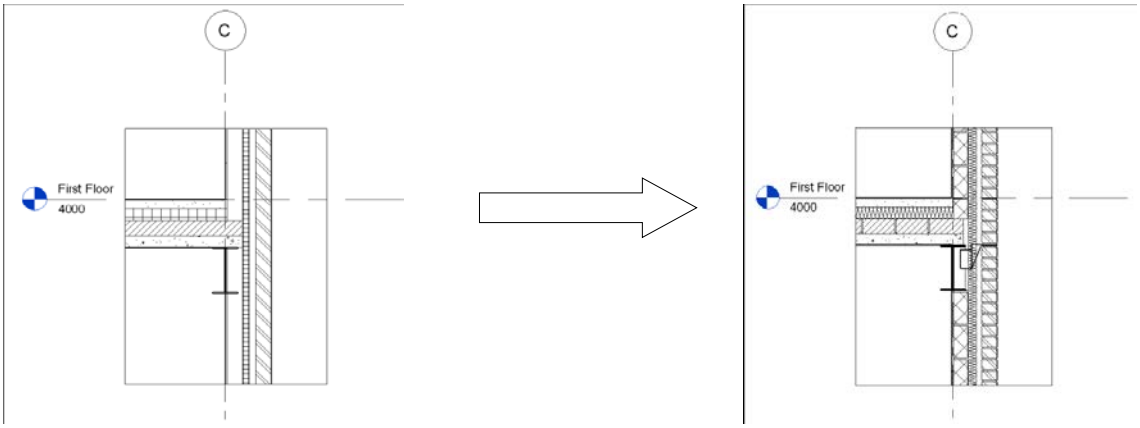
- Further purposes of the BIM will lead to additional specifications of the content, which should be built to suit the purposes of the deliverables.
- In addition to the grading, a component may make use of Coarse, Medium and Fine levels of detail to control graphical representation.
- Objects generated in the development of a project will be stored in the WIP area of the project folder structure.
- The BIM Co-ordinator will assess and verify minimum quality compliance before submitting new objects to the corporate library stored in the central resource folder.
- The intended purpose of the components shall be considered and the results checked and verified prior to large scale use. For instance, structural analysis applications may require elements with certain naming conventions or other criteria, without which they will not be recognised. Different applications may have different requirements.
- A corporate shared parameter file is encouraged in order to maintain consistency of variable naming during content creation. (Refer to Section 10.5)
- Where multiple grades of the same element do exist, care should be taken to ensure that the same Shared Parameters are incorporated into the objects, in order to maintain data integrity.

7.2.1 Model / Drafting Detail

At the outset of the project, consideration shall be given to the maximum level of detail to be included in the BIM. Too little and the information will not be fit for purpose; too much and the model may become unmanageable and inefficient.

- The BIM Co-ordinator shall dictate the point at which 3D geometry ceases and 2D detailing is utilised to prepare the published output.
- Intelligent 2D linework shall be developed to accompany the geometry and enhance the required views without undue strain on the hardware. 2D linework is not exclusive to detailed/fabrication information.
- Detailing and enhancement techniques shall be used whenever possible to reduce model complexity, but without compromising the integrity of the model.

3D modelling is carried out to an accuracy of approximately 1:50.



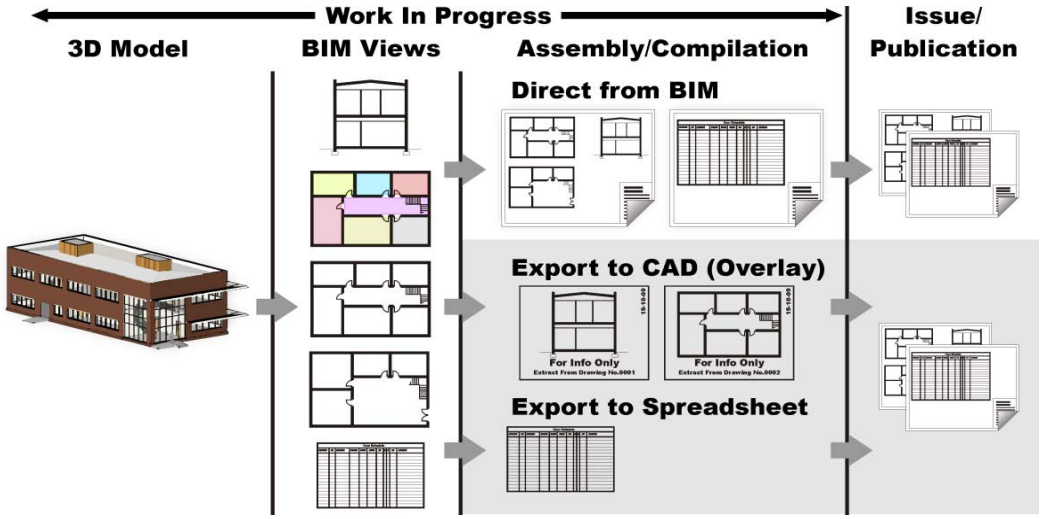
2D information contained within model

Detail Components, Repeating Details, Filled / Masking Regions, Tags, Keynotes, Text and Detail Lines are used to enhance the finished image

7.3 Drawing Compilation

Drawing compilation and preparation for publication can be carried out in two ways:

1. Fully assembled compilation of views and sheets within the BIM environment (preferred).
2. Export views in the form of output files for assembly and graphical enhancement using 2D detailing tools within a CAD environment.



- Exporting views in order to “finish off” in CAD negates the advantages of the BIM data for coordination purposes and should be avoided where possible.
- The BIM Co-ordinator shall decide if the team composition or other factors dictate that the BIM methodology is not appropriate.
- Whichever methodology is chosen, the 3D model shall be developed to the same maximum extent, before 2D techniques are applied.
- When CAD or BIM data is Linked into a project, the design teams shall ensure that the latest validated / checked design information is accessed directly from the Project Shared area when composing drawing sheets.

7.3.1 Sheet composition direct from within the BIM

Drawing sheet composition from within a BIM environment shall be established through the linking of views, callouts, elevations and drawing sheets fully within Revit software.

Care shall be taken to ensure that any linked data is available and visible prior to the publication of documentation from the BIM.

7.3.2 Sheet composition from Views/Output files

Views exported from the BIM for sheet compilation in CAD, or for use as a background to other drawings in CAD, shall be placed on a plain border which clearly indicates the following:

- The data is provided for information purposes only
- Details of the origin of the data
- The date of production or issue

Where output files are exported from the BIM for further 2D detailing in CAD, originators shall ensure that changes occurring within the BIM are correctly reflected and updated within the CAD files used to produce the final drawing.

If it is a requirement to export data from Revit in “Real-World” co-ordinates, then the export operation must be performed from

Warning:

The integrity of exported views/output files from within a BIM environment must be checked for accuracy and content prior to drawing compilation.

7.4 Spatial Location & Co-ordination

BIM projects shall:

- Use real world co-ordinate systems:
- Be produced to true height above project datum.
- Adopt the established Project Shared Coordinate system across all BIM data files to allow them to be referenced without modification.

CAD data modelled more than 1 mile from the origin (in any plane) shall be shifted to 0,0,0 prior to importing into Revit to avoid accuracy issues. This shift shall be agreed, consistent and identified in the Project BIM Strategy document.

Note:

Some software (e.g. certain structural analysis software) requires data to be located at 0,0. For export to such software, alternative coordinate systems shall be established within the BIM data.

7.5 Units and Measurement

- Models shall use consistent units and measurement across the project. Default project units shall be millimetres with two decimal places in order to display accuracy in the temporary dimensions.
- Dimension styles in the accompanying templates utilise defined units which override project settings, so whilst the temporary dimension might read 3000.00 (project settings), the permanent dimension will read 3000 (dimension style in template).
- 2D input/output files shall conform to the unit and measurement protocols designated for specific drawing types e.g.
    - 1 unit = 1.000 metre — Site layout drawings relating to the project coordinate system to an accuracy of 3 decimal places.
    - 1 unit = 1 millimetre — Elements, details, sections, elevations and building structure outlines to an accuracy of 0 decimal places.
- Switching between Imperial / Metric units shall be avoided where possible in order to maintain proper or conventional measurements, such as 50mm rather than 50.8mm.
- CAD data shall be scaled to the appropriate units prior to linking into the BIM environment.

8. Folder Structure and Naming Conventions

8.1 Introduction

This section defines storage of BIM data within the project filing system along with the naming conventions associated with aspects of BIM working.

8.2 Project Folder Structure

The defined structure follows the principles of BS1192:2007's "Work In Progress (WIP)", "Shared", "Published" and "Archived" segregation of data within a designated set of folders (see Section - Project Review Dates: Sets out key dates for reviews of the Revit model which all teams buy in to both internal to the company and externally with the full design team).

Collaborative BIM Data Sharing

Where a project comprises of a number of separate elements such as multiple buildings, zones or areas, the BIM structure shall be maintained within a set of designated sub-folders representing the various project elements.

All project data (with the exception of a user's Local copy of a Central file) shall be held within the standard project folder structure located on central network servers or appropriate Document Management technology. This includes all WIP components or assemblies.

8.2.1 Central Resource Folder Structure

Standard templates, titleblocks, families and other non-project-specific data shall be held within the server based Central Resource Library, with restricted access.

- <SERVER NAME>\Resource\Autodesk_Revit
+ Titleblocks
+ Standards
+ Templates
+ Families [Refer to Section 8.2.4]

8.2.2 Local Project Folder Structure

Local copies of central project models do not need to be backed up as changes are regularly synchronised with the central model. They shall be stored on the user's hard drive – not in "My Documents"– according to the folder structure below.

- D:\ [Standard local drive] [Standard local drive]
  - BIM_Projects [Storage of Revit local projects] [Storage of Revit local projects]
    - <Project Name> [Name of project] [Name of project]

8.2.3 Project Folder Structure

The following folder structure is provided as an example arrangement, designed to encourage compliancy with the strategies contained within this standard.

-[Project Folder]	
-BIM	[BIM data repository]
-01-WIP	[WIP data repository]
-CAD_Data	[CAD files (incl. Modified)]
-BIM_Models	[Design models (incl. Modified)]
-Sheet_Files	[Sheet/dwg files]
-Export	[Export data e.g. gbXML or images]
-Families	[Components created during this project (See 8.2.4)]
-WIP_TSA	[WIP Temporary Shared Area (TSA)]
-02-Shared	[Verified Shared data]
-CAD_Data	[CAD data/output files]
-BIM_Models	[Design models]
-Coord_Models	[Compilation models]
-03-Published	[Published Data]
+YMMDD_Description	[Sample submission folder]
+YMMDD_Description	[Sample submission folder]
-04-Archived	[Archived Data repository]
+YMMDD_Description	[Archive folder]
+YYMMDD_Description	[Archive folder]
-05-Incoming	[Incoming Data repository]
-Source	[Data originator]
+YMMDD_Description	[Incoming folder]
+Source	[Data originator]
-06-Resource	[Project support files]
+Titleblocks	[Drawing borders/title blocks]
+Logos	[Project logos]
+Standards	[Project standards]

No spaces are to be used in the folder naming as this can potentially interfere with certain file management tools and collaboration across the internet.

8.2.4 Component Library Sub-Folders

All locations for the storage of Family components shall be sub-divided as follows:

-Families	[Exists in several locations]
+2009	[The version of the software]
-2010	[The version of the software]
-Architecture	[Architectural components]
-Mechanical_Services	[MEP components]
-Structure	[Structural components]
-General	[Non discipline-specific elements]
-Autodesk_Metric_Library	[Default supplied components]
-Material_Library	[Textures libraries and images for render output]

The individual disciplines shall then be broken down as follows, with new sub-folders added as required by additional functionality in the software.

8.2.4.1 Architecture Components

-Architecture	
-Casework	
-Ceilings	
-Columns	[Arch non-analytical columns]
-Curtain_Panel_by_Pattern	
-Curtain_Wall_Panels	
-Detail_Components	
-Doors	
-Electrical_Fixtures	[Arch versions]
-Entourage	
-Floors	
-Furniture	
-Generic_Models	

- Lighting_Fixtures [Arch versions]
- Mass_Elements
- Mass
- Planting
- Plumbing_Fixtures [Arch versions]
- Profiles
- Q_Families
- Roofs
- Site
- Speciality_Equipment
- Stairs_and_Railings
- Balusters
- Sustainable_Design
- Walls
- Windows

8.2.4.2MEP Components

- Mechanical Services
  - Ceilings
  - Ducts
  - Electrical_Components
  - Fire_Protection
  - Generic_Models
  - Mechanical_Components
  - Pipe
  - Plumbing_Components
  - Profiles
  - Speciality_Equipment
  - Sustainable_Design

8.2.4.3Structural Components

- Structure

- Boundary_Conditions
- Columns
- Connections
- Floors
- Foundations
- Framing
- Generic_Models
- Profiles
- Rebar_Shapes
- Retaining_Walls
- Roofs
- Speciality_Equipment
- Stiffeners
- Trusses
- Walls

8.2.4.4Non Discipline-Specific Components

- General
  - Annotation [Tags and symbols]
  - Titleblocks [Drawing frame families]

8.3 General Naming Conventions

Use only letters A-Z, hyphen, underscore and numbers 0-9 for all fields.
All fields shall be separated by a hyphen character “-” Do NOT use spaces.
Within a field, either Camel Case or an underscore “_” shall be used instead of a space to separate words.
A single period character "." shall be used to separate the file name from the extension. This character should not be used anywhere else in the file name.
The file extension shall not be amended or deleted.
An “XX” shall be used if the file does not refer a single specific zone or level.

The scheme for zone and level sub-division shall be agreed with the other project professionals at the outset and defined in the Project BIM Strategy document.
For 2 digit code examples for discipline, zone and level see Appendix 11.1
Elements where a naming convention is not explicitly defined by this Standard shall adopt the naming convention of existing elements and prefix with a 3-character abbreviation to identify corporate author.

Examples:

Line Pattern Name	Line Style Name	
AEC_Dash-1.5mm	AEC_1-Solid	} Existing elements
AEC_Dash-3mm	AEC_3-Solid	
AEC_Dash-9mm	AEC_5-Solid	
ABC_Dash-12mm	ABC_3-Hidden	--- New element

8.4 Model File Naming

Naming of model files shall be based on BS1192:2007. For full compliance, recommended character restrictions should be adopted.

Field 1: **Project** (Recommended 3 characters)
An abbreviated code or number identifying the project.

Field 2: **Originator Code** (Recommended 3 characters)
An abbreviated code identifying the originating stakeholder.

Field 3: **Zone/System** (Recommended 2 characters)
Identifier of which building, area, phase or zone of the project the model file relates to if the project is sub-divided by zones).

Field 4: **Level** (Recommended 2 characters)
Identifier of which level, or group of levels, the model file relates to if the project is sub-divided by levels.

Field 5: **Type** (Recommended 2 characters)
Document type, which will be M3 for 3D model files.

Field 6: **Role** (Recommended 2 characters)
2 character discipline identifier code. Refer to Appendix 11.1.

Field 7: **Description**
Descriptive field to define the type of data portrayed in the file. Avoid repeating information codified in other fields. Can be used to describe any part of the previous fields, or to further clarify any other aspect of the contained data.

Local / Central (mandatory when using worksets)
In workset enabled files, either –LOCAL or –CENTRAL shall be suffixed to the filename.

Examples:

Model File Name	Description
37232-AAA-Z6-01-M3-ST-Main_Model-LOCAL.rvt	Job No. 37232, Structural drawing of Zone 6, Level 1 – User local file
FTR-ACM-XX-XX-M3-ST-School_Stage_E.rvt	Acme structures model for School project at Stage E – no zones or segregation of floors
102-ACM-Z1-XX-M3-ME-School.rvt	Acme Building Services model for job 102, Zone 1 all levels

8.5 Workset Naming

Worksets should be named in a consistent and logical manner to aid navigation through the project.

Note:

As these are created, the “Enabled in All Views” option shall be checked in every case except Furniture. (This cannot be changed later)

Field 1: **Zone** (Optional)

Larger projects can be divided horizontal or vertically into zones/levels and so this should be indentified in the workset naming where applicable.

Field 2: **Content**

Description of workset content; used in isolation in smaller projects, or in combination with one or both of Zone and Level on larger projects. Should typically be one of the following:

Ceilings	Ceilings and attached components
Cores	Architectural components of core
Furniture	Furniture and equipment
Interiors	Interior walls and doors
Shell	Exterior walls and openings
Slabs	Horizontal elements including roofs
Circulation	Stairs, ramps and landings
Structure	Structural slabs and columns

Examples:

Workset Name	Example of use
L01-Model	Project broken by levels
L01_14-Internals	Multi-Level Internal layout
East_Lvl26-Partitions	Very large project broken into zones, levels and systems

Core	Small project; core span levels
East-Cores	Large project; cores span levels

8.5.1 Workset Not Defined

Some elements do not require explicit workset definitions due to the standard behaviour of Revit.

Grids These are included in the Shared Levels and Grids.
Areas View specific and don't require a workset.
Annotation View specific and don't require a workset.

8.6 Library Object Naming

To be confirmed in next release.

8.7 Parameter Naming

To be confirmed in next release.

8.8 View Naming

Conventions in the naming and use of views are necessary to coordinate team activity and prevent inadvertent changes in the output documents.

This standard is limited to draughting views and sheet views (although the Project Browser includes other kinds of elements).

- View naming shall be consistent across all references to that view. Renaming of views shall be carried out with care as any changes will be automatically reflected across all documentation.

Field 1: **Level** (Optional)
Concise description of the content and purpose of the view

Field 2: **Content**
Where appropriate, further clarification of the location of information shown

Examples:

Name
LEVEL 1 – FLOOR PLAN

LEVEL 1 – CEILING PLAN
LEVEL 3 – DETAIL PLAN AT ELEVATOR 1
NORTH-SOUTH BUILDING SECTION
WALL SECTION 1
SOUTH ELEVATION

- The Revit functionality that allows for the Title on Sheet to be different to the view name shall not be used. Exceptions for structural modelling:
  - A view to be used as a substructure or superstructure section. In this instance, the view property "Title on Sheet" shall be renamed to "SECTION".
  - A view to be used as a wall or framing elevation. In this instance, the view property "View Name" shall be similar to "VB-2" and the view property "Title on Sheet" shall be renamed similar to "Framing Elevation – VB-2".
- Level names are spelled out as they need to appear in a room schedule (as well as how they will appear in sections and elevations.) Do not pad the level number with leading zeros.
- Views shall not be named in order to make them sort or group more logically in the Project Browser as the grouping and filtering settings take care of that automatically (ie the prefixing of level names by sequential numbers).
- View names shall be written in uppercase.
- Creation of temporary working views is encouraged. The filtering described in Section 8.10 will ensure these remain in the top “views” section of the project browser.

8.8.1 Special Views

Plan views differ in Revit from other views because they can be duplicated (without reproducing their reference mark as is necessary with elevations and sections.) This results in many special-purpose plans that are temporary or maybe never placed on title-sheets.

The following are exceptions to the view naming conventions described above.

View Type	Naming Convention	Examples
Colour Plans	COLOUR - <modifier>	COLOUR – L1 COLOUR – LEVEL 1 PRIMARY
Views created in order to communicate a information relating to elements which meet a specific criteria		
Export Views	EXPORT - <modifier>	EXPORT – L1 EXPORT – LEVEL 1 ELECTRICAL BACKGROUND

Special configurations may be required for supplying graphical information which is specific to a particular discussion. These views shall show information relating to the origin and date/time of the extract as described in Section 7.3.2.		
Import Views	IMPORT - <modifier>	IMPORT – L1 IMPORT – LEVEL 1 ELECTRICAL
A dedicated view should be used for attaching linked and imported material that needs to be segregated from other views. (This requirement helps to avoid technical problems and make it easier to control visibility.)		

8.8.2 Callout Views

Detail views, including views which are used only as a container for a linked AutoCAD detail, are named with the same general conventions as other views.

However, where the view refers to a fabrication detail of a common component, it may be pertinent to adopt a naming convention which refers to the Uniclass code associated with that element.

Examples:

Name
A810 Waterproofing System
A820 Exterior Concrete
A910 Interior Partitions
A915 Interior Firestop-Penetration

8.9 View List Scheduling

Two pre-defined schedules are included in the templates to manage the views, namely the Publication View List and the WIP View List, which contain columns for the following data:

Publication View List				
View Name	Title on Sheet	Scale Value 1	Sheet Number	Sheet Name

WIP View List		
View Name	Scale Value 1	Detail Level

Views are grouped by type within both schedules in order to aid navigation. It is recommended that these schedules remain unchanged and that new schedules are created, should the need arise to make this information available externally in a different format.

8.10 Project Browser Organization

The Project Browser in Revit provides an organizational structure to the views and components within the BIM environment. The following rules are defined within the templates to automatically sort WIP views from Publication views.

- View folders shall be grouped by Family and Type and sorted by Associated Level in Ascending order.

- The Views shall be filtered by Sheet Name which should be Equal to a value of None. View section will now show only views not allocated to a drawing sheet.

- Sheet folders shall be grouped by Sheet Number using 1 Leading Character and sorted by Sheet Number in Ascending order.

- No filters shall be applied to the Sheets.

8.11 Sheet View Naming

Sheet naming shall be based on the Document and Drawing Numbering protocols established for the project. These names automatically match the text as it appears in the titleblock and any schedules.

9. Presentation Style

9.1 Introduction

This section defines the criteria which ensure the plotted appearance of drawing output from the BIM is consistent and of the highest quality. These criteria are embedded within the associated discipline-specific template files which accompany this document.

Note:

It is not the remit of this standard to dictate aspects covered by existing national drafting standards, and covers only those aspects which are important in delivering high quality, consistent drawing output from within a Revit BIM environment.

9.2 Templates

Three discipline-specific Revit project templates are available as part of this Standard. They can be obtained from the web site and are maintained by the A.C.I.D. BIM committee.

Additionally, a number of family templates are included. These templates provide an alternative basis for new families, consistent with the content of this standard.

Where client requirements deviate from those expressed in this standard, project-specific templates shall be created. These shall be stored within the Project BIM Resource standards folder.

9.3 Annotation

Text style shall be **ARIAL NARROW** using font file **ARIALN.TTF**

- The appearance of text shall be consistent across a set of drawings.
- Annotation shall be legible, clear and concise.
- An opaque background should be considered as an aid to clarity.
- Text shall remain legible when drawings are plotted at reduced size. Wherever practical lettering shall not be placed directly on top of lines or symbols.
- Dot style arrowheads shall be used instead of closed filled arrowheads when calling up hatched/shaded areas.

Note:

Parametric annotations shall be used wherever possible (e.g. TAGS, KEYNOTES etc.) For example, using the ROOM tools instead of adding text, allows room data to be scheduled to give area plans, finish schedules etc.

9.4 Text Assignment

All text shall be restricted to the following sizes:

Text height (mm) Plotted	Line Weight	Usage
1.8	2	General text, dimensions, notes – used on A3 & A4 size drawings
2.5	3	General text, Dimensions notes
3.5	4	Sub-headings,
3.5	5	General text, dimensions, notes – A0 drawings
5.0	7	Normal titles, drawing numbers
7.0	8	Major titles

Alternative text sizes shall not be used without the consent of the BIM Co-ordinator.

9.5 Line Weights

Line weights control the graphical display of on-screen data as well as all published output. Line weights assigned to Model elements are scale dependent whilst those associated with Annotation objects are fixed.

There are 16 model line weights. Each can be given a plotted thickness across the range of drawing scales as defined in appendix 11.8.

- Thin Lines mode shall not be used as this distorts the production requirements of publication output and promotes over-modelling and over-detailing.
- The plotted appearance of modelled components shall be consistent across the project.
- Line weights are assigned project-wide by category of component and can be overridden by view and by element. Individual lines on elements can also be overridden. Overriding should be kept to a minimum to aid consistency.
- The plotted appearance of modelled components shall be represented in a manner that provides depth to the drawing and allows for adequate differentiation of elements cut in section, profile view and priority elements.

9.6 Line Patterns

The supplied templates contain a number of defined Line Patterns for use in all draughting production work. These Line Patterns are defined in Appendix 0 and any additional Line Patterns shall be created by the BIM Co-ordinator and named according to the naming conventions described in Section 8.3.

9.7 Line Styles

Line Styles are defined in the supplied templates as a project setting. These styles are documented in Appendix 11.7 and any additional Line Styles shall be created by the BIM Co-ordinator and named according to the naming conventions described in Section 8.3.

9.8 Hatching and Filled Regions

- Appendices 11.4 and 0 provide samples of the default Fill Patterns for Model and Drafting usage, which are loaded into the default templates.
- Alternative Fill Patterns shall be used only with the approval of the Project BIM Co-ordinator.
- Hatching/patterning shall be created using the relevant tools available within the software.
- Where possible, hatch patterns should be assigned to the relevant materials for the elements, rather than assigned as 2D patches.
- Care shall be taken to ensure that the draw order and transparency settings of filled regions are appropriate to the situation so as not to cover required graphical information.

9.9 View Templates and Filters

The default templates have a number of pre-defined View Templates and associated View Filters as described in Appendices 11.11 and 11.12.

- View Templates shall be used to maintain consistency across published output.
- Adjustments to the settings of the View Templates shall be carried out only with the agreement of the BIM Co-ordinator.
- Adjusted View Templates must be re-applied to all relevant views in order to propagate changes.

9.10 Dimensioning

Default dimension styles exist in the accompanying templates and new styles shall be added only if authorised by the BIM Co-ordinator.

- Where practical, all dimensioning shall be created using relevant software dimensioning tools. The dimension text shall not be exploded or overridden, but can be appended to e.g. “1200 (Typ.)”.
- Where practical avoid duplicate dimensioning either within a drawing or within a set of drawings.

- Where practical, dimension lines shall not be broken and shall not cross other dimension lines.
- In general, dimensions shall be placed on a drawing so they may be read from the bottom or right-hand side of the drawing.
- In general, dimension text shall be placed above the dimension line and shall be clear of other lines so that they are legible.
- In general, Dimension styles shall adopt standard engineering style dimensioning using closed filled 20° arrow head. (Deviation: Architects may use diagonal tick style).
- Dimension units shall be predefined within the style, and not left to default to the project units.
- Default dimension styles shall not be overridden.

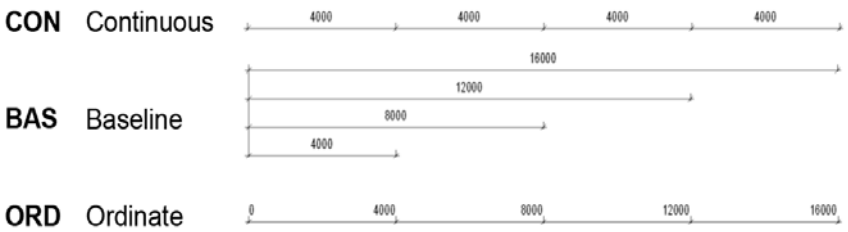
9.10.1 Dimension Style Naming Convention:

Field 1: **Text Size**

Size of text used on the dimension in the appropriate units. By default this shall be 2.5mm Arial Narrow.

Field 2: **String Type** (Optional)

Dimension String Type



Field 3: **Tick Mark**

Description of the tick mark used on the dimension style such as Dot, Arrow or Diagonal tick marks.

Field 4: **(Units)**

The reporting units of the dimension style.

Field 5: **Description** *(Optional)*

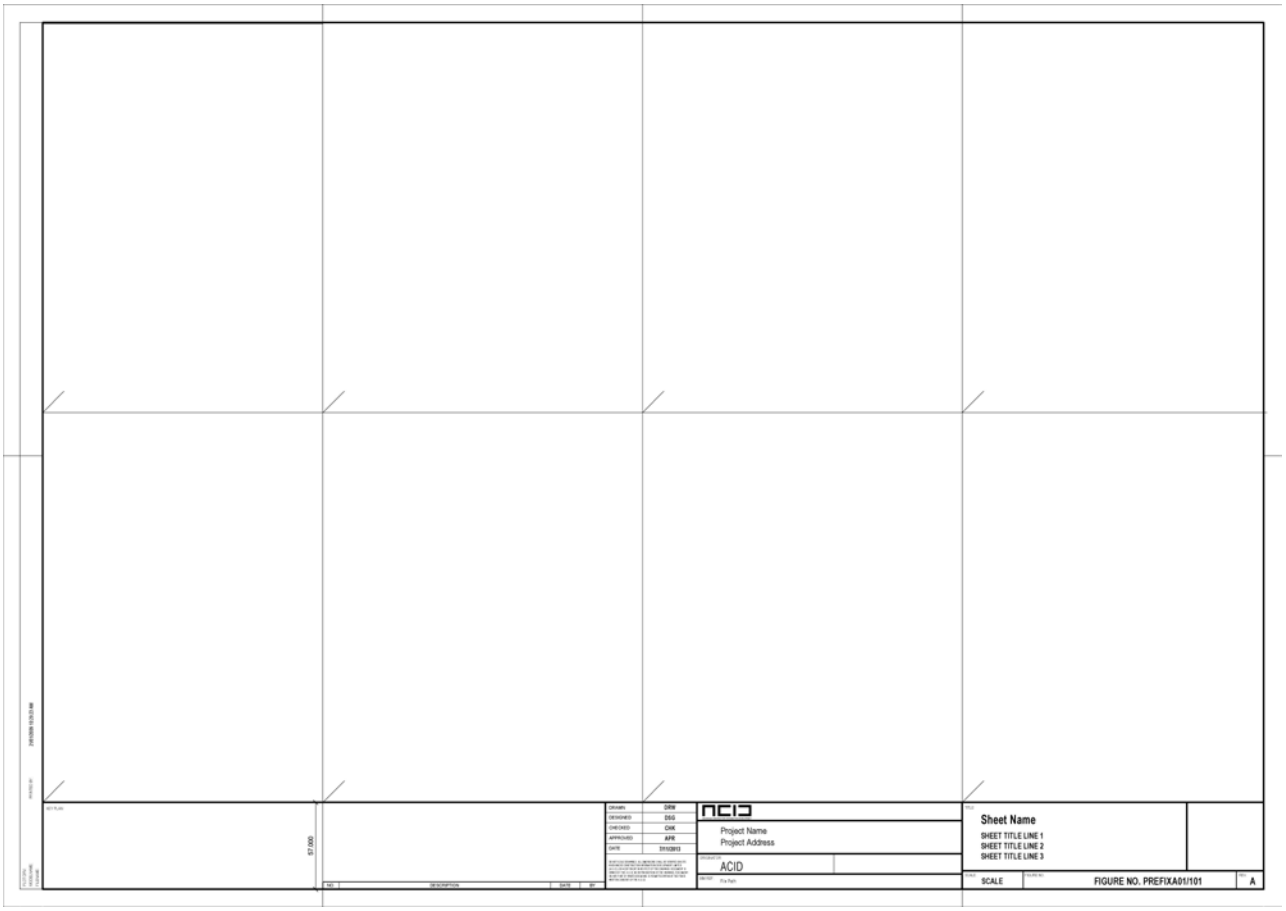
Provision for distinguishing specific dimension styles

Examples:

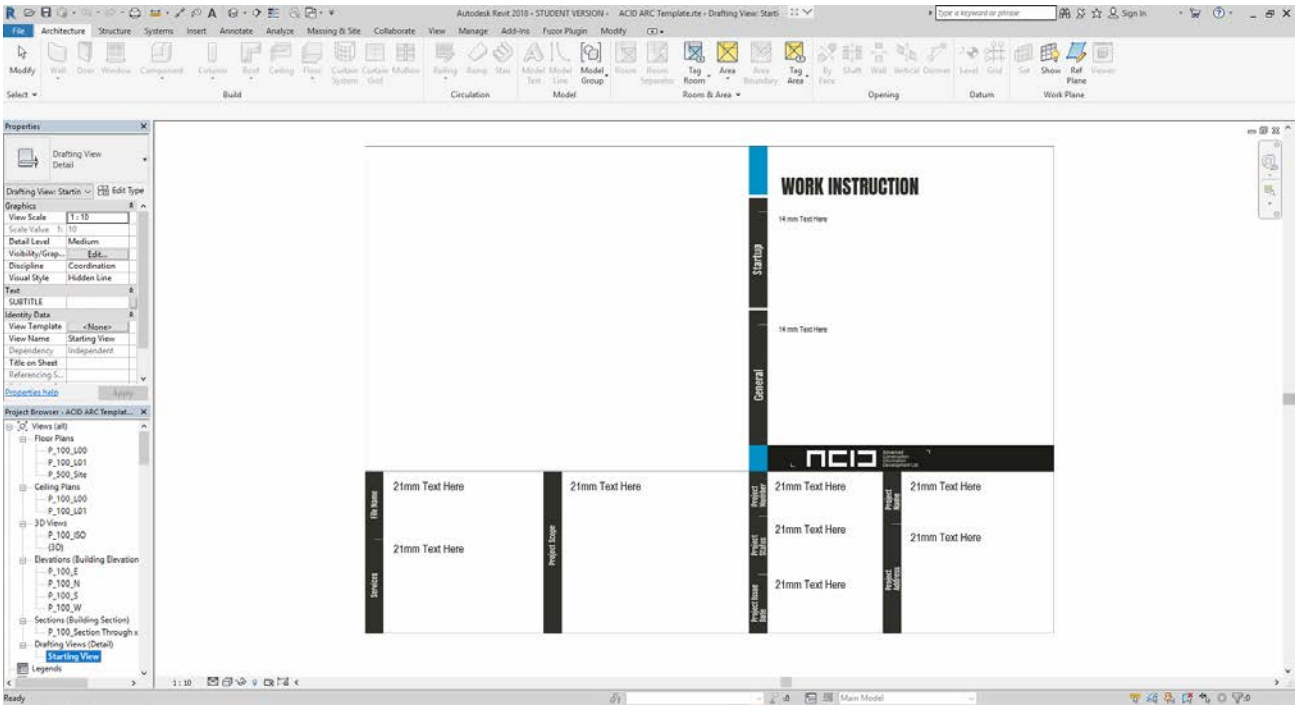
1.8-Con-Arrow-(mm)
2.5-Con-Diagonal-(mm)-Centreline
2.5-Arrow-(deg)

9.11 Titleblocks

- Corporate titleblock are available from the Families area of the central resource folder.
- Alternative client-specific versions may also be available from the same location.
- Project-specific title blocks shall be created and stored in the Project Resource folder.
- Sample title block file is included in this document.



9.12 Starting Page



9.13 Symbology

Standard symbols such as north point, section marks and call-ups are available from within the discipline-specific template files and shall be used by default. See Appendix 11.3 for standard drawing navigation symbols.

9.13.1 Section and Detail Marks

Section and Detail marks shall be accessed from within standard template files, Revit's default repository or the Central BIM library.

- Section and Detail marks used shall be as defined in appendix 11.3.
- All Sections shall be numerically labelled.
- All Details shall be alphabetically labelled.
- Where practical, sections shall be listed consecutively, from left to right and from top to bottom on the drawing on which they are drawn.
- All sections and details shall be correctly cross-referenced in both directions i.e. cross reference to where the section/detail is actually drawn. Drawing cross referencing shall not include the revision code.

9.14 Copyright

All drawings, sketches or figures containing copyright information shall display the relevant permission to use that data.

For example with Lands Department B1000 Digital Basemap:

Maps reproduced by permission of the Director of Lands, Hong Kong Government

10. Resources

10.1 Introduction

To increase efficiency of BIM working, and to ensure a consistent and high quality output, resources and content shall be shared across the practice.

Certain projects may require deviations from this standard: these shall be defined in the Project BIM Strategy document.

10.2 Software

- A consistent software platform will aid the collaboration potential of BIM projects and is recommended. Interoperability between applications should be checked and verified at the outset of the project.
- Where 3rd party applications are used, originators shall ensure the standards defined within this document are complied with, unless situations make this impractical.
- Any potential implementation of software upgrade during the course of a live project shall be reviewed for its appropriateness by the BIM Co-ordinator who shall raise recommendations for upgrade through the relevant senior manager for approval.
- Implementation of any upgrade shall be in line with corporate CAD / BIM software strategy.

10.3 BIM Content / Resource Libraries

Content libraries hold families and other items for use within BIM.

- Creation of project-specific content is encouraged but shall be coordinated by the project BIM Manager ensuring content is developed in accordance with this standard and the associated best practice guidelines.
- No content shall be stored on users own hard-drives, but shall be shared in a controlled manner through the Project BIM Resource Library to provide access across the project team.
- Project content shall be reviewed periodically by the BIM Co-ordinator for inclusion in the Central BIM Resource Library which is read-only.
- Revit default family libraries are available through the Central Resource Library as read-only. Any elements from this library which require modification prior to utilisation shall be copied to the Project Resource Library.

10.3.1 Project BIM Resource Library

This shall be the repository for the storage of project specific standards where deviation from this standard is required due to project or client requirements.

- Standards, templates, titleblocks, families and other data produced in the process of completing the project shall be held within the Project BIM Resource Library (see section 8.2 - Project Folder Structure).
- Additions or modification to content held within this resource shall be carried out in a controlled manner and be at the approval of the BIM Co-ordinator.

10.3.2 Central BIM Resource Library

Standard templates, titleblocks, families and other non-project-specific data shall be held within the server based Resource Library, as defined in Section 8.2.1.

- Additions or modification to content held within this resource shall be carried out in a controlled manner and be at the approval of the BIM Co-ordinator.
- Content shall be segregated by software product and version.
- When content is updated for use in newer product version:
    - The original data shall be maintained,
    - The updated version of the content shall be created in the appropriate location for that product & version. This avoids “forwards incompatibility” when using content with the version of the software for which it was originally created.

10.4 Keynotes

- A default Keynote file is included as part of this Standard and can be found in the Standards folder within the Central Resources.
- This file shall be copied to the project’s Resource>Standards folder for each new project.
- Modifications to the project-specific version are to be managed by the BIM Co-ordinator.

10.5 Shared Parameters

- The corporate Shared Parameter file is held in the Standards folder within the central resource. This is maintained by the BIM Management Team (App 11.15)
- When the creation of project-specific families requires the definition of shared parameters, a file shall be created within the project’s resource folder. Once this content is approved for the corporate library, the associated Shared Parameters will be appended to the central Shared Parameters.

10.6 Keyboard Shortcuts

Only approved keyboard shortcuts shall be used (See Appendix 12.10).

11. Appendices

11.1 Model File Naming Codes

Discipline Codes	
AR	Architects
BS	Building surveyors
CI	Civil engineers
DR	Drainage, Road, Sewer
EL	Electrical engineers
CC	Cable Containment
EL	Electrical Services
FA	Fire Alarms
LP	Lightning Protection
LT	Lighting
SE	Security
SP	Small Power
FI	Fire
FM	Facilities managers
GI	GIS, land surveyors
HS	Health and safety
ID	Interior designers
TE	Telecommunications
CL	Client
LA	Landscape architects
ME	Mechanical engineers
CW	Chilled Water
HT	Heating
ME	Mechanical Services
VT	Ventilation
EN	Environmental
PH	Public health
DR	Drainage
FS	Fire Services
PH	Public Health Services
SR	Sanitation and Rainwater
WS	Water Services
QS	Quantity surveyors
RA	Rail
ST	Structural engineers
TP	Town / Transport planners
CO	Contractors

Discipline Codes	
SD	Specialist designers
ZZ	General (non-specific)

Project Zone Code Examples	
01	Building or zone 1
ZA	Zone A
B1	Building 1
CP	Car park
A2	Area Designation 2

Project Level Code Examples	
01	First floor
B2	Basement 2
M1	Mezzanine 1
RF	Roof
PL	Piling
FN	Foundation

SC	Sub-contractors

11.2 Uniclass Table Reference

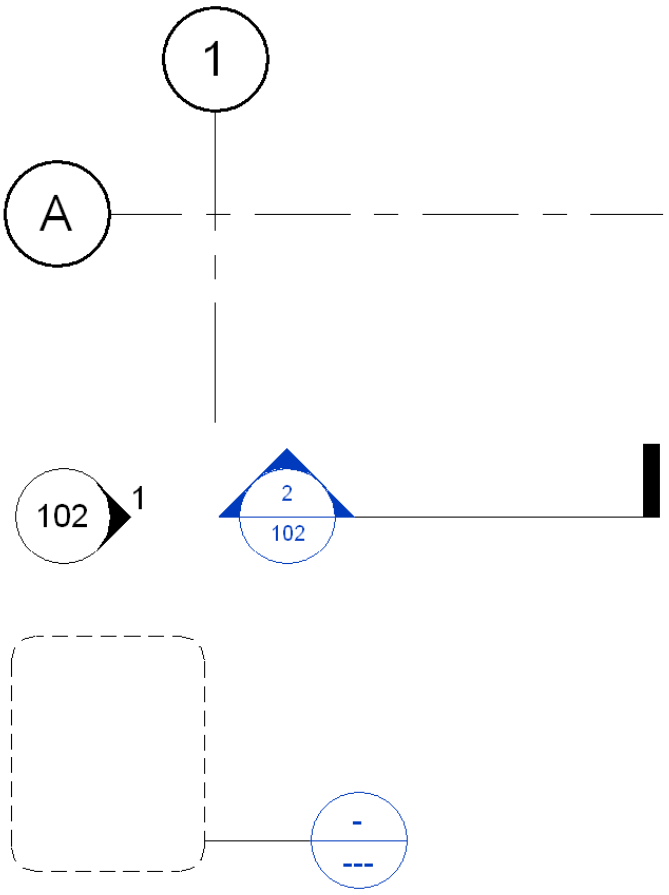
Uniclass Table	Used for
F	Definitions of “spaces”
G	Building objects (normally physical/graphical)
H	Civil engineering objects
J	Detailed classification of non-graphical objects used for specification
P	Non-specific material definition

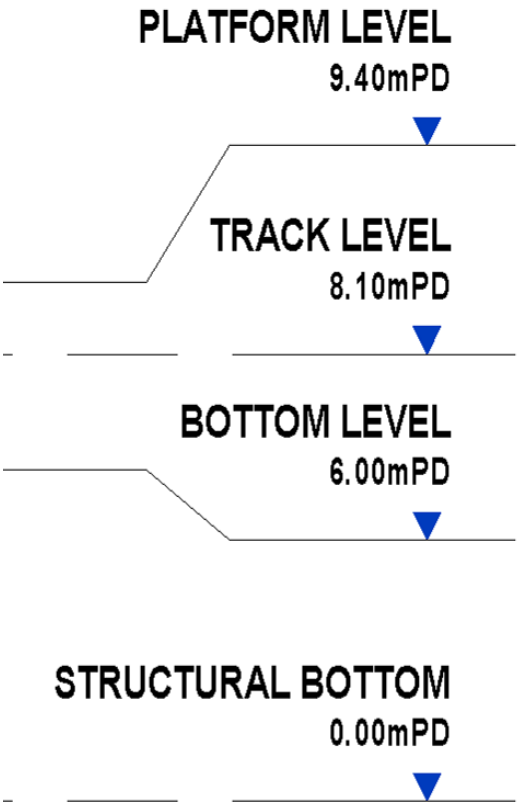
Alternative classification systems to Uniclass, such as CI/FsB have followers within the industry, it is beyond the remit of this standard to suggest which of these is more or less suitable. CI/FsB is no longer maintained and as such it was discounted from promotion herein.

The full Uniclass tables are available on-line at:

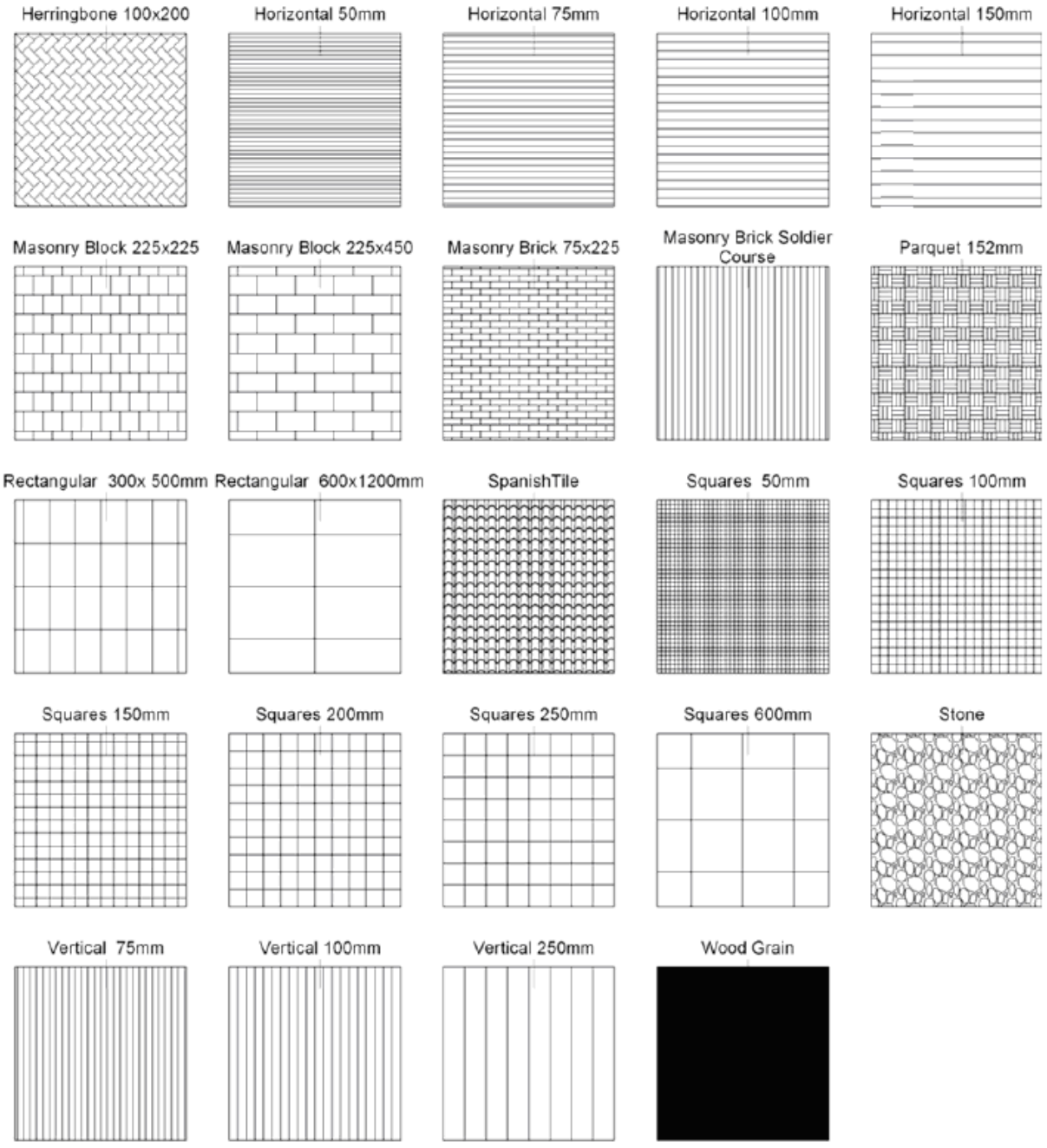
www.cpic.org.uk/en/publications/uniclass-listing.cfm

11.3 Standard Drawing Navigation Symbology

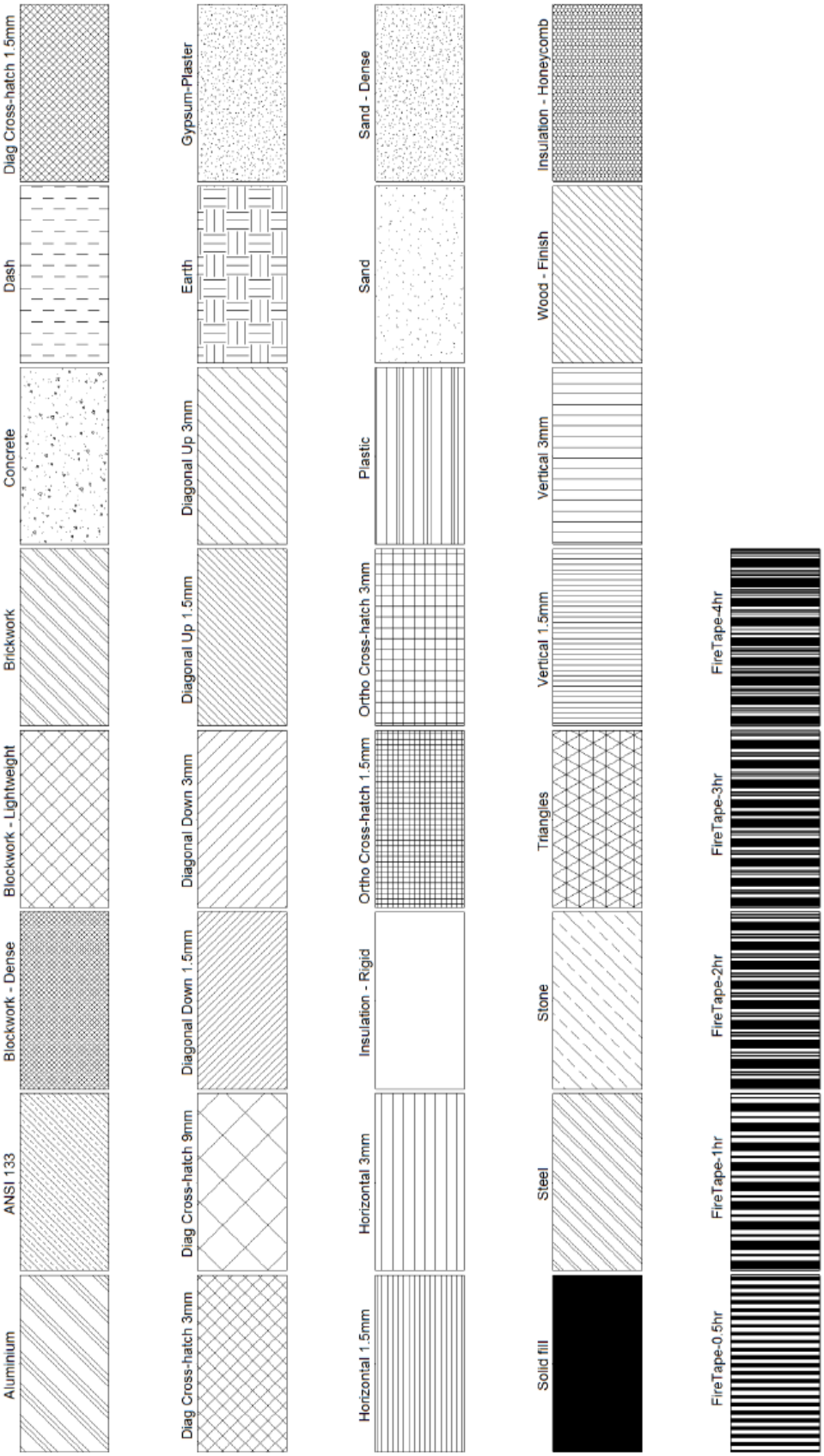



PLATFORM LEVEL
9.40mPD
TRACK LEVEL
8.10mPD
BOTTOM LEVEL
6.00mPD
STRUCTURAL BOTTOM
0.00mPD

11.4 Model Patterns



11.5 Drafting Patterns



11.6 Line Patterns

Name	1		2		3		4		5		6		7		8	
	Type	Value	Type	Value	Type	Value	Type	Value	Type	Value	Type	Value	Type	Value	Type	Value
Demolished	Dash	3	Space	1.5												
Elevation	Dash	2	Space	1												
Grid Line	Dash	12	Space	3	Dash		Space	3								
Hidden	Dash	4	Space	2												
Overhead	Dash	2.5	Space	1.5												
Window	Dash	6	Space	3	Dash	3	Space	3								
AEC_Centre	Dash	12	Space	4	Dash	4	Space	4								
AEC_Dash	Dash	1.5	Space	1.5												
AEC_Dash 3mm	Dash	3	Space	3												
AEC_Dash 3mm Loose	Dash	3	Space	6												
AEC_Dash 9mm	Dash	9	Space	4												
AEC_Dash Dot 3mm	Dash	3	Space	2	Dot		Space	2								
AEC_Dash Dot 6mm	Dash	6	Space	4	Dot		Space	4								
AEC_Dash Dot Dot 6mm	Dash	6	Space	4	Dot		Space	4	Dot		Space	4				
AEC_Dot 4mm	Dot		Space	4												
AEC_Dot 1mm	Dot		Space	1												
AEC_Dot 2mm	Dot		Space	2												
AEC_Double Dash	Dash	15	Space	4	Dash	6	Space	4	Dash	6	Space	4				
AEC_Hidden 2mm	Dash	2	Space	1												
AEC_Triple Dash	Dash	15	Space	4	Dash	6	Space	4	Dash	6	Space	4	Dash	6	Space	4

11.7 Line Styles

Category	Line Weight	Line Colour	Line Pattern
	Projection		
Lines	3	RGB 000-161-000	Solid
Area Boundary	12	RGB 128-000-255	Solid
Beyond	3	Black	Solid
Centreline	3	Black	AEC_Centre
Demolished	3	Black	Demolished
Hidden	3	Black	Hidden
Overhead	2	Black	Overhead
Room Separation	12	Cyan	AEC_Dash 3mm
Sketch	6	Magenta	Solid
Space Separation	12	Green	AEC_Dash 3mm
Axis of Rotation	12	Blue	AEC_Centre
Hidden Lines	3	RGB 000-161-000	AEC_Dash 3mm
Insulation Batting Lines	3	Black	Solid
Lines	3	RGB 000-161-000	Solid
Medium Lines	5	Black	Solid
Thin Lines	1	Black	Solid
Wide Lines	10	Black	Solid
General			
AEC_1-Solid	1	Black	Solid
AEC_3-Solid	3	Black	Solid
AEC_5-Solid	5	Black	Solid
AEC_6-Solid	6	Black	Solid
AEC_7-Solid	7	Black	Solid
AEC_8-Solid	8	Black	Solid
AEC_9-Solid	9	Black	Solid
AEC_10-Solid	10	Black	Solid
Architectural			
AEC_10-DPC	10	Magenta	Solid
AEC_10-DPM	10	RGB 000-128-000	AEC_Double Dash
Structural			
AEC_8-RNF_Mesh	8	Black	AEC_Dash Dot 6mm
AEC_11-Rebar	11	Black	Solid

11.8 Line Weights

Pen	1:10	1:20	1:50	1:100	1:200	1:500	Perspective	Annotation
1	0.1300	0.1300	0.1300	0.0600	0.0600	0.0600	0.0600	0.0600
2	0.1500	0.1500	0.1500	0.1300	0.0600	0.0600	0.1300	0.1300
3	0.1800	0.1800	0.1800	0.1500	0.1300	0.0600	0.1500	0.1500
4	0.2000	0.2000	0.2000	0.1800	0.1500	0.1300	0.1800	0.1800
5	0.2500	0.2200	0.2200	0.2000	0.1800	0.1500	0.2000	0.2000
6	0.3500	0.2500	0.2500	0.2200	0.2000	0.1800	0.2200	0.2200
7	0.4000	0.3500	0.3500	0.2500	0.2200	0.2000	0.2500	0.2500
8	0.5000	0.4000	0.4000	0.3500	0.2500	0.2200	0.3500	0.3500
9	0.6000	0.5000	0.5000	0.4000	0.3500	0.2500	0.4000	0.4000
10	0.7000	0.6000	0.6000	0.5000	0.4000	0.3500	0.5000	0.5000
11	1.0000	0.7000	0.7000	0.6000	0.5000	0.4000	0.6000	0.6000
12	1.4000	1.0000	1.0000	0.7000	0.6000	0.5000	0.7000	0.7000
13	2.0000	1.4000	1.4000	1.0000	0.7000	0.6000	1.0000	1.0000
14	3.0000	2.0000	2.0000	1.4000	1.0000	0.7000	1.4000	1.4000
15	4.0000	3.0000	3.0000	2.0000	1.4000	1.0000	2.0000	2.0000
16	5.0000	4.0000	4.0000	3.0000	2.0000	1.4000	3.0000	3.0000

11.8.1 ISO Standard Metric Line Widths

The following line widths are ISO compliant and have been incorporated into the above line weights.

11.9 Object Styles Annotation

Category	Line Weight	Line Colour	Line Pattern	CAD Export Settings	
				Layer Name	Colour
Air Terminal Tags	3	Black	Solid		
Area Load Tags	3	Black	Solid		
Area Tags	3	Black	Solid		
Brace in Plan View Symbols	3	Black	Solid		
Callout Boundary	3	Black	AEC_Hidden 2mm		
Callout Leader Line	3	Black	Solid		
Callout Heads	3	Black	Solid		
Casework Tags	3	Black	Solid		
Ceiling Tags	3	Black	Solid		
Communication Device Tags	3	Black	Solid		
Connection Symbols	3	Black	Solid		
Curtain Panel Tags	3	Black	Solid		
Curtain System Tags	3	Black	Solid		
Data Device Tags	3	Black	Solid		
Detail Item Tags	3	Black	Solid		
Door Tags	3	Black	Solid		
Duct Accessory Tags	3	Black	Solid		
Duct Fitting Tags	3	Black	Solid		
Duct Tags	3	Black	Solid		
Electrical Circuit Tags	3	Black	Solid		
Electrical Equipment Tags	3	Black	Solid		
Electrical Fixture Tags	3	Black	Solid		
Fire Alarm Device Tags	3	Black	Solid		
Flex Duct Tags	3	Black	Solid		
Flex Pipe Tags	3	Black	Solid		
Floor Tags	3	Black	Solid		
Foundation Span Direction	3	Black	Solid		
Furniture System Tags	3	Black	Solid		
Furniture Tags	3	Black	Solid		
Generic Annotations	3	Black	Solid		
→Centerline	5	Black	AEC_Centre		
Generic Model Tags	3	Black	Solid		
Grid Heads	10	Black	Solid		
Internal Area Load Tags	3	Black	Solid		
Internal Line Load Tags	3	Black	Solid		
Internal Point Load Tags	3	Black	Solid		
Keynote Tags	3	Black	Solid		
Level Heads	3	Black	Solid		
Lighting Device Tags	3	Black	Solid		
Lighting Fixture Tags	3	Black	Solid		
Line Load Tags	3	Black	Solid		

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Category	Line Weight	Line Colour	Line Pattern	CAD Export Settings	
				Layer Name	Colour
Mass Floor Tags	3	Black	Solid		
Mass Tags	3	Black	Solid		
Matchline	5	RGB 128-128-128	AEC_Dash Dot 3mm		
Material Tags	3	Black	Solid		
Mechanical Equipment Tags	3	Black	Solid		
Multi-Category Tags	3	Black	Solid		
Nurse Call Device Tags	3	Black	Solid		
Parking Tags	3	Black	Solid		
Pipe Accessory Tags	3	Black	Solid		
Pipe Fitting Tags	3	Black	Solid		
Pipe Tags	3	Black	Solid		
Plan Region	3	RGB 000-127-000	Hidden		
Planting Tags	3	Black	Solid		
Plumbing Fixture Tags	3	Black	Solid		
Point Load Tags	3	Black	Solid		
Property Line Segment Tags	3	Black	Solid		
Property Tags	3	Black	Solid		
Railing Tags	3	Black	Solid		
Reference Lines	3	RGB 000-127-000	Solid		
Reference Planes	3	RGB 000-127-000	Solid		
Reference Points	3	Black	Solid		
→Lines	3	PANTONE Process Blue C	Solid		
→Planes	3	PANTONE Process Blue C	Solid		
→Points	6	Black	Solid		
Revision Cloud Tags	3	Black	Solid		
Revision Clouds	3	Black	Solid		
Roof Tags	3	Black	Solid		
Room Tags	3	Black	Solid		
Scope Boxes	3	RGB 000-127-000	Solid		
Section Boxes	3	Black	Solid		
Section Line	3	Black	Solid		
→Broken Section	3	Black	AEC_Dot 4mm		
Section Marks	3	Black	Solid		
→Medium Lines	6	Black	Solid		
→Thin Lines	3	Black	Solid		
→Wide Lines	11	Black	Solid		

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Category	Line Weight	Line Colour	Line Pattern	CAD Export Settings	
				Layer Name	Colour
Security Device Tags	3	Black	Solid		
Site Tags	3	Black	Solid		
→North Symbol	5	Black	Solid		
Space Tags	3	Black	Solid		
Span Direction Symbol	3	Black	Solid		
Specialty Equipment Tags	3	Black	Solid		
Spot Elevation Symbols	3	Black	Solid		
Sprinkler Tags	3	Black	Solid		
Stair Tags	3	Black	Solid		
Structural Annotations	3	Black	Solid		
Structural Area Reinforcement Symbols	3	Black	Solid		
Structural Area Reinforcement Tags	3	Black	Solid		
Structural Beam System Tags	3	Black	Solid		
Structural Column Tags	3	Black	Solid		
Structural Connection Tags	3	Black	Solid		
Structural Foundation Tags	3	Black	Solid		
Structural Framing Tags	3	Black	Solid		
Structural Path Reinforcement Symbols	3	Black	Solid		
Structural Path Reinforcement Tags	3	Black	Solid		
Structural Rebar Tags	3	Black	Solid		
Structural Stiffener Tags	3	Black	Solid		
Structural Truss Tags	3	Black	Solid		
Telephone Device Tags	3	Black	Solid		
Title Blocks	3	Black	Solid		
→Medium Lines	6	Black	Solid		
→Thin Lines	3	Black	Solid		
→Wide Lines	11	Black	Solid		
View Reference	3	Black	Solid		
View Titles	3	Black	Solid		
Wall Tags	3	Black	Solid		
Window Tags	3	Black	Solid		
Wire Tag	3	Black	Solid		
Zone Tags	3	Black	Solid		

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11.10 Object Styles – Model

Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Air Terminals	3		Black	Solid				
Boundary Conditions	3		Black	Solid				
Casework	3	6	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
Ceilings	3	6	Black	Solid				
→Common Edges	3	3	Black	Solid				
→Hidden Lines	3	5	Black	Hidden				
Columns	3	6	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
Communication Devices	3		Black	Solid				
Curtain Panels	3	5	Black	Solid				
→Glass	3	6	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
Curtain Systems	5	5	RGB 000-127-000	Solid				
→Hidden Lines	5	5	RGB 000-127-000	Hidden				
Curtain Wall	3	5	Black	Solid				
→Hidden Lines	3	5	Black	Hidden				
Data Devices	3		Black	Solid				
Detail Items	3		Black	Solid				
→Heavy Lines	11		Black	Solid				
→Hidden Lines	3		Black	Hidden				
→Light Lines	3		Black	Solid				
→Medium Lines	5		Black	Solid				
Doors	3	5	Black	Solid				
→Architrave	3	3	Black	Solid				
→Cavity Closer	3	3	Black	Solid				
→Elevation Swing	3	3	RGB 128-128-128	Elevation Swing				
→Frame/Mullion	3	5	Black	Solid				
→Glass	3	5	Black	Solid				
→Glazing Bars	3	3	Black	Solid				
→Hidden Lines	5	5	Blue	Hidden				
→Ironmongery	3	3	Black	Solid				
→Moulding / Architrave	3	6	Black	Solid				
→Opening	3	6	Black	Solid				
→Panel	3	5	Black	Solid				
→Plan Swing	3	3	Black	Solid				
→Structural	3	3	Black	Hidden				
→Threshold	3	3	Black	Solid				

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Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Duct Accessories	3		Black	Solid				
Duct Fittings	3			Solid				
→Center Line	3		Black	AEC_ Centre				
→Insulation	3		Black	Solid				
→Lining	3		Black	Solid				
Duct Insulations	3		Black	Solid				
Duct Linings	3		Blue	Solid				
Ducts	3		Black	Solid				
→Center Line	3		Black	AEC_ Centre				
→Drop	3		RGB 000-127-000	Solid				
→Insulation	3		Black	Solid				
→Lining	3		Black	Solid				
→Rise			RGB 000-127-000	Solid				
Electrical Equipment	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Electrical Fixtures	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Entourage	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Fire Alarm Devices	3		Black	Solid				
Flex Ducts	3		Black	Solid				
→Center Line	3		Black	AEC_ Centre				
→Insulation	3		Black	Solid				
→Pattern	3		RGB 000-127-000	Solid				
Flex Pipes	3		Black	Solid				
→Center Line	3		Black	AEC_ Centre				
→Insulation	3		Black	Solid				
→Pattern	3		RGB 000-127-000	Solid				
Floors	3	4	Black	Solid				
→Analytical Model	3	3	Black	Solid				
→Common Edges	5	3	Black	Solid				
→Hidden Lines	5	5	Black	Hidden				
→Interior Edges	5	5	Black	Solid				
→Slab Edges	3	10	Black	Solid				

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Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Furniture	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
→Overhead Lines	3		Black	AEC_ Dash				
Furniture Systems	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Generic Models	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
HVAC Zones	3		Black	Solid				
→Boundary	6		Black	Solid				
Lighting Devices	3		Black	Solid				
Lighting Fixtures	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
→Light Source	3		Yellow	Solid				
Mass	3	5	Black	Solid				
→Form	3	5	Black	Solid				
→Gridlines	5	5	Blue	AEC_ Centre				
→Hidden Lines	3	5	Black	Hidden				
→Mass Floor	3	5	Black	Solid				
→Nodes	5	5	Black	Solid				
→Pattern Fill	5	5	Black	Hidden				
→Pattern Lines	5	5	Black	Solid				
Mechanical Equipment	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Nurse Call Devices	3		Black	Solid				
Parking	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
→Parking Layout	10		PANTONE Process Blue C	Solid				
→Reference Line	3		Black	Solid				
→Stripe	3		Black	Solid				
→White Lining	3		Black	Solid				
Pipe Accessories	3		Black	Solid				
Pipe Fittings	3		Black	Solid				
→Center Line	3		Black	AEC_ Centre				
→Insulation	3		Black	Solid				

Left blank awaiting corporate CAD layer standard

Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Pipes	3		Black	Solid				
→Center Line	3		Black	AEC_ Centre				
→Drop	3		RGB 000-127-000	Solid				
→Insulation	3		Black	Solid				
→Rise	3		RGB 000-127-000	Solid				
Planting	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Plumbing Fixtures	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Railings	3	5	Black	Solid				
→Balusters	3	5	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Railings Beyond Cut	3	3	Black	Overhead				
→Rails	3	5	Black	Solid				
Ramps	3	6	Black	Solid				
→Down Arrow	3	3	Black	Solid				
→DOWN text	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Ramps Beyond Cut Line	3	3	Black	Overhead				
→Stringers	3	3	Black	Solid				
→Stringers Beyond Cut Line	3	3	Black	Overhead				
→Up Arrow	3	3	Black	Solid				
→UP text	3	3	Black	Solid				
Roads	3	10	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
Roofs	3	10	Black	Solid				
→Common Edges	5	3	Black	Solid				
→Fascias	3	10	Black	Solid				
→Gutters	3	10	Black	Solid				
→Hidden Lines	5	5	Black	Hidden				
→Interior Edges	5	5	Black	Solid				
→Roof Soffits	3	10	Black	Solid				
Security Devices	3		Black	Solid				
Shaft Openings	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				

Left blank awaiting corporate CAD layer standard

Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Site	3	5	Black	Solid				
→Hidden Lines	3	5	Black	Hidden				
→Pads	3	5	Black	Solid				
→Property Lines	6	3	Black	AEC_ Double Dash				
→Stripe	3	3	Black	Solid				
→Utilities	3	3	Black	Solid				
Specialty Equipment	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Sprinklers	3		Black	Solid				
Stairs	3	6	Black	Solid				
→Down Arrow	3	3	Black	Solid				
→DOWN Text	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Stairs Beyond Cut Line	3	3	Black	Overhead				
→Stringers	3	3	Black	Solid				
→Stringers Beyond Cut Line	3	3	Black	Overhead				
→Up Arrow	3	3	Black	Solid				
→UP Text	3	3	Black	Solid				
→Structural Area Reinforcement	3	3	Black	Solid				
→Boundary	3	3	Black	Solid				
Structural Beam Systems	3		Black	Solid				
→Hidden Lines	3		Black	Hidden				
Structural Columns	3	3	Black	Solid				
→Analytical Model	3	3	Black	Solid				
→Hidden Faces	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Rigid Links	5	5	RGB 000-127-000	Solid				
→Stick Symbols	12	12	Black	Solid				
Structural Connections	3		Black	Solid				
Structural Foundations	3	10	Black	Solid				
→Analytical Model	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				

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Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Structural Framing	3	6	Black	Solid				
→Analytical Model	3	3	Black	Solid				
→Chord	6	6	Black	Solid				
→Girder	12	12	Black	Solid				
→Hidden Faces	3	3	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Horizontal Bracing	5	5	Black	Solid				
→Joist	10	10	Black	Solid				
→Kicker Bracing	14	14	Black	Solid				
→Other	3	3	Black	Solid				
→Purlin	10	10	Black	AEC_ Dot 2mm				
→Rigid Links	5	5	RGB 000-127-000	Solid				
→Stanchions	5	6	Black	Solid				
→Stick Symbols	12	12	Black	Solid				
→Vertical	12	12	Black	Solid				
→Web	4	4	Black	Solid				
Structural Load Cases	3		Black	Solid				
→Accidental	3		Black	Solid				
→Dead Loads	3		Black	Solid				
→Live Loads	3		Black	Solid				
→Roof Live Loads	3		Black	Solid				
→Seismic	3		Black	Solid				
→Snow Loads	3		Black	Solid				
→Temperature Loads	3		Black	Solid				
→Wind Loads	3		Black	Solid				
Structural Path	3	3	Black	Solid				
→Boundary	3	3	Black	Solid				
Structural Rebar	3	3	Black	Solid				
Structural Stiffeners	3	3	Black	Solid				
Structural Trusses	3		RGB 000-127-000	AEC_Dash 3mm				
→Stick Symbols	3		Black	Solid				
Telephone Devices	3		Black	Solid				
Topography	3	12	Black	Solid				
→Hidden Lines	3	3	Black	Hidden				
→Primary	3	12	Black	Solid				
→Secondary Contours	3	3	Black	Solid				
→Triangulation Edges	3	3	RGB 128-128-128	Solid				

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Category	Line Weight		Line Colour	Line Pattern	CAD Export Settings			
					Projection		Cut	
	Proj	Cut			Layer	Colour	Layer	Colour
Walls	3	6	Black	Solid				
→Analytical Model	3	3	Black	Solid				
→Common Edges	3	3	Black	Solid				
→Hidden Lines	3	5	Black	Hidden				
→ Wall Sweep -	3	6	Black	Solid				
Windows	3	6	Black	Solid				
→Cavity Closer	3	3	Black	Solid				
→Elevation Swing	3	3	RGB 128-128-128	Elevation Swing				
→Frame / Mullion	3	5	Black	Solid				
→Glass	3	5	Black	Solid				
→Hidden Lines	3	5	RGB 000-000-127	Hidden				
→Moulding	3	5	Black	Solid				
→Opening	3	5	Black	Solid				
→Plan Swing	3	3	Black	Solid				
→Sill/Head	3	5	Black	Solid				
→Trim	3	3	Black	Solid				
Wires	3		Black	Solid				
→ Home Run Arrows	3		Black	Solid				
→Wire Tick Marks	3		Black	Solid				

Parameter Name	Detailing View	Fire Strategy Plan	Site Plan	Site Section	Structural Foundation Plan
View Style	Floor Structural, Area Plan	Elevation, Section, Detail View	Floor, Structural, Area Plan	Ceiling Plan	Elevation, Section, Detail View
View Scale	1:100	1:100	1:100	1:100	1:100
Model	Normal	Normal	Normal	Normal	Normal
Detail Level	Coarse	Coarse	Coarse	Coarse	Coarse
V/G Overrides Model	Switch Off all non-essential items. Halftone everything else except Doors and Walls.	None	Halftone: Furniture,Furniture Sys, Mech Equip, Planting, Plumb Fix, Site, Spec Equip	None	None
V/G Overrides Annotation		None	None	None	None
V/G Overrides Import	None	None	None	None	None
V/G Overrides Filters	Acoustic - High: RGB 255-128-				
	Acoustic - Low: Cyan				
	Acoustic - None: Halftoned				
Model Graphics Style	Hidden Line	Hidden Line	Hidden Line	Hidden Line	Hidden Line
Graphic Display Options	None	None	None	None	None
View Range	Top: Ass Lev – 2300		Top: Ass Lev – 2300	Top: Lev Above–0	
	Cut: Ass Lev - 2500		Cut: Ass Lev - 2500	Cut: Ass Lev - 2300	
	Bottom: Ass Lev – 0		Bottom: Ass Lev – 0	Bottom: Ass Lev– 2300	
	Depth Ass: Lev - 0		Depth Ass: Lev - 0	Depth Lev Above - 0	
Orientation	Project North		Project North	Project North	
Phase Filter	Show All	Show All	Show All	Show All	Show All
Discipline	Architectural	Architectural	Architectural	Architectural	Architectural
Column Symbolic Offset					
Render Settings					
Depth/Far Clipping	No Clip	No Clip	No Clip	No Clip	No Clip

Parameter Name	Detailing View	Fire Strategy Plan	Site Plan	Site Section	Structural Foundation Plan
View Style	Floor, Structural, Area Plan	Floor, Structural, Area Plan	Floor, Structural, Area Plan	Elevation, Section, Detail View	Floor, Structural, Area Plan
View Scale	1:20	1:100	1:100	1:100	1:100
Model	Normal	Normal	Normal	Normal	Normal
Detail Level	Fire	Coarse	Coarse	Coarse	Coarse
V/G Overrides Model	None	Switch Off all non-essential items. Halftone everything else except Doors and Walls	.None Essentials off	None	Structurally Relevant Categories Only
V/G Overrides Annotation	None	Switch Off all non-essential items. Halftone everything.	None	None	Structurally Relevant Categories Only
V/G Overrides Import	None	None	None	None	None
V/G Overrides Filters	None	Fire Rating 30mins: Red	None	None	None
		Fire Rating 30mins:Green			
		Fire Rating 30mins:Blue			
		Fire Rating 30mins:Magenta			
		Fire Rating 30mins:Halftoned			
Model Graphics Style	Hidden Line	Hidden Line	Hidden Line	Hidden Line	Hidden Line
Graphic Display Options	None	None	None	None	None
View Range	Top: Ass Lev – 2300	Top: Ass Lev – 2300	Top: Ass Lev – 100000		Top: Ass Lev – 100
	Cut: Ass Lev - 2500	Cut: Ass Lev - 1500	Cut: Ass Lev - 100000		Cut: Ass Lev - 100
	Bottom: Ass Lev – 0	Bottom: Ass Lev – 0	Bottom: Ass Lev – 0		Bottom: Lev Below–0
	Depth Ass: Lev - 0	Depth Ass: Lev - 0	Depth Ass: Lev - 0		Depth Lev Below- 0
Orientation	Project North	Project North	Project North		Project North
Phase Filter	Show All	Show All	Show All	Show All	Show All
Discipline	Architectural	Architectural	Architectural	Architectural	Architectural
Column Symbolic Offset					
Render Settings					0
Depth/Far Clipping	No Clip	No Clip	No Clip	No Clip	No Clip

Parameter Name	Structural Framing	Structural Framing Plan	Export to Civil Engineering	Structural Section
View Style	Elevation, Section, Detail View	Floor, Structural, Area Plan	3D Views, Walkthroughs	Elevation, Section, Detail View
View Scale	1:20	1:100	1:100	1:50
Model	Normal	Normal		Normal
Detail Level	Coarse	Coarse	Coarse	Medium
V/G Overrides Model	Structurally Relevant Categories Only	Structurally Relevant Categories Only	None Essentials off	Structurally Relevant Categories Only
V/G Overrides Annotation	Structurally Relevant Categories Only	Structurally Relevant Categories Only	None	Structurally Relevant Categories Only
V/G Overrides Import	None	None	None	None
V/G Overrides Filters	None	Fire Rating 30mins: Red	None	None
		Fire Rating 30mins:Green		
		Fire Rating 30mins:Blue		
		Fire Rating 30mins:Magenta		
		Fire Rating 30mins:Halftoned		
Model Graphics Style	Hidden Line	Hidden Line	Shading with Edges	Hidden Line
Graphic Display Options	None	None	None	None
View Range		Top: Ass Lev – 0		
		Cut: Ass Lev - 0		
		Bottom: Lev Below– 1500		
		Depth :Lev Below- 1500		
Orientation		Project North		
Phase Filter	Show All	Show All	Show All	Show All
Discipline	Structural	Structural	Architectural	Structural
Column Symbolic Offset				
Render Settings			None	
Depth/Far Clipping	No Clip	No Clip		No Clip

11.10.1 Architectural

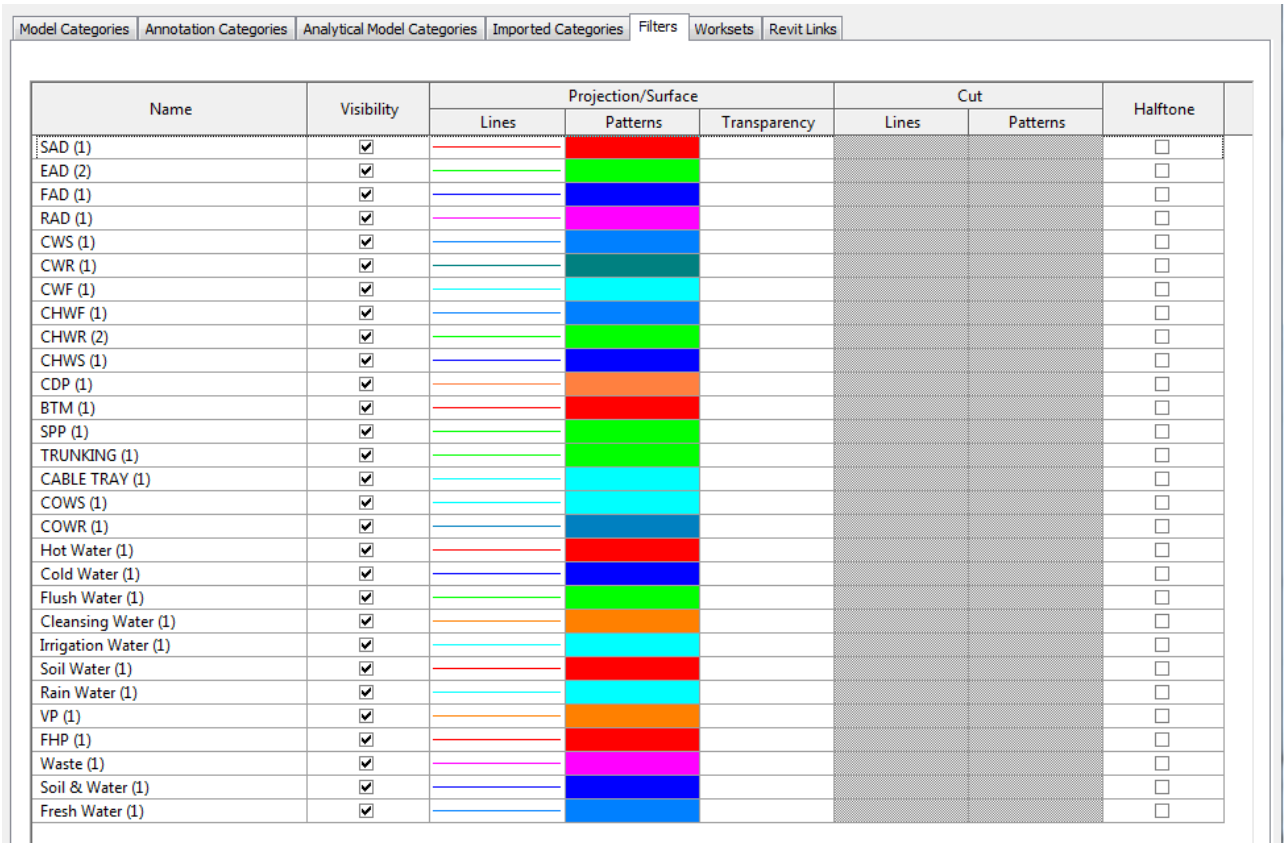
Name	Categories	Filter By	Criteria	Value
Fire Rating – 30min	Ceilings Floors Doors Walls	Fire Designation	Contains	30
Fire Rating – 60min	Ceilings Floors Doors Walls	Fire Designation	Contains	60
Fire Rating – 90min	Ceilings Floors Doors Walls	Fire Designation	Contains	90
Fire Rating - None	Ceilings Floors Doors Walls	Fire Designation	Does Not Contain	
Acoustic - High	Ceilings Floors Doors Walls	Acoustic Designation	Is greater than or equal to	55
Acoustic - Low	Ceilings Floors Doors Walls	Acoustic Designation	Is less than	55
Acoustic - None	Ceilings Floors Doors Walls	Acoustic Designation	Does Not Contain	

11.10.2 Structural

Name	Categories	Filter By	Criteria	Value

11.10.3 MEP

Name	Categories	Filter By	Criteria	Value



Name	Visibility	Projection/Surface			Cut		Halftone
		Lines	Patterns	Transparency	Lines	Patterns	
SAD (1)	☑						☐
EAD (2)	☑						☐
FAD (1)	☑						☐
RAD (1)	☑						☐
CWS (1)	☑						☐
CWR (1)	☑						☐
CWF (1)	☑						☐
CHWF (1)	☑						☐
CHWR (2)	☑						☐
CHWS (1)	☑						☐
CDP (1)	☑						☐
BTM (1)	☑						☐
SPP (1)	☑						☐
TRUNKING (1)	☑						☐
CABLE TRAY (1)	☑						☐
COWS (1)	☑						☐
COWR (1)	☑						☐
Hot Water (1)	☑						☐
Cold Water (1)	☑						☐
Flush Water (1)	☑						☐
Cleansing Water (1)	☑						☐
Irrigation Water (1)	☑						☐
Soil Water (1)	☑						☐
Rain Water (1)	☑						☐
VP (1)	☑						☐
FHP (1)	☑						☐
Waste (1)	☑						☐
Soil & Water (1)	☑						☐
Fresh Water (1)	☑						☐

11.11 Keyboard Shortcuts

Shortcuts marked can be launched using the first character followed by the Spacebar.

Home Tab		
*	WA	Build Wall
	DD	Build Door
	WW	Build Window
	CM	Place Component
*	RR	Build Roof by Footprint
	RX	Build Roof by Extrusion
	CE	Build Ceiling
	FF	Build Floor
	CG	Define Curtain Grid
*	ML	Place Curtain Mullion
	LI	Model Line (Visible in 3D)
*	GP	Create Group from Selected Objects
	RA	Build Railing
	ST	Build Stair
	LL	Define Level
	GG	Define Gridline
	RD	Define Room
	RT	Tag Room

	WS	Set Work Plane
	RF	Define a Reference Plane
Insert Tab		
	IL	Link Revit File
*	II	Link CAD File
	LO	Load Family in from Library
Annotate Tab		
	DS	Place Aligned Dimension
*	EL	Place a Spot Elevation Marker
	SL	Detail Line (2D View Specific)
	DC	Place a 2D Detail Component
	RG	Define a 2D Repeating Detail String
	IO	Draw Insulation Batt-Lines
*	TT	Define Text
	F7	Spell-Check Text
	TG	Place a Tag by Category
	MT	Place a Multi-Category Tag
	KK	Place a Keynote Tag by Element
Modify Tab		
	MD or Esc-Esc	Modify
	PL	Paste Aligned-Select Levels by Name
	MA	Match Type Information
	AA	Align Objects
	TR	Trim Objects
	SX	Split Objects
	OO	Offset Lies or Walls
	TM	Measure Between Two References
	TA	Measure Along an Element
	JJ	Manipulate Wall-Join Configuration
	EE	Edit the Cut Profile
	LW	Modify Line work Appearance
	SF	Split Surface Material
	PT	Paint Surface Material

View Control Bar		
	WF	Show Model in Wire – Frame
	HL	Show Model with Hidden Lines
	SD	Show Model Shaded with Edges
	GD	Callup the Graphic Display Options Dialogue
	RN	Call up the Rendering Dialogue
	IC	Temporarily Isolate the Category of Elements
*	HC	Temporarily Hide the Category of Elements
	HI	Temporarily Isolate the Elements
	HH	Temporarily Hide the Elements
	HR	Reset All Temporarily Hide / Isolate
	RH	Toggle Reveal Hidden Elements Mode
Navigation Bar		
*	ZZ or ZR	Zoom into Region
	ZO or ZV	Zoom Out (2x)
	ZX, ZE or XF	Zoom to Fit Extents
	ZA	Zoom All Current Windows to Fit Extents
	ZA	Zoom to Sheet Size
	ZC or ZP	Revert to Previous Zoom / Pan
Snap Overrides		
	SI	Snap to Intersections
	SE	Snap to Endpoints
	SM	Snap to Midpoints
	SC	Snap to Centres
	SN	Snap to Nearest
	SP	Snap to Perpendicular
	SG	Snap to Tangents
	SW	Snap to Work Plane Grid
	SQ	Snap to Quadrants
	SZ	Close Shape
	SO	Turn Snaps Off
General Purpose		
*	QQ	Open Project, Family or Other Revit File
	QR	Create a New Project
*	NN	Create a New Family
	Ctrl-P	Print / Plot
	GB	Export Model to gbXML for Energy Assess
*	XX	Close File
	Ctrl-S or QA	Save
	Ctrl-Z	Undo Previous Command(s)
	Ctrl-Y	Redo Command(s)
	Ctrl-←	Recapture Previous Selection
*	SA	Select All Similar Instances
	F1	Help
	Shift-F1	What's This?

Collaborate Tab		
	SS	Quick Synchronise with Central Model
	RL or RW	Reload Latest Changes form Central Model
	RQ	Relinquish All / Worksets / Borrowed Elements
	ER	View Outstanding Edit Requests
View Tab		
∗	VP	View Properties
∗□	AV	Apply View Template to the Current View
	CV	Create View Template form the Current View
	VV or VG	Visibility / Graphics Override Control Dialogue
	TH	Toggle Thin Lines / WYSIWYG
∗	3D	Open or Create a Default 3D View
	CX	Define a Camera View
∗	CS	Define a Section View
	CA	Define a Callout View
	QS	Create a Schedule of Quantities
	CW	Close all Hidden Views
	WC	Cascade the Currently Open View
	WT	Tile the Currently Open Views
Manage Tab		
	SU	Sun and Shadow settings
	MH	Call up the Materials / Textures Dialogue
	UN	Modify Project Units
Contextual Tab		
∗	EP or PP	Element Properties
∗	MM	Move Selected Elements
∗	CO	Copy Selected Elements
	RO	Rotate Selected Elements
	MI	Mirror Selected Elements
	AR	Array Selected Elements
∗	DE	Delete Selected Elements
	AP	Add Element to Edited Group
	AD	Attach a 2D Detail to the Edited Group
	PG	Show Properties of Edited Group
	FG	Finish Editing the Current Group
	GC	Cancel Editing the Current Group
	CR	Create Similar Object to that Selected
	EH	Hide Element in this View
	//	Hide Category of Element in this View
	EG	Edit Selected Group
	UG	Ungroup Selected Group
	LG	Convert the Selected Group into a Linked Project
	EW	Edit Witness Lines
	WU	Unhide Hidden Elements
	VU	Unhide Hidden Categories
	EX	Exclude the Selected Item form this Group
	RB	Restore the Selected Item to this Group
	MP	Move Selected Element form Group to Project

11.12 Category Abbreviation Code

Category	Code		Category	Code
Air Terminals	AIR		Mass	MAS
Annotations	ANN		Mechanical Equipment	MEC
Ceilings	CLG		Nurse Call Devices	NRS
Columns	COL		People	PEP
Communication Devices	COM		Pipe Fittings	PIF
Casework	CSW		Plumbing Fixtures	PLM
CUC	CUC		Planting	PLN
Curtain Wall Mullions	CTM		Profile	PRF
Curtain Panels	CTP		Pipe Accessories	PPA
Curtain Systems	CTS		Pipe Fittings	PPF
Data Devices	DAT		Pipes	PPS
Duct Accessories	DCA		Parking	PRK
Duct Fittings	DCF		PSB	PSB
Duct Insulations	DCI		PSD	PSD
Duct Linings	DCL		Roads	RDS
Ducts	DCT		Roof and Ceiling	RFC
Detail Items	DET		Railings	RLG
Doors	DOR		Ramps	RMP
- Door	DOR		Roofs	ROF
- Gate	GAE		Structural Area Reinforcement	SAR
- Ironmongery	IRG		Structural Beam Systems	SBS
ECS	ECS		Structural Columns	SCL
Electrical Equipment	ELE		Structural Connections	SCO
Electrical Fixtures	ELF		Security Devices	SEC
- ADV Panel	ADP		Structural Framing	SFA
- AFC Gate	AFG		Structural Foundations	SFO
- ATM	ATM		Shaft Openings	SFT
-AVM	AVM		Shutter	SHU
- Computer, Fax, Printer, Monitor	CFP		Signage	SIG
- CCTV	CTV		Site	SIT
- Electrical Fixture for Station	EFS		Structural Load Cases	SLC
- Lingting and Clock	LTC		Specialty Equipment	SPC
- Telephone	TEL		Sprinklers	SPK
- TIM	TIM		Structural Path Reinforcement	SPR
Escalator	ELT		Structural Rebar	SRB
- Escalator Railing	ELR		Structural Stiffeners	SSF
Entourage	ENT		Stairs	STA
Fire Alarm Devices	FIR		Structural Trusses	STR
Fire Fixture	FIF		Structural	STT

Finishes	FNH		- Columns	COU
Floors	FLR		- Framing	FRM
Furniture	FRN		Telephone Devices	TEL
Furniture Systems	FRS		Tactile Guide	TAG
Flex Ducts	FXD		Train	TRN
Flex Pipes	FXP		- Reference Files	RFF
Generic Models	GEN		Topography	TOP
Kiosks	KOK		Windows	WDW
Lighting Devices	LGD		Wires	WIR
Lighting Fixtures	LGF		Walls	WLL
Louvre	LOU			

11.13 Shared Parameters

Group	**Parameter Name**	**Type**
Element Performance	Acoustic Designation	TEXT
	Acoustic Rating	TEXT
	Fire Designation	TEXT
Families	Uniclass	TEXT

11.14 Colour Legend

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11.15 Colour SSCC Submission

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11.16 Sheet Naming

Drawing Number System - Subject Codes Framework (SC)	
A01-A99	Architectural
B01-B99	Construction Drawings
C01-C99	Civil & Structural Including Trackwork & Alignment
L01-L99	Combine Services Drawings
S01-S99	Structural E&M Drawings
M01-M99	Environmental Control System
I01-I99	Sea Water Intake
F01-F99	Fire Services
W01-W99	Plumbing
D01-D99	Drainage
G01-G99	Compressed Air
E01-E99	Electrical
Q01-Q99	Ancillaries
P01-P99	Civil Planning
T01-T99	Temporary Works Drawings
X01-X99	Property Developments
Z01-Z99	Co-ordination Drawings

Sheet Naming													
			WCN	/	PSC	/	LC	/	OC/AC	/	SC	/	Seq.No.
Architectural		e.g.	901	/	Z	/	ADM	/	MTR	/	A10	/	100
Structural		e.g.	901	/	Z	/	ADM	/	MTR	/	C01	/	100
MEP	**FS**	e.g.	901	/	Z	/	ADM	/	MTR	/	F01	/	100
	ECS	e.g.	901	/	Z	/	ADM	/	MTR	/	M01	/	100
	ELEC	e.g.	901	/	Z	/	ADM	/	MTR	/	E01	/	100
	PLUM	e.g.	901	/	Z	/	ADM	/	MTR	/	P01	/	100
	DRAIN	e.g.	901	/	Z	/	ADM	/	MTR	/	D01	/	100

Drawing Number System - Subject Designation Codes	
A01 Series	**Scheme Design Drawings**
A10 Series	**Architectural General Arrangement Drawings (including Transport Interchanges & Development Interface)**
A10	Drawing List & legend
A11	Location & Site Plans
A12	GA Plans
A13	Sections
A14	Elevations
A15	Reflected Ceiling Plans
A16	Axonometric & Perspective and Solar Study
A20 Series	**Statutory and other Submissions**
A21	STIC Submissions
A22	SSCC Submissions
A23	Dedicated Routes for the Disabled
A24	BD Submissions (only if Property included)

11.17 View Naming

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11.18 Arch Sequence Numbering

	Categorie	Number	Descriptions	Scales
0		**000 – 009**	**Cover sheet, drawing list, symbols and notes**	**Min 2.5mm**
		010 – 099	**Overall project site plan and location plan**	1:500 - 1:1000 or smaller scale
	General	0100 – 0199	Overall project floor plans (If 1:200 does not fit A1 sheet)	
		200 – 299	Overall project elevations (If 1:200 does not fit A1 sheet)	
		300 – 399	Overall project sections (If 1:200 does not fit A1 sheet)	
1	**Plans**	**100 – 149**	**Floor Plans**	1:200, 1:100
		150 – 199	**Reflected Ceiling Plans**	
2	**Elevations**	**200 – 299**	**Elevations**	1:200, 1:100
		200 – 249	Zone 1 - Podium Elevations (EXAMPLE - OPTIONAL)	
		250 – 299	Zone 2 - Tower Elevations (EXAMPLE - OPTIONAL)	
3	**Sections**	**300 – 399**	**Building Sections**	1:200, 1:100
		300 – 349	Zone 1 - Podium Sections (EXAMPLE - OPTIONAL)	
		350 – 399	Zone 2 - Tower Sections (EXAMPLE - OPTIONAL)	
4	**Enlarged Views**	**400 – 499**	**Enlarged plans, sections, elevations, and details**	1:100, 1:50, 1:20, 1:10, 1:5
			Cores, lobbies, entrances	
			Unit types, room types, intenal elevations	
			Toilets, kitchens, cold stores, etc.	
			Stairs, lifts, escalators, chutes, etc.	
5	**External Envelope Details**	**500 – 599**	**How materials meet at the building surface**	1:20, 1:10, 1:5, 1:2, 1:1
			Roof details, perimeter,penetrations, parapets, movement joints, etc.	
			MEP equipment curbs, tanks, catwalks, ladders, etc.	
			Waterproofing details, flashing, tanking, drainage layers	
			External wall sections and details	
6	**Internal Details**	**600 – 699**	**How materials meet inside the building**	1:20, 1:10, 1:5, 1:2, 1:1
			Wall types - Schedule and details	
			Finish details - Set schedule and details	
			Typical details, FS gear, metalwork, joinery, inerface with exterior,	
			Atypical and miscellaneous details	
7	**External Works**	**700 – 799**	**Landscape, hardscape, vehicle areas, and features**	1:100, 1:50, 1:20, 1:10, 1:5
			External works plans	
			External works elevations	
			External works enlarged views	
			External works details	
8	**Openings**	**800 – 849**	**Doors, access panels, fire shutters, etc. - elevations & details**	1:50, 1:20 (elevs) 1:10, 1:5, 1:2,1:1
		850 – 899	**Entrances, windows, louvers, storefronts, etc. - elevations & details**	
9	**3-D Drawings**	**900 – 949**	**Perspective and Axonometric Views**	Varies
		950 – 999	**Solur Study**	Varies

11.19 Worksets Naming

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11.20 Drawing Matrix

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11.21 View Template

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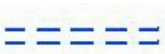
Drawing Colour Coding

Material / Description	Preferred Colour	RGB Colour System[1]	Equivalent AutoCAD Colour Index[2]
Hardcore or Dry Fill	Putty	204, 178, 102	43
Brick	Orange Red	255, 63, 0	20
Concrete Slab (Lighter Wash)	Witch Haze	223, 255, 127	61
Concrete (Plain or Reinforced)	British Racing Green	0, 76, 38	118
Solid Concrete Blocks	Electric Blue	127, 223, 255	141
Hollow Concrete Blocks	Purple	191, 127, 255	191
Lightweight Partition (e.g. Plasterboard)	Macaroni and Cheese	255, 191, 127	31
Plaster or Cement Rendering	Wild Willow	204, 204, 102	53
Impermeable / Non-absorbent Floor or Wall	Neon Pink	255, 127, 223	221
Glass	Electric Blue	127, 255, 255	131
Timber	Muesli	153, 133, 76	45
Metal Work or Steel	Heliotrope	223, 127, 255	201
Stone Finish	Dark Grey	173, 173, 173	253
Sanitary Fittings	Yellow	255, 255, 0	50

[1] Colours are constructed from the combination of the red, green and blue colours.
[2] Plot screening setting should be 100 (i.e. full colour intensity).

Material / Description	Preferred Colour	RGB Colour System[1]	Equivalent AutoCAD Colour Index[2]
Demolition Works / Deletion of Approved Works	Blue 	0, 63 255	160
Underline for Revision	Venetian Red	204, 0, 51	242