A DVANCED
C ONSTRUCTION
I NFORMATION
D EVELOPMENT

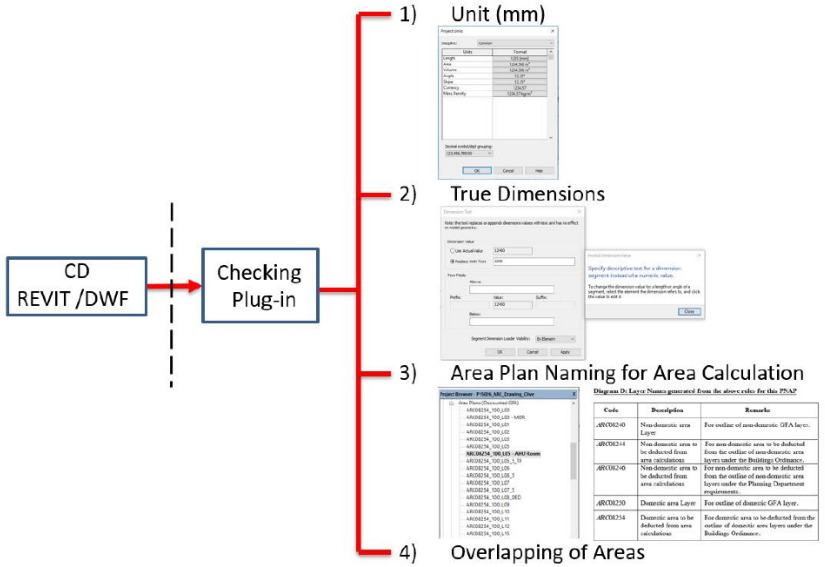
BIM Standards for General Building Plan Submission (Phase One)

Scope of Consultancy

a. Fundamental Checking Equivalent to the Standards as per Current Practice Notes

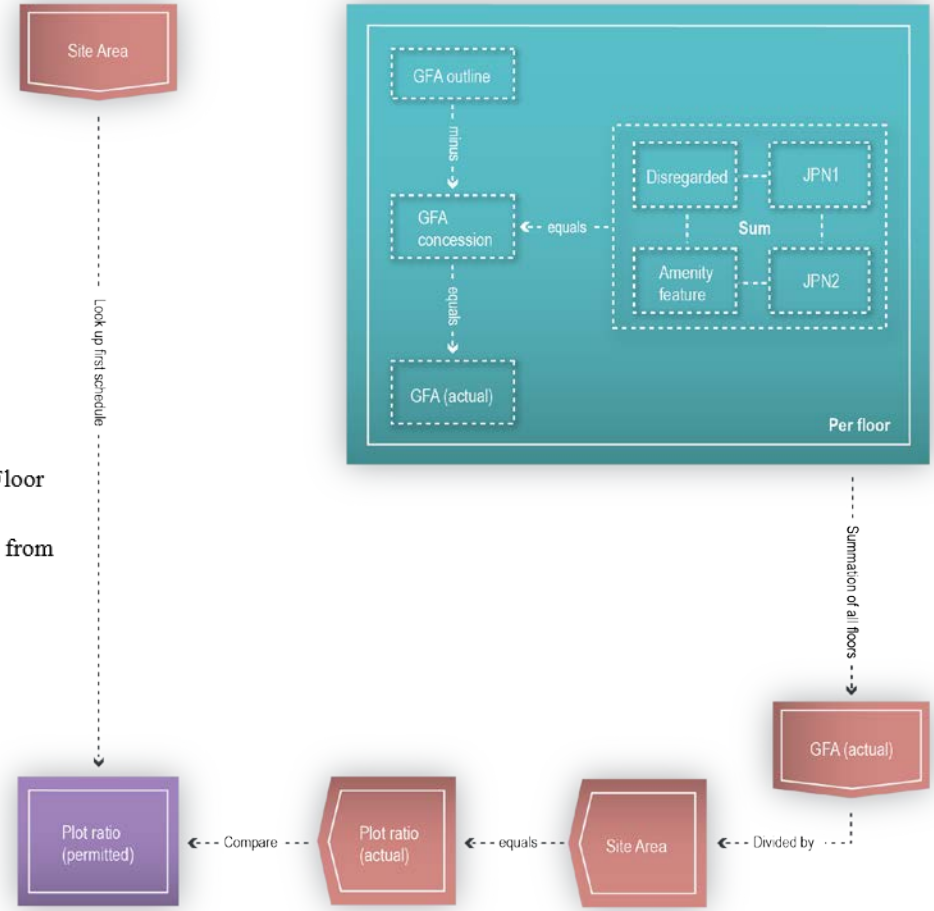
- Checking of file drawn in true size (i.e. 1 drawing unit = 1 mm or 1 metre);
- Checking of all dimensions and areas in true figures;
- Checking of area type in valid name, e.g. ARC08240 – non-domestic area.

Fundamental Checking Equivalent to the Standards as per Current Practice Notes



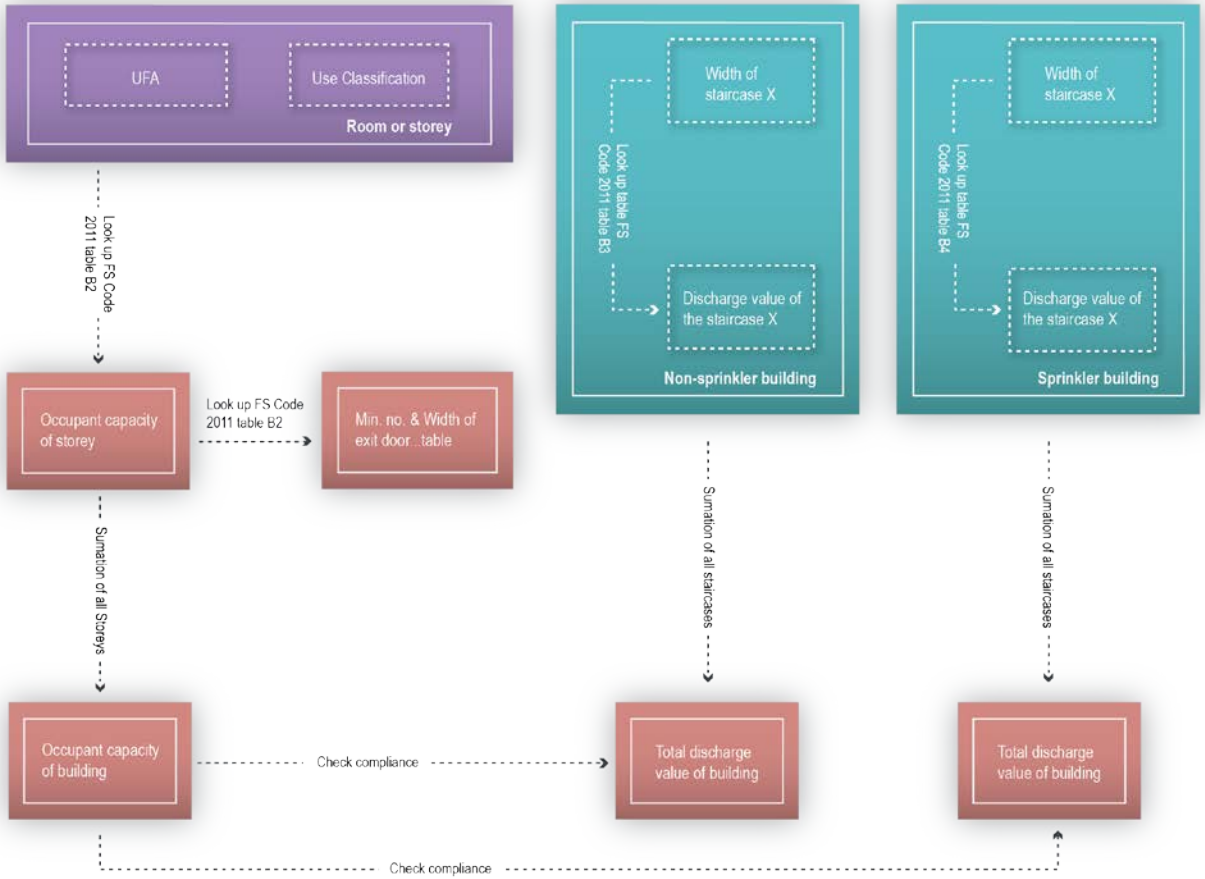
b. Checking of Gross Floor Area

- Checking of Gross Floor Area, non-Gross Floor Area, site coverage and plot ratio;
- Checking of Gross Floor Area, non-Gross Floor Area, site coverage and plot ratio, with consideration of bonus Gross Floor Area and site coverage;
- Separate checking to be provided according to requirements from Buildings Department, Planning Department, and Lands Department.



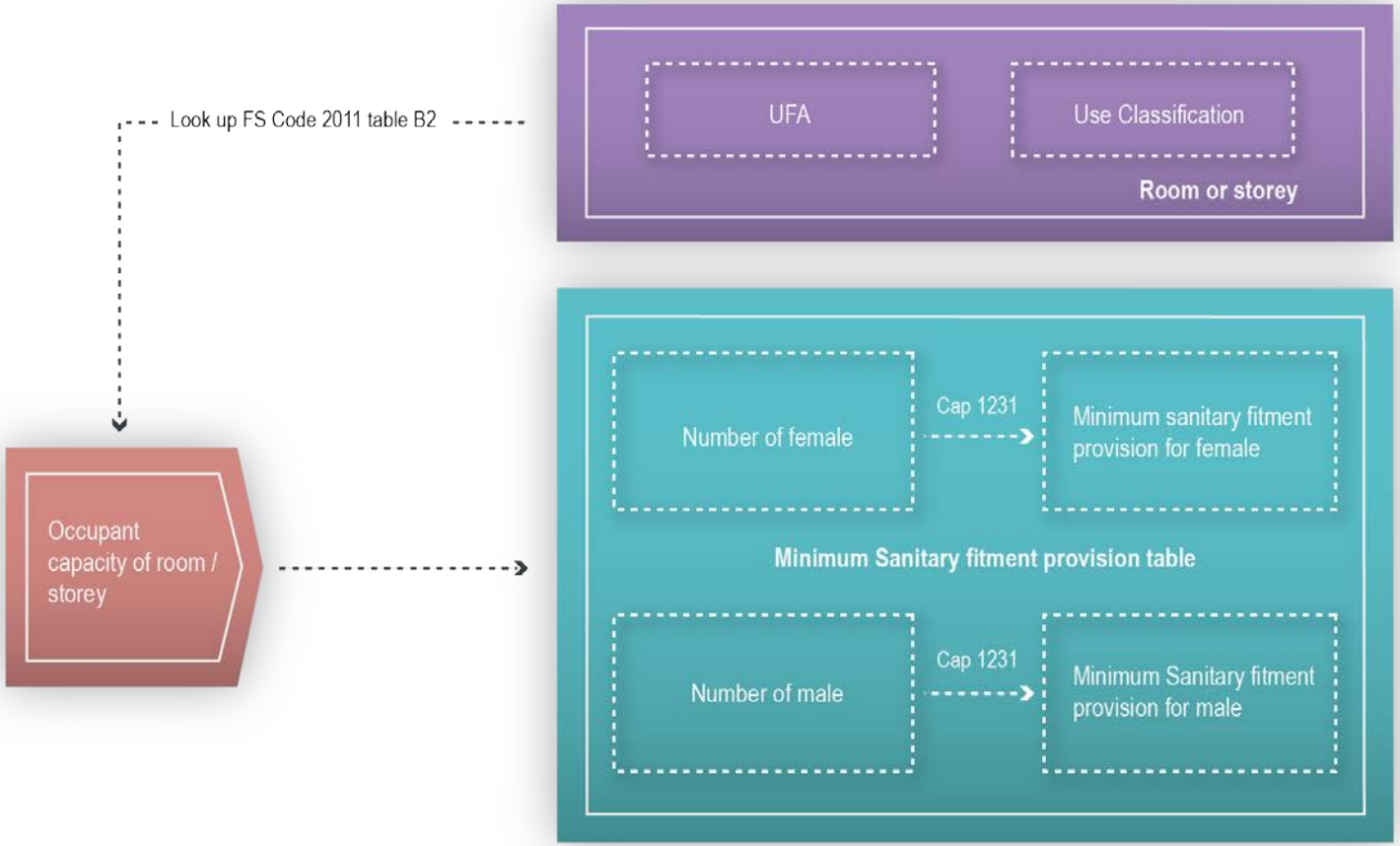
c. Checking of Means of Escape

- Checking of Usable Floor Area;
- Checking of number and width of exit routes and doors provided;
- Checking of number of people, required number and width of exit routes and doors.



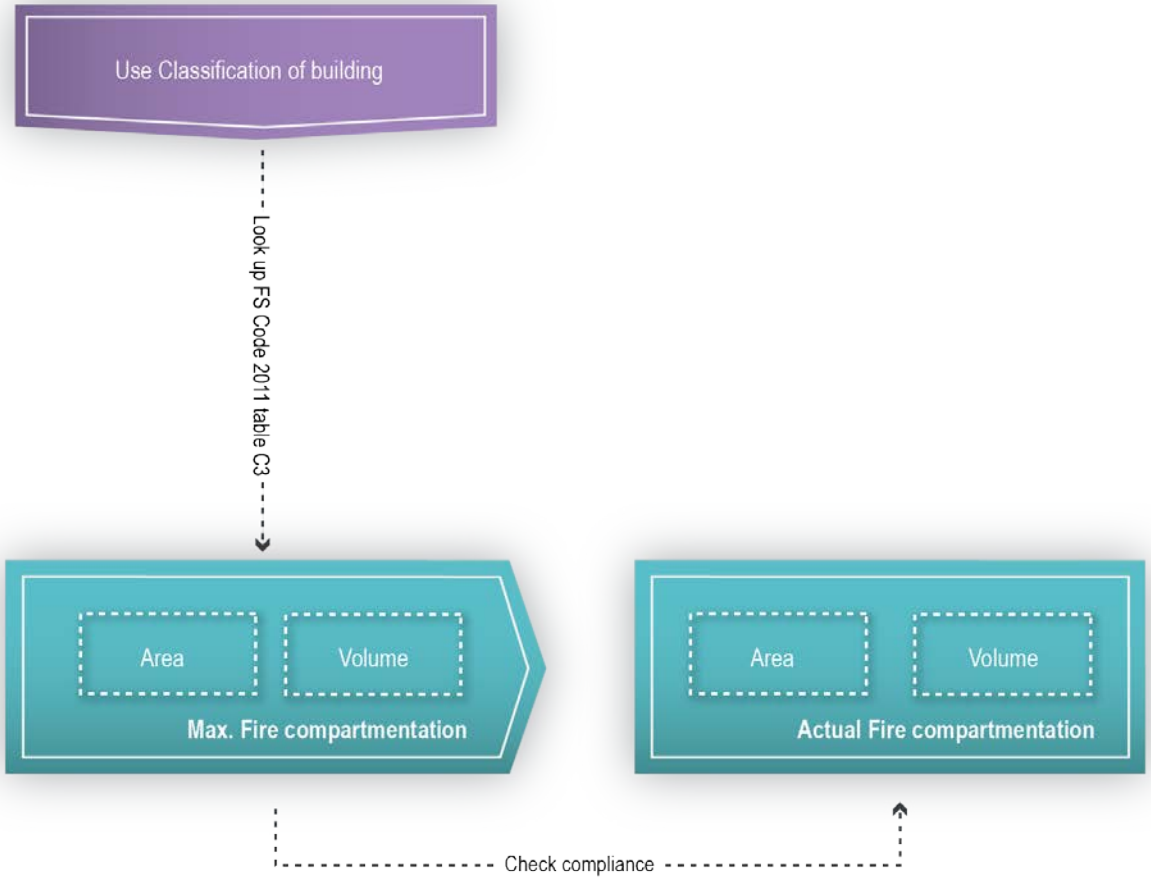
d. Checking of Sanitary Fitment Provision

- Checking of Usable Floor Space;
- Checking of sanitary fitment provision provided;
- Checking of number of male and female persons, and required number of sanitary fitments.



e. Checking of Fire Compartment and Fire Resisting Construction

- Checking of actual fire compartment area and volume;
- Checking of requirements on fire resisting rating and elements of construction.



Specification

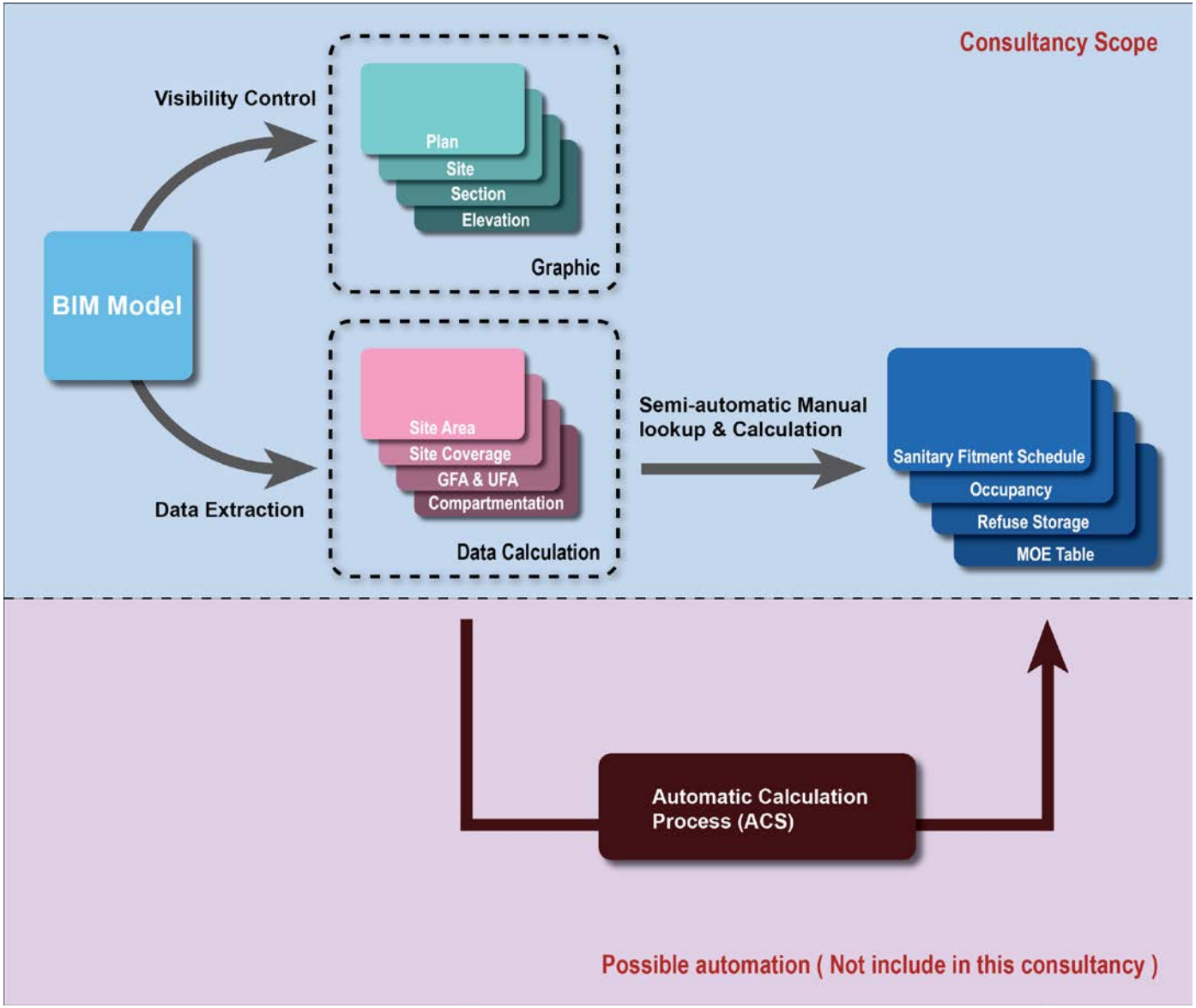
The Objectives - The main objective listed on the regulation to identify and explain the purpose of a specific submittal.

The Logics - The calculation method/ definition in Building Ordinance and PNAP.

The specifications - “Logics” part translate from regulated term into common BIM terminology.

The BIM Approach - How the statutory submittal can be done by BIM technology, and supported by an example in BIM software.

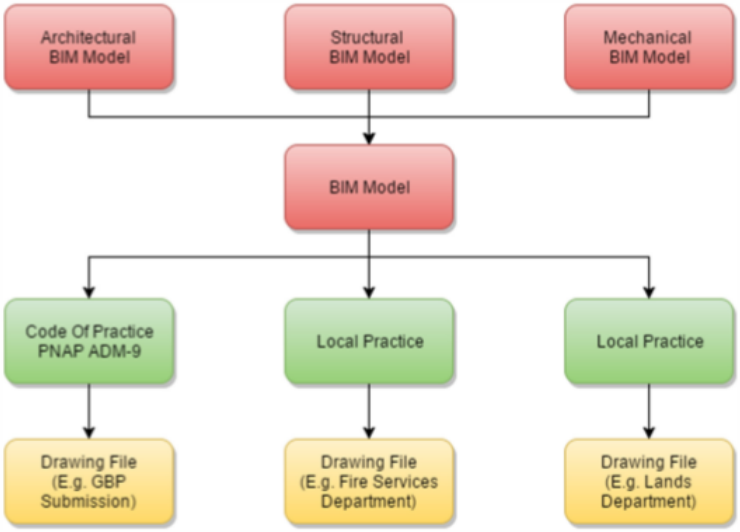
Statutory Submission Drawings


Consultancy Scope
Visibility Control
Plan
Site
Section
Elevation
Graphic
BIM Model
Site Area
Site Coverage
GFA & UFA
Compartmentation
Data Calculation
Data Extraction
Semi-automatic Manual
lookup & Calculation
Sanitary Fitment Schedule
Occupancy
Refuse Storage
MOE Table
Automatic Calculation
Process (ACS)
Possible automation (Not include in this consultancy)

Drawing Graphics

Drawing Graphics

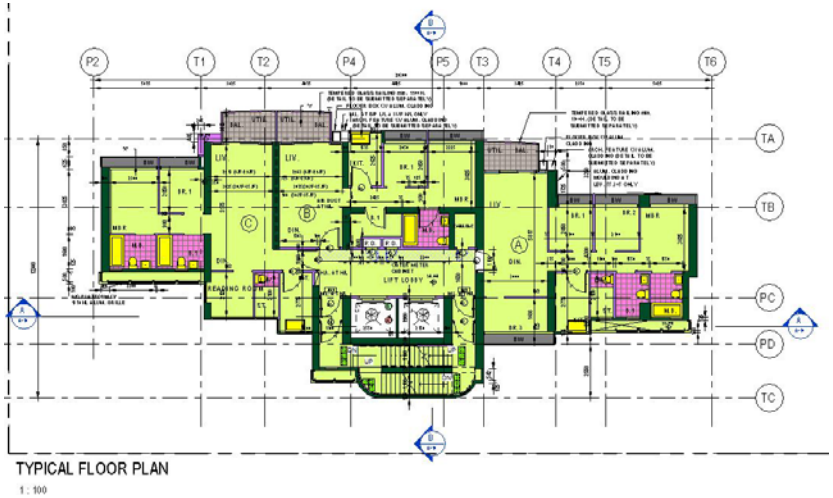
A BIM model had to be collaborated by different parties, such as Architectural, Structural, Mechanical etc. They have to communicate and collaborate through meetings and adjust the BIM model.



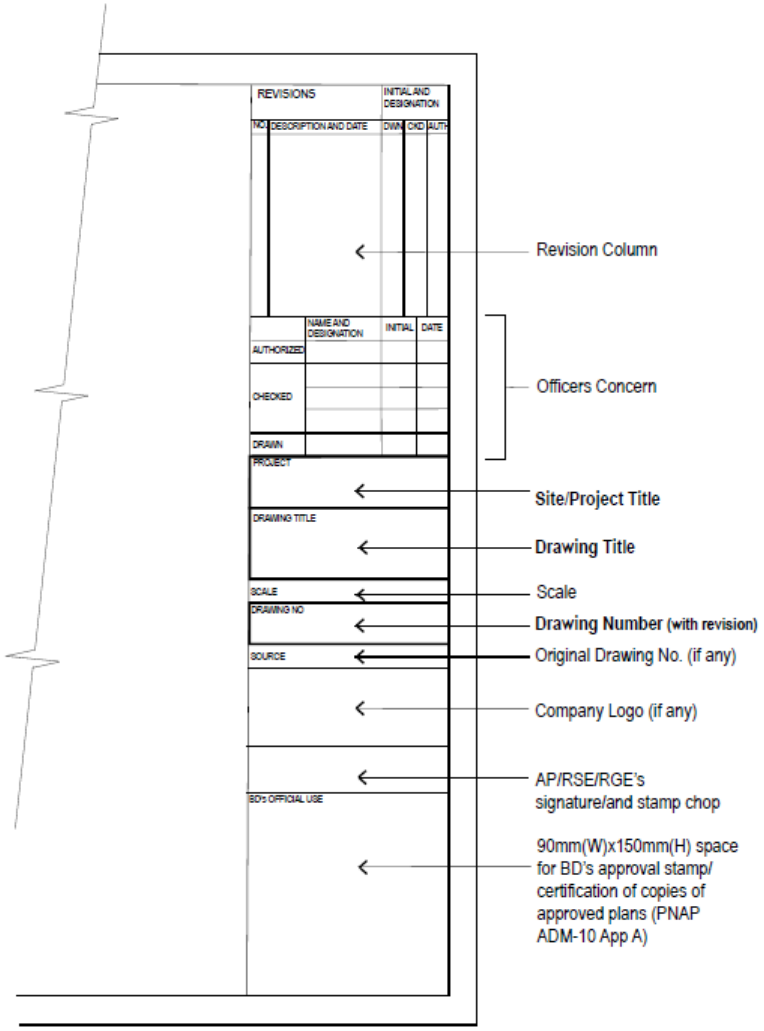
Once the BIM model completed, it can perform various functions/ submissions for different purpose. For example, the BIM model can produce Fire Services Submission, General Building Plan Submission and Lands Department Submission. However, we shall not produce drawings in the model file due to the file size constraint (Limited to 200 Mb). Each submission should create a stand-alone drawing file.

In the GBP Submission process, there are a certain requirement about the colour indication. In the Practice Notes for Authorized Persons (PNAP) ADM-9, that one copies of every plan submitted for approval should be coloured in order to clearly differentiate existing works from proposed new works and one part of any proposed new works from other parts. For consistency in the use of colour, the preferred colours as shown in Appendix A should be adopted. For amendments to the approved works, the proposed works should be coloured or otherwise identified from the approved works, with identical colouring or other means, on all sets of plans submitted to the Buildings Department.

Thus, the BIM model will be linked into the related Submission Drawing file. The materials can be overridden every view and plan. The RGB System in Appendix A is to provide a table of required colour on plan.



Sample Title Panel



1

* Information box shown in bold letter is compulsory for BD submission.

Appendix A
(PNAP ADM-9)

Preferred Colours

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

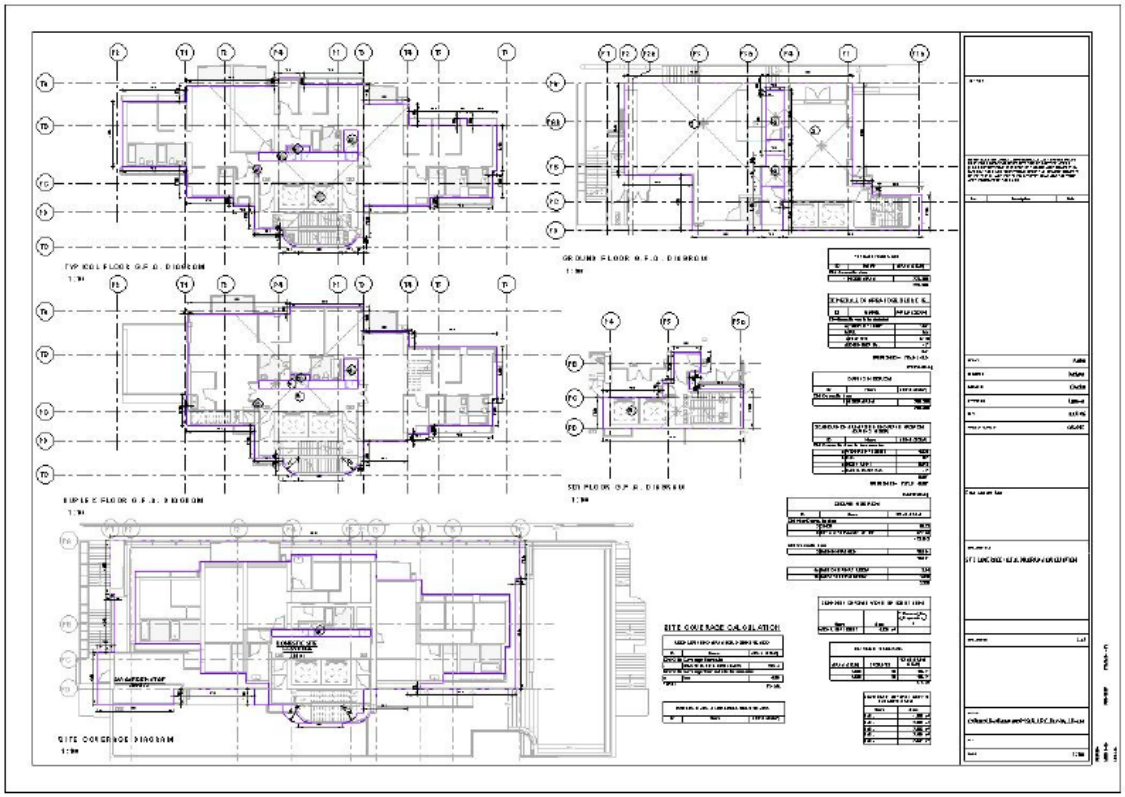
[1] Colours are constructed from the combination of the red, green and blue colours.
[2] Plot screening setting should be 100 (i.e. full colour intensity).

1

Data Extraction

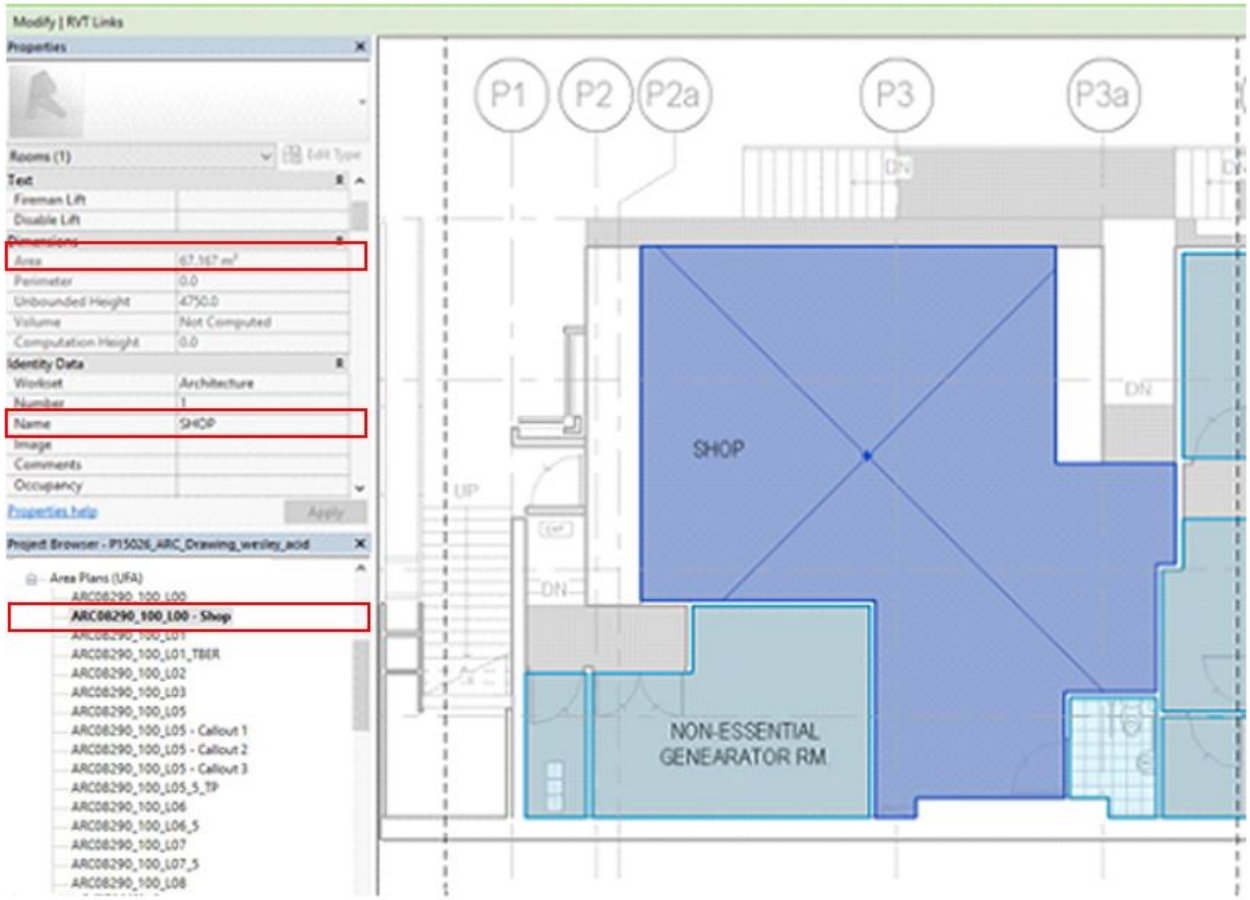
Creation of Area Diagrams in Drawing Sheet

Once Area Diagrams are ready, there will be one more step to further produce a proper submission drawing. The Area Diagrams should be gathered and drag into a Drawing Sheet accompanied with the Results in Schedule to indicate the room areas. A set of drawing can be named and reviewed according to the drawing numbers.



In the BIM approach, exact results need to be produced to fulfill the requirements.

Room Tool
Usable Floor Area (U.F.A.)



Calculation

Computational Logic for Calculations

In the General Building Plan submission, all calculations are fundamentally based on 2 elements:

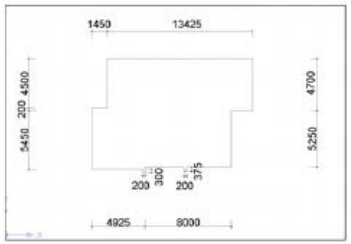
1. Area
2. Functional Use of that area

As far as the area concern, typically it is the definition of:

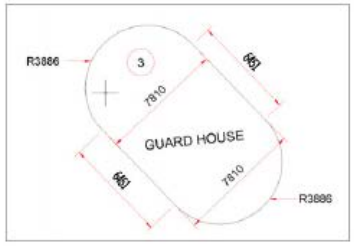
1 Site Area
2 Gross Floor Area
3 Usable Floor Area
4 Site Coverage Area

Building Department's PNAP ADM-19 highlights the requirements of the Areas as defined for the purpose of the calculations. It requires the Outline of the area concerned, functional use of the area, identification code of the area and Dimensions.

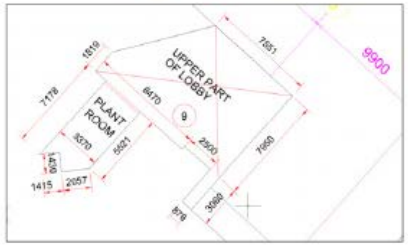
Sample 1 **Rectangular shape GFA diagram**



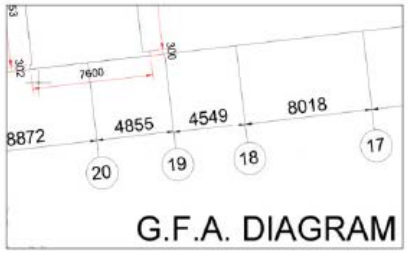
Sample 2 **GFA diagram with curve(s) and annotations**



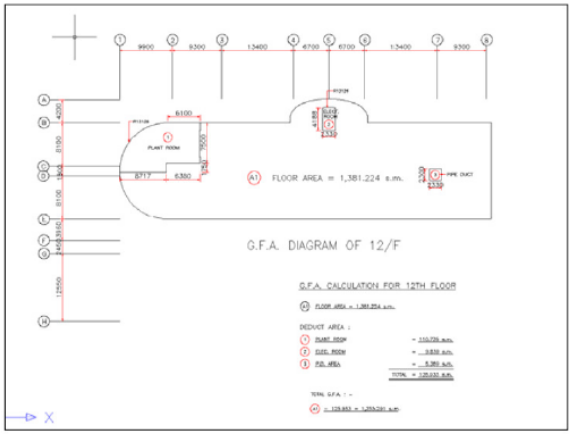
Sample 3 **GFA diagram (part) with dimension and annotation**



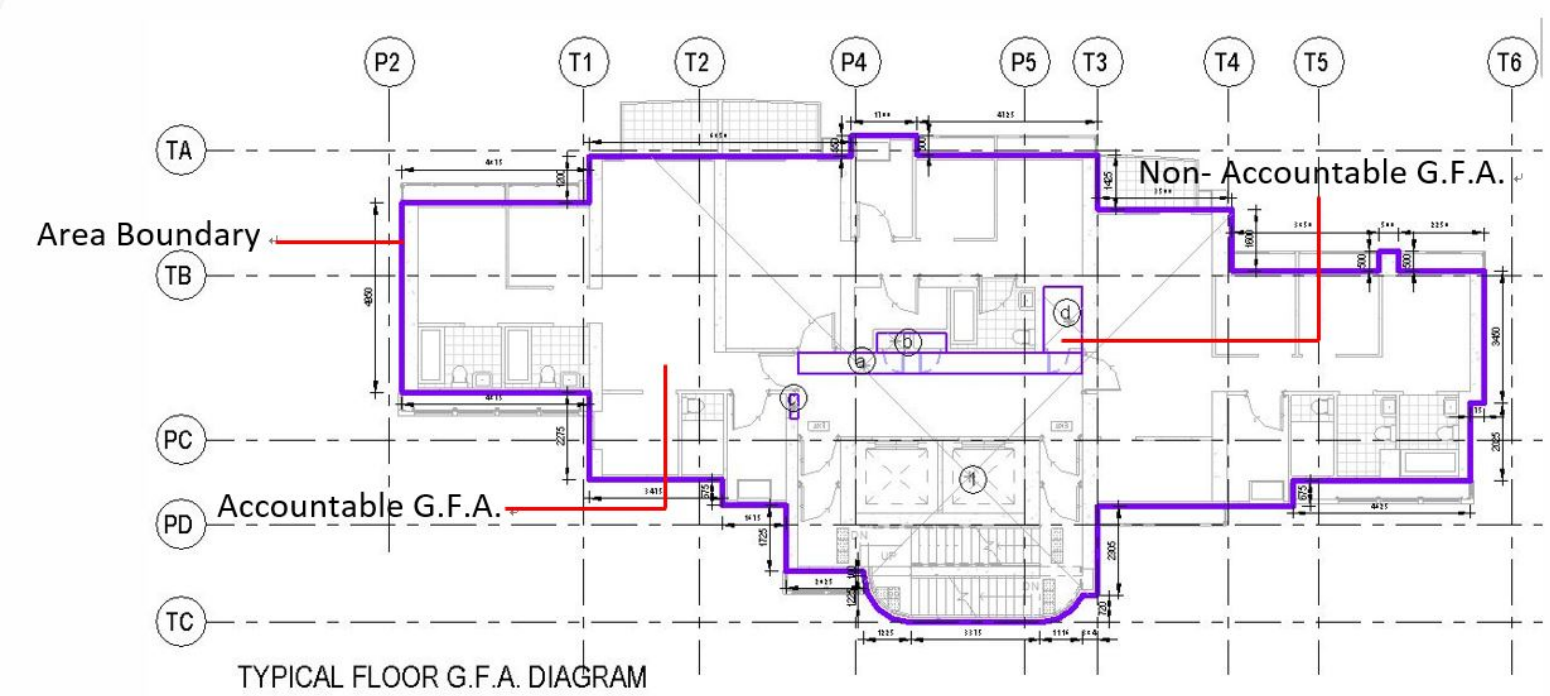
Sample 4 **GFA diagram (part) with grid line and dimension.**



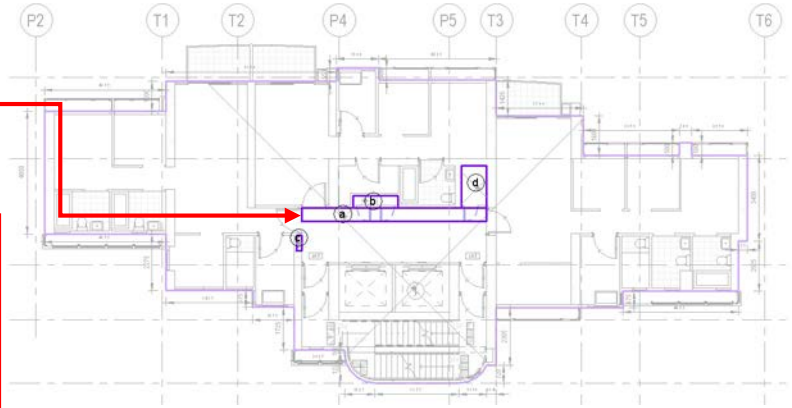
Sample 5 **Overview of a sample GFA diagram with calculations**

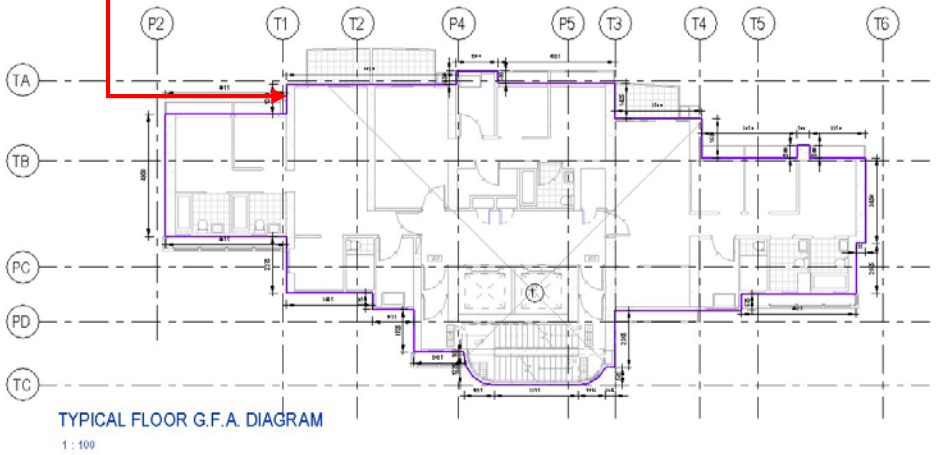


Area Plan Approach
Gross Floor Area (G.F.A.)
Overlay 2 Sets of Area Plan Together



- C-02 - SITE COVERAGE / G.F.A. DIAGRAM & CALCULATION
  - Area Plan (Discounted GFA): ARC08254_100_L08_DED
  - Area Plan (Discounted GFA): ARC08254_100_L36_DED
  - Area Plan (Gross Building): ARC08250_100_L00
  - Area Plan (Gross Building): ARC08250_100_L05
  - Area Plan (Gross Building): ARC08250_100_L08_ADD
  - Area Plan (Gross Building): ARC08250_100_L36
  - Area Plan (Non-Domestic Site Coverage): ARC08220_100_R5_TR
  - Area Plan (Site Coverage): ARC08220_100_L08
  - Area Plan (Site Coverage): ARC08220_100_R5_TR

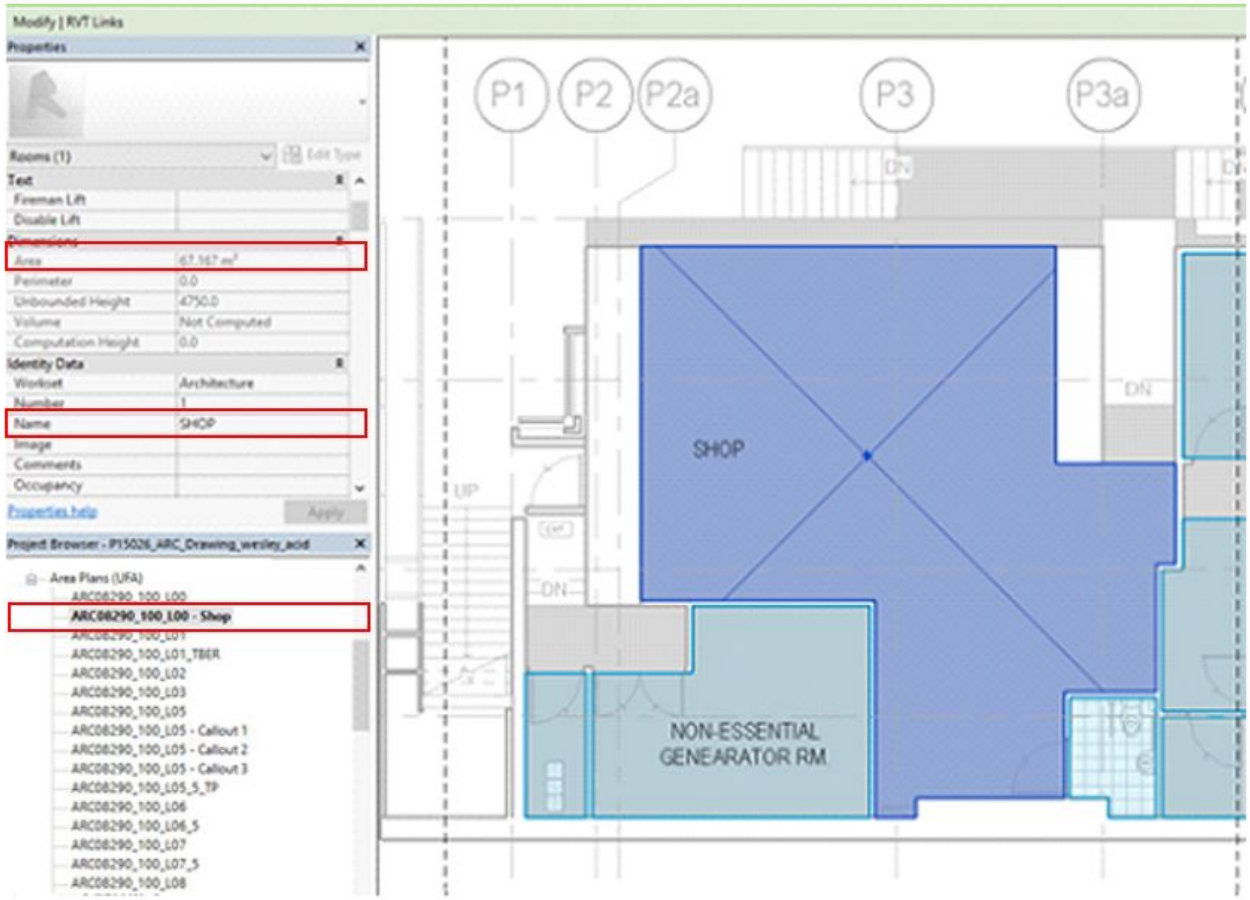




TYPICAL FLOOR G.F.A. DIAGRAM

1 : 100

Room Tool
Usable Floor Area (U.F.A.)



Semi-automatic Calculation (Manual Look-up Table)

In this case, to find out the Minimum Width of Each Exit Route each floor, Code of Practice for the Provision of Means of Escape in Case of Fire is required. The Factor representing usable floor area in m^2 per person can be find out in MOE Part II, Section 7, Table 1, which is 3s.m/person.

Table 1

Intended use of storey	Factor representing usable floor area in m^2 per person
(a) Assembly halls, auditoria and stadia without seating or with movable seating	0.5
(b) Areas accessible to the public in viewing galleries, banking halls, betting centres and places where public service counters are provided	0.5
(c) Dance halls (calculated on dancing area), disco and reception area for restaurant.	0.75
(d) Restaurants(calculated on dining area), dining area, lounges, committee rooms, conference rooms, meeting rooms, common rooms, function room and waiting rooms	1
(e) Kitchens attached to restaurants	4.5
(f) Museums, exhibition halls, trademarts and display areas	2
(g) Supermarkets, showrooms, jewellery and goldsmith shops, pawn shops and money changers	2
(h) Shopping arcades, department stores and shopping areas	
- basement, G/F, 1/F & 2/F	3
- 3/F & above	4.5
(i) Offices	9
(j) Tenement houses, barracks, dormitories, and self-contained flats comprising a single room or having the main living area subdivided by rooms	3
(k) Self-contained flats with corridor or balcony access having five or more flats on each floor served by each staircase	4.5
(l) Flats not covered by (j) or (k)	9
(m) Flatted factories	4.5
(n) Warehouses, godowns and storage areas	30
(o) Classrooms of school not covered by Education Ordinance and other lecture rooms, library, and study rooms	2

MOE Part II, Section 7, Table 1

After sorting out the required minimum area of a shop, which can be calculated by multiplying the room area and the factor, define the occupancy of the area. Once getting back to MOE Part II, Section 11, Table 2, the Minimum Width of Each Exit Route each floor will be calculated. Then we can enter the required and provided width and total width for the exit routes of each floor.

Table 2

Table showing minimum number of exit doors from a room, or exit routes from a storey, and required minimum width thereof

Capacity of room or storey	Min. No. of exit doors (from room) or exit routes (from storey)	Min. Total Width of		Min. Width of each	
		exit doors	exit routes	exit door	exit route
4 - 30	1			750 mm	1050 mm
31 - 200	2	1750 mm	2100 mm	850 mm	1050 mm
201 - 300	2	2500 mm	2500 mm	1050 mm	1050 mm
301 - 500	2	3000 mm	3000 mm	1050 mm	1050 mm
501 - 750	3	4500 mm	4500 mm	1200 mm	1200 mm
751 - 1000	4	6000 mm	6000 mm	1200 mm	1200 mm
1001 - 1250	5	7500 mm	7500 mm	1350 mm	1350 mm
1251 - 1500	6	9000 mm	9000 mm	1350 mm	1350 mm
over 1500	7 or such greater number as the Building Authority may require	to be calculated at the rate of 300mm per 50 persons		1500 mm	1500 mm

MOE Part II, Section 11, Table 2

A Scheduled Table is to be created to fill in the result data in the Drawing Sheet.

SCHEDULE MIN MAX NUMBER & WIDTH OF EXIT DOOR & EXIT ROUTE FROM EACH COMPARTMENT											
COMPARTMENT	COMPARTMENT CAPACITY	MIN. NO. OF EXIT ROUTE		MIN. TOTAL WIDTH OF				MIN. WIDTH OF EACH			
				EXIT DOORS		EXIT ROUTES		EXIT DOORS		EXIT ROUTES	
		REQ'D	PROV'D	REQ'D	PROV'D	REQ'D	PROV'D	REQ'D	PROV'D	REQ'D	PROV'D

With every UFA, GFA, Site Coverage etc. available, every subsequent calculation submittal shares the same workflow to proceed for the **Results in schedule**.

SCHEDULE OF EXIT DOORS AND EXIT ROUTES

ID	LOCATION (ROOM / AREA)	USABLE FLOOR AREA (SQ.M)	OCCUPANCY DENSITY	OCCUPANCY CAPACITY OF ROOM / STOREY	MIN. NO. OF EXIT ROUTES / DOORS		MIN. TOTAL (mm) WIDTH OF EXIT DOORS		MIN. TOTAL (mm) WIDTH OF EXIT ROUTES		MIN. WIDTH OF EACH EXIT DOOR		MIN. WIDTH OF EACH EXIT ROUTE	
					REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D
G/F														
GA	STORE	32.91	30	2	1	1	-	900	-	TO OPEN SPACE	-	900	-	TO OPEN SPACE
GB	EX. STORE ROOM	44.188	30	2	1	1	-	900	-	TO OPEN SPACE	-	900	-	TO OPEN SPACE
GC	STAFF CHANGING ROOM	7.693	9	1	1	1	-	900	-	TO OPEN SPACE	-	900	-	TO OPEN SPACE
GD	EX. ST. ROOM	14.499	30	1	1	1	-	900	-	TO OPEN SPACE	-	900	-	TO OPEN SPACE
GE	EX. ST.	6.229	30	1	1	1	-	900	-	TO OPEN SPACE	-	900	-	TO OPEN SPACE
	SUB TOTAL	105.519		7										
1/F														
1A	KITCHEN	90.505	4.5	21	1	2	-	2550	-	2550	750	1050 / 1575	1050	STAIR NO.3 - 1050mm WIDE
1B	INDOOR SITTING AREA	396.831	1	397	2	2	3000	3000	3000	3000	1050	1200 / 1800	1050	STAIR NO.4 - 1575mm WIDE
	SUB TOTAL	487.336		418										
TOTAL		592.855		425										

ts in schedule is then tabulated in the drawing sheet for submission.

Automatic Calculation(Automatic Look-up Table)

Whereas the semi-automatic process involves the summation of concerned area plan, the searching for Calculated Result is still a manual process, even in a BIM system.
Automatic calculations refer to a script or plug-in which will automatically refer to the statutory tables and perform the calculation, returns with a result and fill in the requirement schedule. This is, however, belongs to another phase of the Consultancy Study which will not be covered here.

Proposed PNAP ADM-19 Appendix F Electronic Submission for Mathematical Calculation of Areas

BIM Platform

DWFX

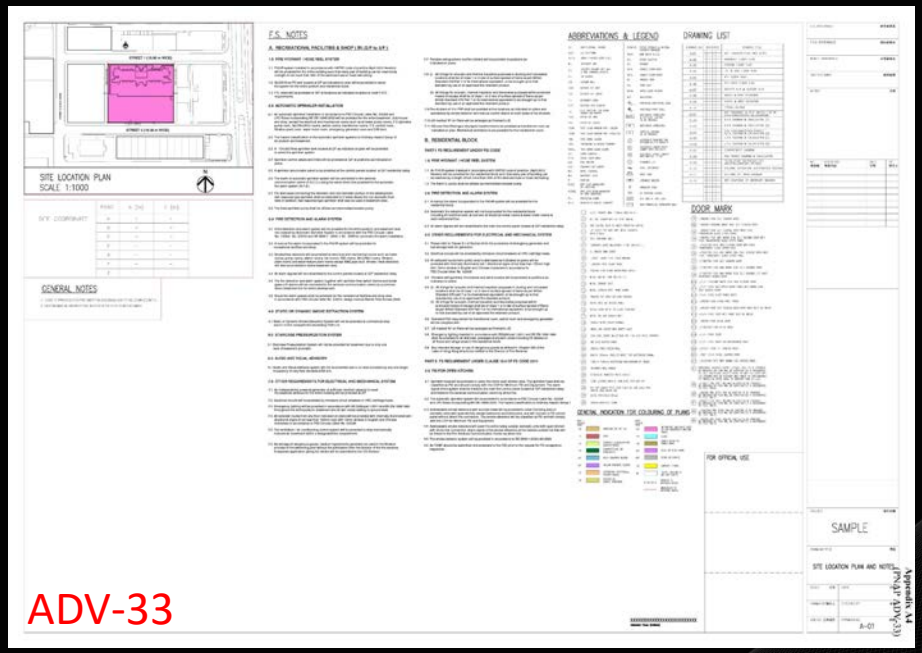
Native Viewer

REV DesignReview

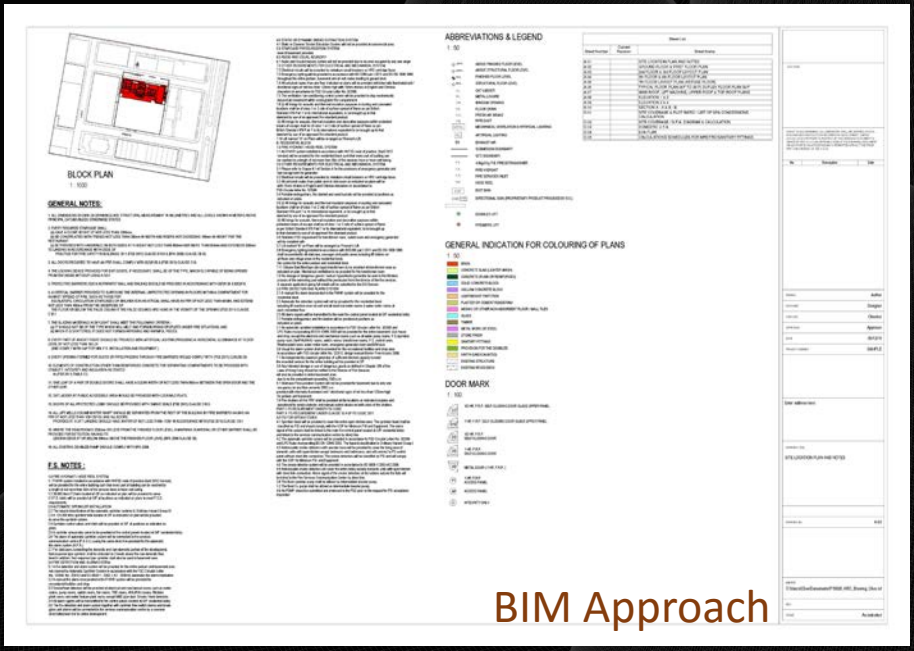
BIMX

BIMx

Statutory Submission Drawings (ADV-33)

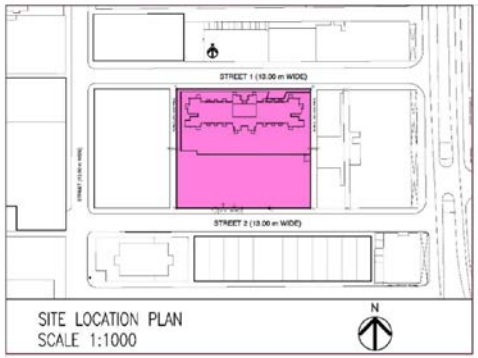


ADV-33



BIM Approach

Statutory Submission Drawings



SITE LOCATION PLAN
SCALE 1:1000

SITE COORDINATE	POINT	N (m)	E (m)
	A	–	–
	B	–	–
	C	–	–
	D	–	–
	X	–	–
	Y	–	–
	Z	–	–

GENERAL NOTES

1. CODE OF PRACTICE FOR FIRE SAFETY IN BUILDINGS 2011 TO BE COMPLIED WITH
2. DESIGN MANUAL: BARRIER FREE ACCESS 2008 TO BE COMPLIED WITH

F.S. NOTES

A. RECREATIONAL FACILITIES & SHOP (B1,G/F to 3/F)

1.0 FIRE HYDRANT / HOSE REEL SYSTEM

1.1 FH/HR system installed in accordance with HKFSD code of practice (April 2012 Version), will be provided for the entire building such that every part of building can be reached by a length of not more than 30m of fire services hose or hose reel tubing.

1.2 36,000 litres FS tank located at 2/F as indicated on plan will be provided to serve the system for the entire podium and residential block.

1.3 F.S. inlets will be provided at G/F at locations as indicated on plans to meet F.S.D. requirements.

2.0 AUTOMATIC SPRINKLER INSTALLATION

2.1 An automatic sprinkler installation in accordance to FSD Circular Letter No. 3/2006 and LPC Rules incorporating BS EN 12845:2003 will be provided for the entire basement, club house and shop, except the electrical and mechanical rooms such as all water pump rooms, F.S.sprinkler pump room, fan(PAU&A/C) rooms, switch rooms, transformer rooms, F.S. control room, filtration plant room, water meter room, emergency generator room and E/M duct.

2.2 The hazard classification of the automatic sprinkler systems is Ordinary Hazard Group III for podium and basement.

2.3 A 124,000 litres sprinkler tank located at 2/F as indicated on plan will be provided to serve the sprinkler system.

2.4 Sprinkler control valves and inlets will be provided at G/F at positions as indicated on plans.

2.5 A sprinkler annunciator panel to be provided at fire control panels located at G/F residential lobby.

2.6 The alarm of automatic sprinkler system will be connected to fire services communication centre (F.S.C.C) using the same direct line provided for the automatic fire alarm system (A.F.A.).

2.7 For staircases connecting the domestic and non-domestic portion of the development, heat responsive type sprinkler shall be extended to 2 levels above the non-domestic floor level. In addition, heat responsive type sprinkler shall also be used in basement area.

2.8 The fixed sprinkler pump shall be utilized as intermediate booster pump.

3.0 FIRE DETECTION AND ALARM SYSTEM

3.1 A fire detection and alarm system will be provided for the entire podium and basement area not covered by Automatic Sprinkler System in accordance with the FSD Circular Letter No. 1/2006, No. 2/2012 and BS 5839-1 : 2002 + A2 : 2008 for automatic fire alarm installation.

3.2 A manual fire alarm incorporated in the FH/HR system will be provided for recreational facilities and shop.

3.3 Smoke/heat detectors will be provided at electrical and mechanical rooms such as meter rooms, pump rooms, switch rooms, fan rooms, TSE rooms, AHU(PAU rooms, filtration plant rooms and water feature plant rooms except M&E pipe duct. Smoke / heat detectors will also be provided in entire basement area.

3.4 All alarm signals will be transmitted to fire control panels located at G/F residential lobby.

3.5 The fire detection and alarm system together with sprinkler flow switch alarms and break glass unit alarms will be connected to fire services communication centre by a common direct telephone line for entire development.

3.6 Visual fire alarm system shall be provided for the recreational facilities and shop area in accordance with FSD circular letter No. 2/2012, design manual-Barrier Free Access 2008

4.0 STATIC OR DYNAMIC SMOKE EXTRACTION SYSTEM

4.1 Static or Dynamic Smoke Extraction System will not be provided at commercial area due to no fire compartment exceeding 7000 c.m.

5.0 STAIRCASE PRESSURIZATION SYSTEM

5.1 Staircase Pressurization System will not be provided for basement due to only one level of basement provided.

6.0 AUDIO AND VISUAL ADVISORY

6.1 Audio and Visual Advisory system will not be provided due to no area occupied by any one single occupancy on any floor exceeds 2000 s.m.

7.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM

7.1 An independently powered generator of sufficient electric capacity to meet the essential services for the entire building will be provided at G/F.

7.2 Electrical circuits will be provided by miniature circuit breakers or HRC cartridge fuses.

7.3 Emergency lighting will be provided in accordance with BS 5266 part 1:2011 and BS EN 1838:1999 throughout the entire podium, basement and all exit routes leading to ground level.

7.4 All exit/exit routes from any floor indicated on plans will be provided with internally illuminated exit / directional signs of not less than 125mm high with 15mm strokes in English and Chinese characters in accordance to FSD Circular Letter No. 5/2006.

7.5 The ventilation / air conditioning control system will be provided to stop mechanically induced air movement within a designated fire compartment.

7.6 No storage of dangerous goods / sodium hypochlorite generator be used in the filtration process of the swimming pool without the permission from the director of the fire services. A separate application giving full details will be submitted to the DG Division.

7.7 Portable extinguishers, fire blanket and sand buckets will be provided at positions as indicated on plans.

7.8 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent to be brought up to that standard by use of an approved fire retardant product.

7.9 Fire shutters of 4 hr FRP shall be provided at the locations as indicated on plans and operated by smoke detector and manual control device on both sides of the shutters.

7.10 Lift marked 'W' on Plans will be arranged as Fireman's Lift.

7.11 Silicone fluid filled type pole type transformers to be provided at transformer room as indicated on plan. Mechanical ventilation to be provided for the transformer room.

B. RESIDENTIAL BLOCK

PART I: FS REQUIREMENT UNDER FSI CODE

1.0 FIRE HYDRANT / HOSE REEL SYSTEM

1.1 An FH/HR system installed in accordance with HKFSD code of practice (April 2012 Version) will be provided for the residential block such that every part of building can be reached by a length of not more than 30m of fire services hose or hose reel tubing.

1.2 The feed f.s. pump shall be utilized as intermediate booster pump.

2.0 FIRE DETECTION AND ALARM SYSTEM

2.1 A manual fire alarm incorporated in the FH/HR system will be provided for the residential block.

2.2 Automatic fire detection system will not be provided for the residential block including lift machine room at roof and all electrical meter rooms & water meter rooms at each residential floor.

2.3 All alarm signals will be transmitted to the main fire control panel located at G/F residential lobby.

3.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM

3.1 Please refer to Clause B1 of Section A for the provisions of emergency generator and fuel storage tank for generator.

3.2 Electrical circuits will be provided by miniature circuit breakers or HRC cartridge fuses.

3.3 All exit/exit routes from public area to staircases as indicated on plans will be provided with internally illuminated exit / directional signs of not less than 125mm high with 15mm strokes in English and Chinese characters in accordance to FSD Circular letter No. 5/2006.

3.4 Portable extinguishers, fire blanket and sand buckets will be provided at positions as indicated on plans.

3.5 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent, to be brought up to that standard by use of an approved fire retardant product.

3.6 Standard FSD requirement for transformer room, switch room and emergency generator will be complied with.

3.7 Lift marked 'W' on Plans will be arranged as Fireman's Lift.

3.8 Emergency lighting installed in accordance with BS5266 part 1:2011 and BS EN 1838:1999 shall be provided to all staircases and public areas including lift lobbies on all floors and refuge areas in the residential block.

3.9 Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

PART II: FS REQUIREMENT UNDER CLAUSE 13.4 OF FS CODE 2011

4.0 FSI FOR OPEN KITCHEN

4.1 Sprinkler head will be provided to cover the entire open kitchen area. The sprinkler head shall be classified as FSI and should comply with the COP for Minimum FSI and Equipment. The alarm signal of the system shall be linked to the main fire control panel located at G/F residential lobby and linked to fire services communication centre by direct line.

4.2 The automatic sprinkler system will be provided in accordance to FSD Circular Letter No. 5/2006 and LPC Rules incorporating BS EN 12845:2003. The hazard classification is Ordinary Hazard Group I.

4.3 Addressable smoke detectors with sounder base will be provided to cover the living area of domestic units with open kitchen except bedrooms and bathrooms, and will connect to FS control panel without direct link connection. The smoke detectors will be classified as FSI and will comply with the COP for Minimum FSI and Equipment.

4.4 Addressable smoke detectors will connect the entire lobby outside domestic units with open kitchen with direct link connection. Alarm signal of the smoke detectors at the lobbies outside the flats will be linked to the Fire Services Communication Center by direct line.

4.5 The smoke detector system will be provided in accordance to BS 5839-1:2002+A2:2008.

4.6 An FSMP should be submitted and endorsed to the FSD prior to the request for FSI acceptance inspection.

4.7 Portable extinguishers and fire blanket will be provided at positions as indicated on plans.

7.8 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent to be brought up to that standard by use of an approved fire retardant product.

7.9 Fire shutters of 4 hr FRP shall be provided at the locations as indicated on plans and operated by smoke detector and manual control device on both sides of the shutters.

7.10 Lift marked 'W' on Plans will be arranged as Fireman's Lift.

7.11 Silicone fluid filled type pole type transformers to be provided at transformer room as indicated on plan. Mechanical ventilation to be provided for the transformer room.

B. RESIDENTIAL BLOCK

PART I: FS REQUIREMENT UNDER FSI CODE

1.0 FIRE HYDRANT / HOSE REEL SYSTEM

1.1 An FH/HR system installed in accordance with HKFSD code of practice (April 2012 Version) will be provided for the residential block such that every part of building can be reached by a length of not more than 30m of fire services hose or hose reel tubing.

1.2 The feed f.s. pump shall be utilized as intermediate booster pump.

2.0 FIRE DETECTION AND ALARM SYSTEM

2.1 A manual fire alarm incorporated in the FH/HR system will be provided for the residential block.

2.2 Automatic fire detection system will not be provided for the residential block including lift machine room at roof and all electrical meter rooms & water meter rooms at each residential floor.

2.3 All alarm signals will be transmitted to the main fire control panel located at G/F residential lobby.

3.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM

3.1 Please refer to Clause B1 of Section A for the provisions of emergency generator and fuel storage tank for generator.

3.2 Electrical circuits will be provided by miniature circuit breakers or HRC cartridge fuses.

3.3 All exit/exit routes from public area to staircases as indicated on plans will be provided with internally illuminated exit / directional signs of not less than 125mm high with 15mm strokes in English and Chinese characters in accordance to FSD Circular letter No. 5/2006.

3.4 Portable extinguishers, fire blanket and sand buckets will be provided at positions as indicated on plans.

3.5 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.

(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent, to be brought up to that standard by use of an approved fire retardant product.

3.6 Standard FSD requirement for transformer room, switch room and emergency generator will be complied with.

3.7 Lift marked 'W' on Plans will be arranged as Fireman's Lift.

3.8 Emergency lighting installed in accordance with BS5266 part 1:2011 and BS EN 1838:1999 shall be provided to all staircases and public areas including lift lobbies on all floors and refuge areas in the residential block.

3.9 Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.

PART II: FS REQUIREMENT UNDER CLAUSE 13.4 OF FS CODE 2011

4.0 FSI FOR OPEN KITCHEN

4.1 Sprinkler head will be provided to cover the entire open kitchen area. The sprinkler head shall be classified as FSI and should comply with the COP for Minimum FSI and Equipment. The alarm signal of the system shall be linked to the main fire control panel located at G/F residential lobby and linked to fire services communication centre by direct line.

4.2 The automatic sprinkler system will be provided in accordance to FSD Circular Letter No. 5/2006 and LPC Rules incorporating BS EN 12845:2003. The hazard classification is Ordinary Hazard Group I.

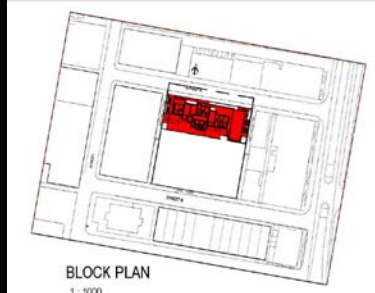
4.3 Addressable smoke detectors with sounder base will be provided to cover the living area of domestic units with open kitchen except bedrooms and bathrooms, and will connect to FS control panel without direct link connection. The smoke detectors will be classified as FSI and will comply with the COP for Minimum FSI and Equipment.

4.4 Addressable smoke detectors will connect the entire lobby outside domestic units with open kitchen with direct link connection. Alarm signal of the smoke detectors at the lobbies outside the flats will be linked to the Fire Services Communication Center by direct line.

4.5 The smoke detector system will be provided in accordance to BS 5839-1:2002+A2:2008.

4.6 An FSMP should be submitted and endorsed to the FSD prior to the request for FSI acceptance inspection.

ADV-33



BLOCK PLAN
1 : 1000

GENERAL NOTES:

1. ALL DIMENSIONS SHOWN ON DRAWINGS ARE STRUCTURAL MEASUREMENT IN MILLIMETRES AND ALL LEVELS SHOWN IN METERS ABOVE PRINCIPAL DATUM UNLESS OTHERWISE STATED.

2. EVERY REQUIRED STAIRCASE SHALL:
(a) HAVE A CLEAR HEIGHT OF NOT LESS THAN 2500mm;
(b) BE CONSTRUCTED WITH TREADS NOT LESS THAN 280mm IN WIDTH AND RISERS NOT EXCEEDING 150mm IN HEIGHT FOR THE RESTAURANT
(c) BE PROVIDED WITH HANDRAILS ON BOTH SIDES AT A HEIGHT NOT LESS THAN 850mm NOR MORE THAN 950mm AND EXTENDED 300mm TO LANDING IN ACCORDANCE WITH CODE OF PRACTICE FOR FIRE SAFETY IN BUILDINGS 2011 (FSD 2011) CLAUSE B14& 6 (BPA 2008) CLAUSE 29.32.

3. ALL DOORS REQUIRED TO HAVE AN FRR SHALL COMPLY WITH B(CP,90 & (FSD 2011) CLAUSE C16.

4. THE LOCKING DEVICE PROVIDED FOR EXIT DOORS, IF NECESSARY, SHALL BE OF THE TYPE, WHICH IS CAPABLE OF BEING OPENED FROM THE INSIDE WITHOUT USING A KEY.

5. PROTECTIVE BARRIERS (SUCH AS PARAPET WALL AND RAILING) SHOULD BE PROVIDED IN ACCORDANCE WITH B(P)P 34 & B(C)P 8

6. A VERTICAL BARRIER PROVIDED TO SURROUND THE INTERNAL UNPROTECTED OPENING IN FLOORS WITHIN A COMPARTMENT FOR AGAINST SPREAD OF FIRE, SUCH AS THOSE FOR ESCALATORS, D'ROULATION STAIRCASES OR WALKWAYS IN AN ATRIUM, SHALL HAVE AN FRR OF NOT LESS THAN 60MIN. AND EXTEND NOT LESS THAN 450mm FROM THE UNDERSIDE OF THE FLOOR OR BELOW THE FALSE CEILING IF THE FALSE CEILINGS ARE HUNG IN THE VICINITY OF THE OPENING (FSD 2011) CLAUSE D10.1

7. THE GLAZING MATERIALS IN SKYLIGHT SHALL MEET THE FOLLOWING CRITERIA :-
(a) IT SHOULD NOT BE OF THE TYPE WHICH WILL MELT AND FORM BURNING DROPLETS UNDER FIRE SITUATIONS; AND
(b) WHEN IT IS SHATTERED, IT DOES NOT FORM SHARPENING AND HARMFUL PIECES.

8. EVERY PART OF AN EXIT ROUTE SHOULD BE PROVIDED WITH ARTIFICIAL LIGHTING PROVIDING A HORIZONTAL ILLUMINANCE AT FLOOR LEVEL OF NOT LESS THAN 30 LUX
(AND COMPLY WITH CoP FOR MIN. F.S. INSTALLATION AND EQUIPMENT)

9. EVERY OPENING FORMED FOR DUCTS OR PIPES PASSING THROUGH FIRE BARRIERS WOULD COMPLY WITH (FSD 2011) CLAUSE C6.

10. ELEMENTS OF CONSTRUCTION OTHER THAN REINFORCED CONCRETE FOR SEPARATING COMPARTMENTS TO BE PROVIDED WITH STABILITY, INTEGRITY AND INSULATION AS STATED IN (FSD 2011) TABLE C2.

11. ONE LEAF OF A PAIR OF DOUBLE DOORS SHALL HAVE A CLEAR WIDTH OF NOT LESS THAN 800mm BETWEEN THE OPEN DOOR AND THE OTHER LEAF.

12. CAT LADDER AT PUBLIC ACCESSIBLE AREA WOULD BE PROVIDED WITH LOCKABLE PLATE.

13. DOORS OF ALL PROTECTED LOBBY SHOULD BE PROVIDED WITH SMOKE SEALS (FSD 2011) CLAUSE D16.5.

14. ALL LIFT WELLS & DUMB WAITER SHAFT SHOULD BE SEPARATED FROM THE REST OF THE BUILDING BY FIRE BARRIERS HAVING AN FRR OF NOT LESS THAN 1/3H'D'/0.5H, AND ALL DOORS PROVIDED AT A LIFT LANDING SHOULD HAVE AN FRR OF NOT LESS THAN -1/3h- IN ACCORDANCE WITH (FSD 2011) CLAUSE C8.1.

15. WHERE THE HEADROOM IS 2200mm OR LESS FROM THE FINISHED FLOOR LEVEL, A WARNING GUARDRAIL OR OTHER BARRIER SHALL BE PROVIDED FOR DETECTION, HAVING ITS LEADING EDGE AT OR BELOW 690mm ABOVE THE FINISHED FLOOR LEVEL (BPA 2008 CLAUSE 36).

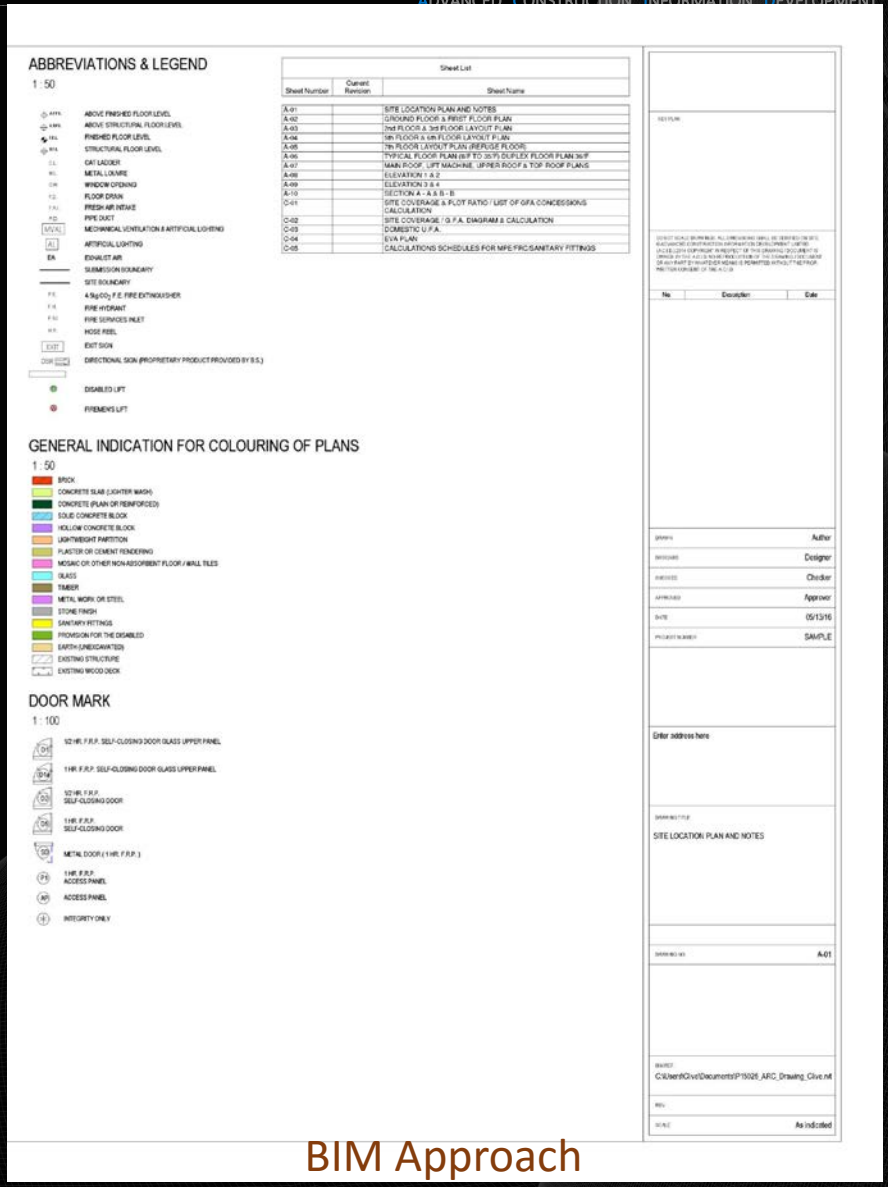
16. ALL EXISTING DISABLED RAMP SHOULD COMPLY WITH BPA 2008.

F.S. NOTES :

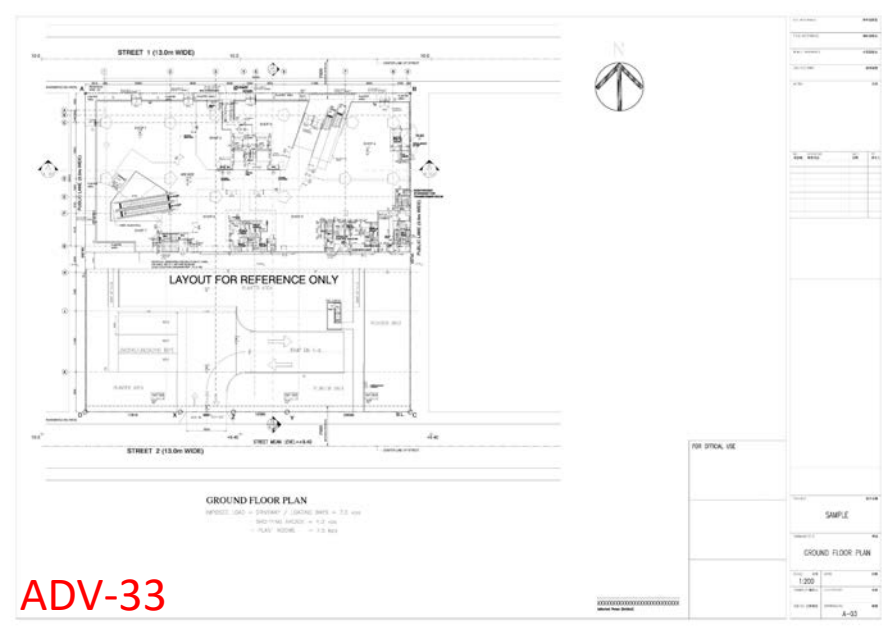
1.0 FIRE HYDRANT / HOSE REEL SYSTEM
1.1 FH/HR system installed in accordance with HKFSE code of practice (April 2012 Version), will be provided for the entire building such that every part of building can be escorted by a length of not more than 30m of fire services hose or hose reel tubing.
1.2 36,000 litres FS tank located at 2/F as indicated on plan will be provided to serve
1.3 F.S. inlets will be provided at G/F at locations as indicated on plans to meet F.S.D. requirements.
2.0 AUTOMATIC SPRINKLER INSTALLATION
2.1 The hazard classification of the automatic sprinkler system is Ordinary Hazard Group III
2.3 A 124,000 litres sprinkler tank located at 2/F as indicated on plan will be provided to serve the sprinkler system.
2.4 Sprinkler control valves and inlets will be provided at G/F at positions as indicated on plans.
2.5 A sprinkler annunciator panel to be provided at fire control panels located at G/F residential lobby.
2.6 The alarm of automatic sprinkler system will be connected to fire services communication centre (F.S.C.C.) using the same direct line provided for the automatic fire alarm system (A.F.A.).
2.7 For staircases connecting the domestic and non-domestic portion of the development, heat responsive type sprinkler shall be extended to 2 levels above the non-domestic floor level. In addition, heat responsive type sprinkler shall also be used in basement area.
2.8 The fixed sprinkler pump shall be utilized as intermediate booster pump.
3.0 FIRE DETECTION AND ALARM SYSTEM
3.1 A fire detection and alarm system will be provided for the entire podium and basement area not covered by Automatic Sprinkler System in accordance with the FSD Circular Letter No. 1/2006, No. 2/2012 and BS 5839-1 : 2002 + A2 : 2008 for automatic fire alarm installation.
3.2 A manual fire alarm incorporated in the FH/HR system will be provided for recreational facilities and shop.
3.3 Smoke/heat detectors will be provided at electrical and mechanical rooms such as meter rooms, pump rooms, switch rooms, fan rooms, TSE rooms, AHU(PAU rooms, filtration plant rooms and water feature plant rooms except M&E pipe duct. Smoke / heat detectors
3.4 All alarm signals will be transmitted to fire control panels located at G/F residential lobby.
3.5 The fire detection and alarm system together with sprinkler flow switch alarms and break glass unit alarms will be connected to fire services communication centre by a common direct telephone line for entire development.
4.0 STATIC OR DYNAMIC SMOKE EXTRACTION SYSTEM
4.1 Static or Dynamic Smoke Extraction System will not be provided at commercial area.
5.0 STAIRCASE PRESSURIZATION SYSTEM
level of basement provided.
6.0 AUDIO AND VISUAL ADVISORY
6.1 Audio and Visual Advisory system will not be provided due to no area occupied by any one single
7.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM
7.2 Electrical circuits will be provided by miniature circuit breakers or HRC cartridge fuses.
7.3 Emergency lighting will be provided in accordance with BS 5266 part 1:2011 and BS EN 1838:1999 throughout the entire podium, basement and all exit routes leading to ground level.
7.4 All exit/exit routes from any floor indicated on plans will be provided with internally illuminated exit / directional signs of not less than 125mm high with 15mm strokes in English and Chinese characters in accordance to FSD Circular Letter No. 5/2006.
7.5 The ventilation / air conditioning control system will be provided to stop mechanically induced air movement within a designated fire compartment.
7.8 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent to be brought up to that standard by use of an approved fire retardant product.
7.9 Fire shutters of 4 hr FRP shall be provided at the locations as indicated on plans and operated by smoke detector and manual control device on both sides of the shutters.
PART I: FS REQUIREMENT UNDER FSI CODE
7.11 Silicone fluid filled type pole type transformers to be provided at transformer room as indicated on plan. Mechanical ventilation to be provided for the transformer room.
B. RESIDENTIAL BLOCK
1.0 FIRE HYDRANT / HOSE REEL SYSTEM
1.1 An FH/HR system installed in accordance with HKFSD code of practice (April 2012 Version) will be provided for the residential block such that every part of building can be reached by a length of not more than 30m of fire services hose or hose reel tubing.
3.0 OTHER REQUIREMENTS FOR ELECTRICAL AND MECHANICAL SYSTEM
3.9 Please refer to Clause B.1 of Section A for the provisions of emergency generator and fuel storage tank for generator.
3.2 Electrical circuits will be provided by miniature circuit breakers or HRC cartridge fuses.
3.3 All exit/exit routes from public area to staircases as indicated on plans will be with 15mm strokes in English and Chinese characters in accordance to FSD Circular letter No. 5/2006
3.4 Portable extinguishers, fire blanket and sand buckets will be provided at positions as indicated on plans.
3.5 (i) All linings for acoustic and thermal insulation purposes in ducting and concealed locations shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 part 7 or its international equivalent, or be brought up to that standard by use of an approved fire retardant product.
(ii) All linings for acoustic, thermal insulation and decorative purposes within protected means of escape shall be of class 1 or 2 rate of surface spread of flame as per British Standard 476 Part 7 or its international equivalent to be brought up to that standard by use of an approved fire retardant product.
3.6 Standard FSD requirement for transformer room, switch room and emergency generator will be complied with.
3.7 Lift marked 'W' on Plans will be arranged as Fireman's Lift.
3.8 Emergency lighting installed in accordance with BS5266 part 1:2011 and BS EN 1838:1999 shall be provided to all staircases and public areas including lift lobbies on all floors and refuge areas in the residential block.
3.9 Any intended storage or use of dangerous goods as defined in Chapter 295 of the Laws of Hong Kong should be notified to the Director of Fire Services.
PART II: FS REQUIREMENT UNDER CLAUSE 13.4 OF FS CODE 2011
4.0 FSI FOR OPEN KITCHEN
4.1 Sprinkler head will be provided to cover the entire open kitchen area. The sprinkler head shall be classified as FSI and should comply with the COP for Minimum FSI and Equipment. The alarm signal of the system shall be linked to the main fire control panel located at G/F residential lobby and linked to fire services communication centre by direct line.
4.2 The automatic sprinkler system will be provided in accordance to FSD Circular Letter No. 5/2006 and LPC Rules incorporating BS EN 12845:2003. The hazard classification is Ordinary Hazard Group I.
4.3 Addressable smoke detectors with sounder base will be provided to cover the living area of domestic units with open kitchen except bedrooms and bathrooms, and will connect to FS control panel without direct link connection. The smoke detectors will be classified as FSI and will comply with the COP for Minimum FSI and Equipment.
4.4 Addressable smoke detectors will connect the entire lobby outside domestic units with open kitchen with direct link connection. Alarm signal of the smoke detectors at the lobbies outside the flats will be linked to the Fire Services Communication Center by direct line.
4.5 The smoke detector system will be provided in accordance to BS 5839-1:2002+A2:2008.
4.6 An FSMP should be submitted and endorsed to the FSD prior to the request for FSI acceptance inspection.

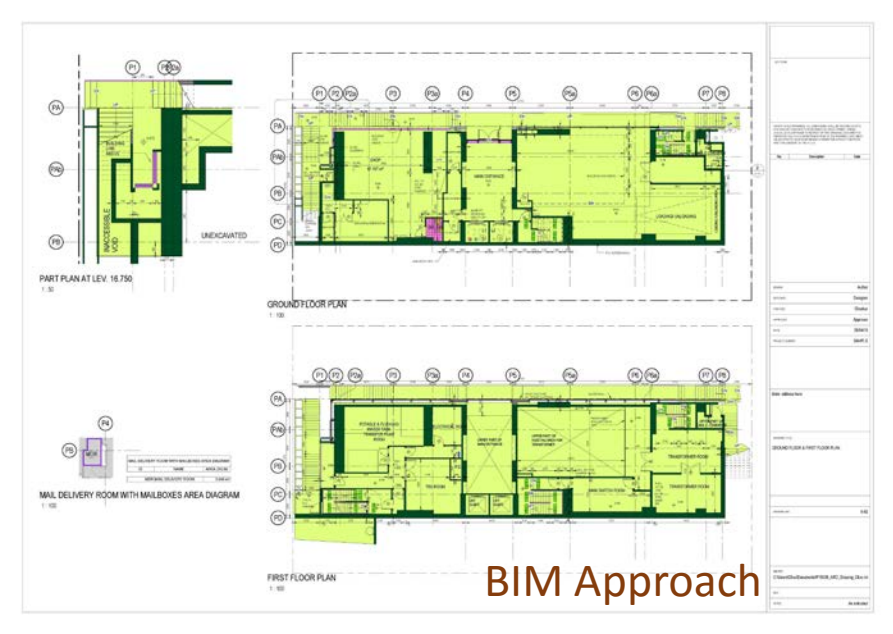
BIM Approach

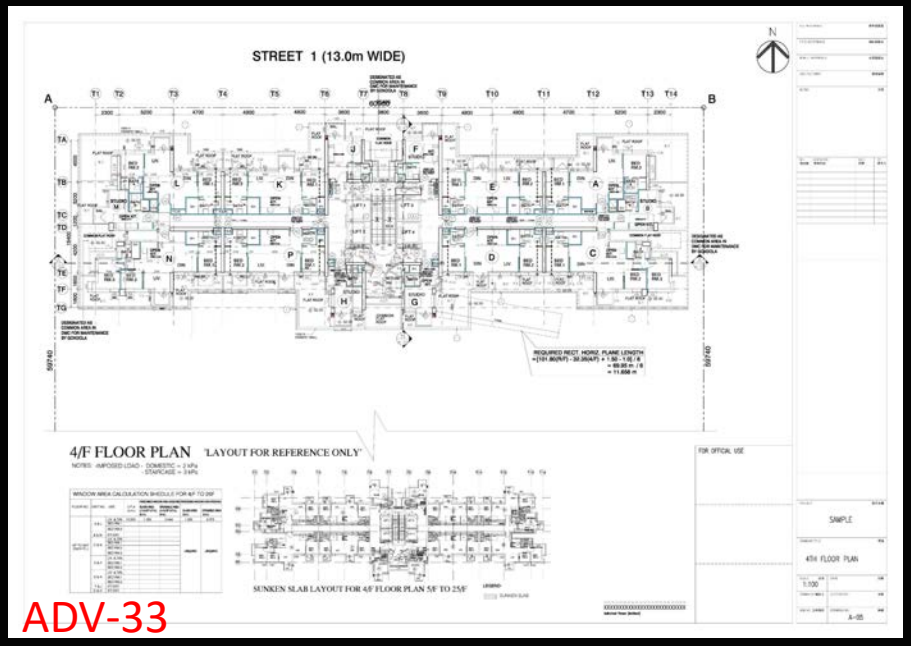
ADV-33



BIM Approach


STREET 1 (13.0m WIDE)
LAYOUT FOR REFERENCE ONLY
STREET 2 (13.0m WIDE)
GROUND FLOOR PLAN
SAMPLE
GROUND FLOOR PLAN
1:200
A-03
ADV-33


PART PLAN AT LEV. 16.750
UNEXCAVATED
GROUND FLOOR PLAN
MAIL DELIVERY ROOM WITH MAILBOXES AREA DIAGRAM
FIRST FLOOR PLAN
BIM Approach



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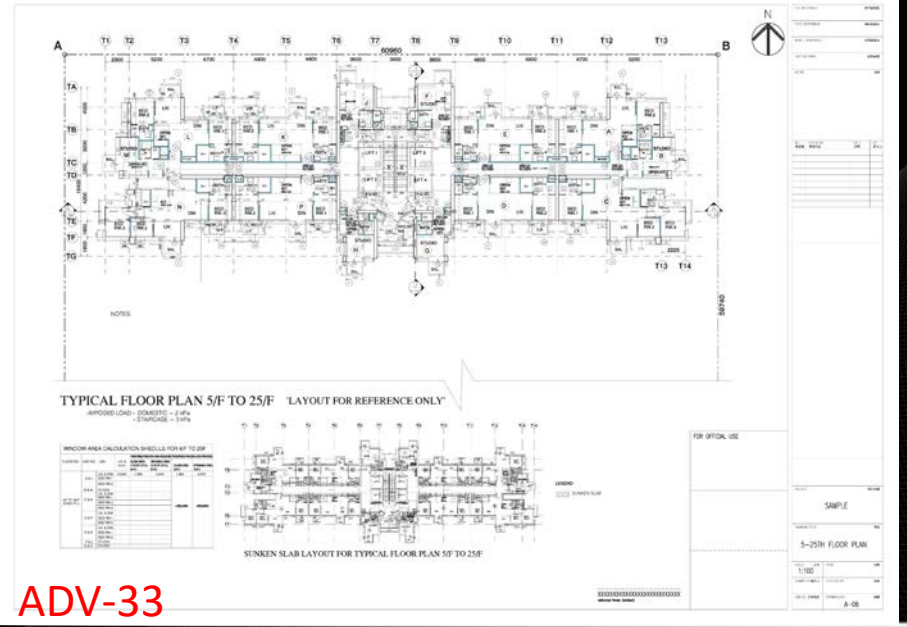
BIM Approach



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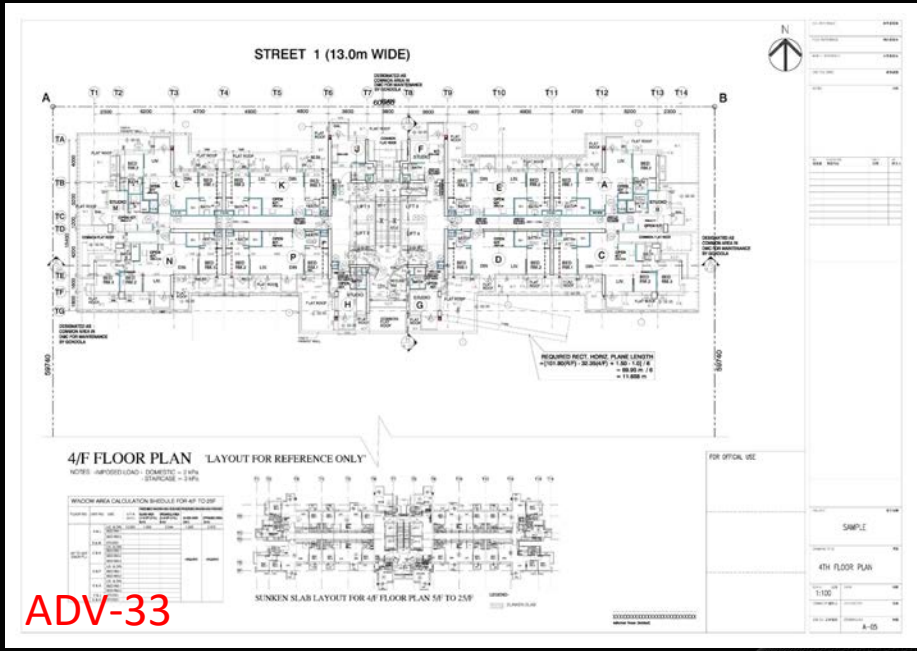
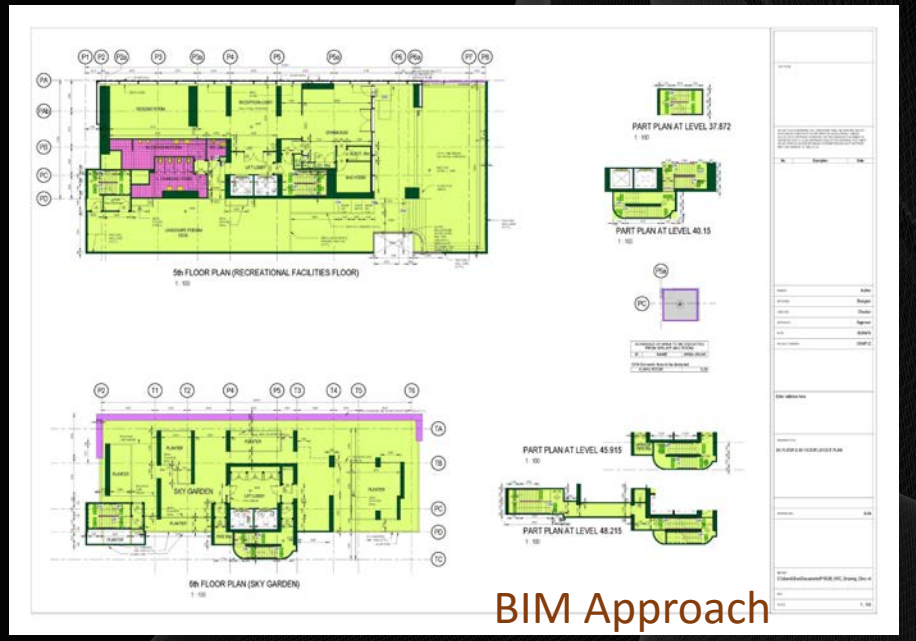
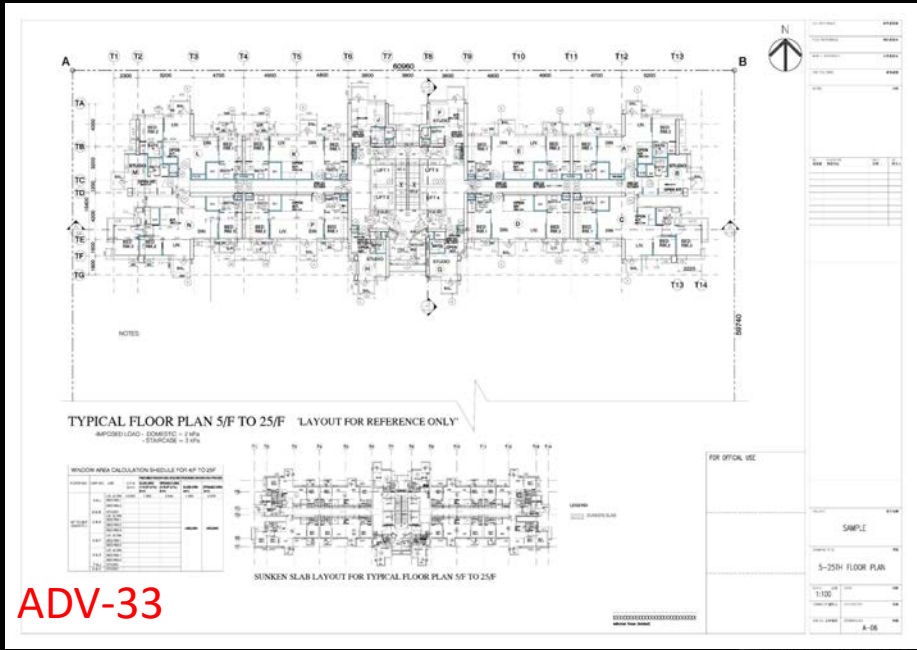
BIM Approach


STREET 1 (13.0m WIDE)
4/F FLOOR PLAN
"LAYOUT FOR REFERENCE ONLY"
SUNKEN SLAB LAYOUT FOR 4/F FLOOR PLAN 5/F TO 25/F
4TH FLOOR PLAN
ADV-33


5th FLOOR PLAN (RECREATIONAL FACILITIES FLOOR)
PART PLAN AT LEVEL 37.872
PART PLAN AT LEVEL 40.15
6th FLOOR PLAN (SKY GARDEN)
PART PLAN AT LEVEL 45.915
PART PLAN AT LEVEL 48.215
BIM Approach


INTERMEDIATE LEVEL PART PLAN AT LEVEL 53.690
5th RECREATIONAL FACILITIES AREA DIAGRAM
6/F SKY GARDEN AREA DIAGRAM
7/F REFUGE FLOOR PLAN
BIM Approach



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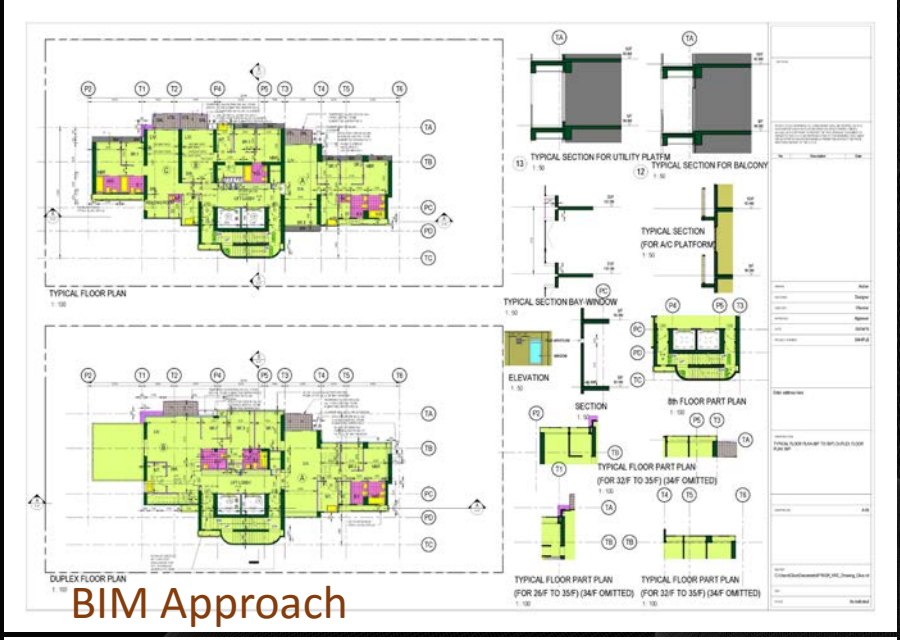

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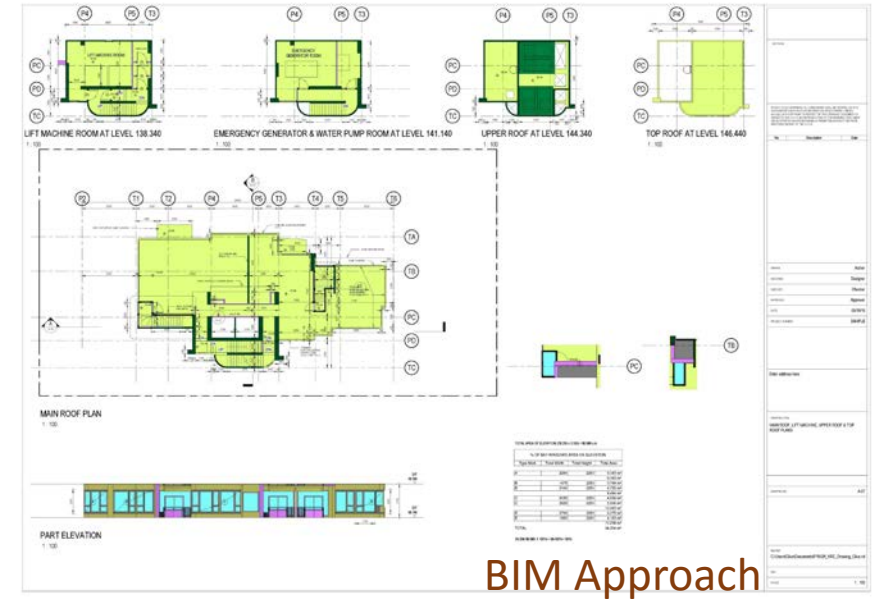

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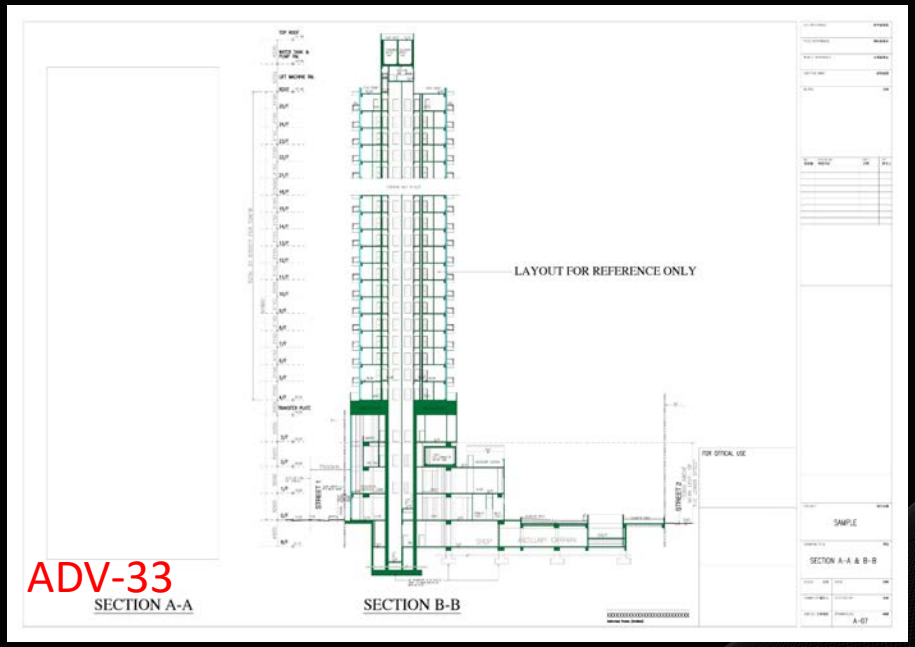

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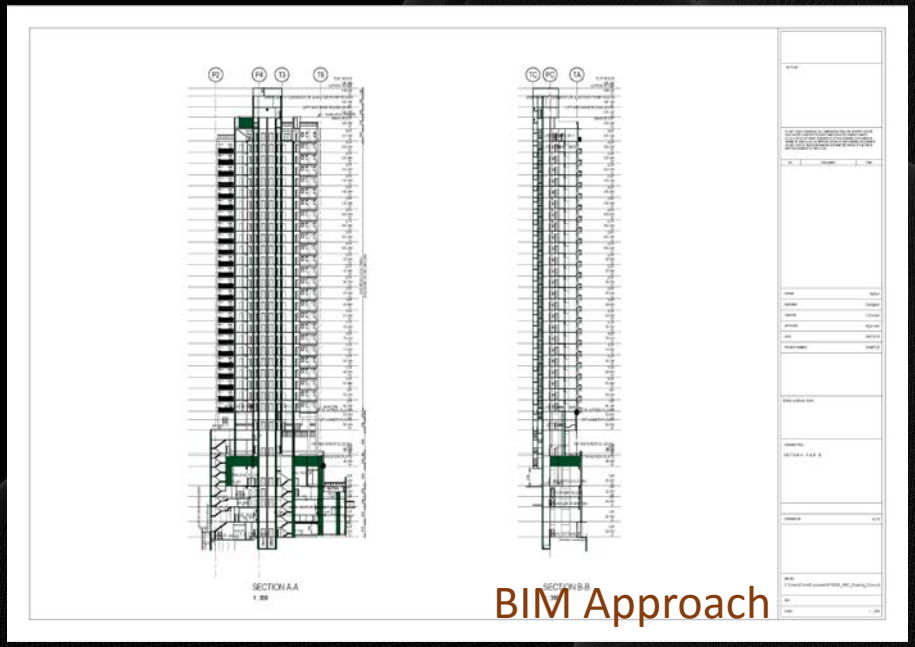
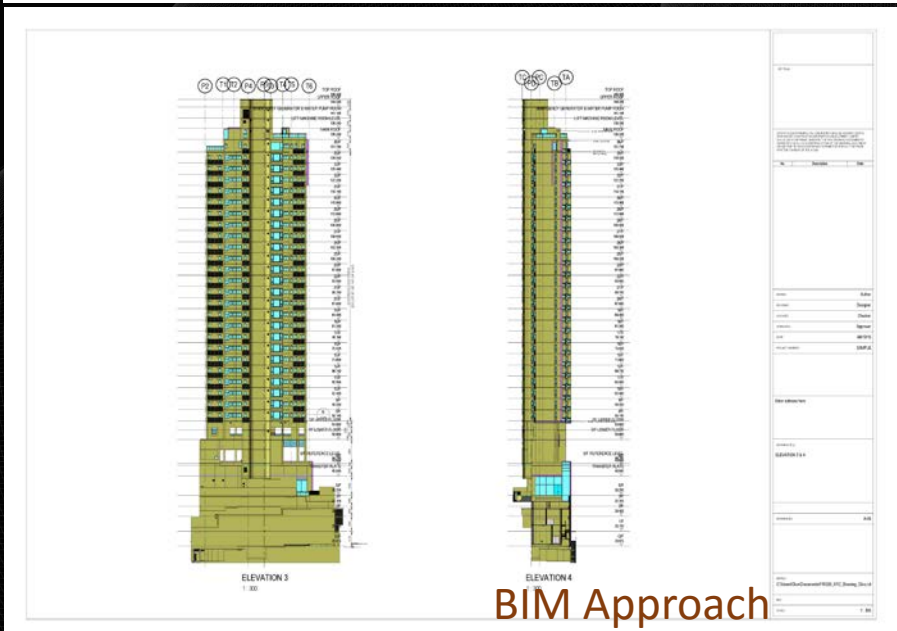


BIM Approach

ADV-33

BIM Approach



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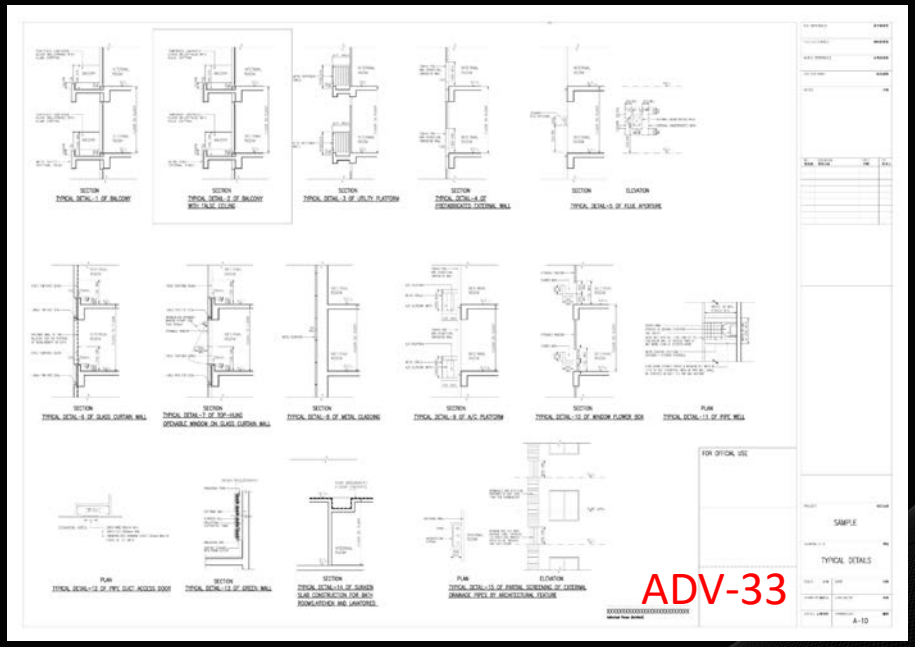


ADV-33

Shown on Previous Page

SITE COVERAGE & PLOT RATIO CALCULATION

(A) GENERAL:-

SITE AREA (ACCOUNTABLE FOR P.R. & S.C.)	=
CLASS OF SITE	=
HEIGHT OF BUILDING	=
PERMITTED DOMESTIC SITE COVERAGE (OVER 61 m)	=
PROPOSED DOMESTIC SITE COVERAGE (OVER 61 m)	=
PERMITTED NON-DOMESTIC SITE COVERAGE (UNDER 15m)	=
PERMITTED NON-DOMESTIC SITE COVERAGE (OVER 61m)	=
PROPOSED NON-DOMESTIC SITE COVERAGE (OVER 61m)	=
PERMITTED NON-DOMESTIC PLOT RATIO (BPR)	=
PERMITTED DOMESTIC PLOT RATIO (BPR)	=
PERMITTED PLOT RATIO (OZP)	=
PROPOSED NO. OF UNITS	=
PROPOSED DOMESTIC G.F.A.	=
PROPOSED NON-DOMESTIC G.F.A.	=

(B) DOMESTIC G.F.A. CALCULATION:-

5/F To 25/F	=
4/F	=
3/F	=
1/F	=
G/F	=
TOTAL	=

(C) ACTUAL TOTAL G.F.A. CALCULATION FOR DOMESTIC:-

(D) REMAINING NON-DOMESTIC G.F.A.:-

=

(E) NON-DOMESTIC G.F.A. CALCULATION:-

2/F	=
1/F	=
G/F	=
B/F	=
TOTAL	=

(F) ACTUAL PLOT RATIO FOR NON-DOMESTIC:-

(G) ACTUAL TOTAL PLOT RATIO:-

(H) DOMESTIC SITE COVERAGE CALCULATION (LARGEST FL.):-

(J) NON-DOMESTIC SITE COVERAGE CALCULATION:-

(K) RECREATIONAL FACILITIES AREA CALCULATION:-

(L) REFUSE CHAMBER AREA CALCULATION:-

ADV-33

(M) OPEN SPACE PROVISION:-

BALCONY AREA CALCULATION

UTILITY PLATFORM AREA CALCULATION

LIFT SHAFT AREA DIAGRAM

EXEMPTED AREA CALCULATION FOR LIFT SHAFT

AREA DIAGRAM FOR REFUSE CHAMBER
AREA CALCULATION FOR REFUSE CHAMBER

GBP-MODIFICATION/EXEMPTIONS TABLE

GBP - MODIFICATION / EXEMPTIONS FREQUENTLY APPLIED FOR (PNAP ADM-9)

Description	Justification	Condition	Location	GFA Concession	A	B	C	D	E

LIST OF GFA CONCESSION

SCHESULE

DEVELOPMENT SCHEDULE

A. LOCATION & LOT NO. :
B. SITE AREA : (APPROX)
C. HEIGHT OF BUILDING :

BLOCK	NO.OF STOREYS	PROPOSED HEIGHT OF BUILDING	HEIGHT RESTRICTIONS UNDER LEASE	SPECIAL CONDITION REFERRED
---	---	---	---	SC ---

D. SCHEDULE OF ACCOMMODATION

ACCOMMODATION	PROPOSED	REQUIRED/PERMITTED UNDER LEASE	SPECIAL CONDITION REFERRED
1 USER	---	---	SC ---
2 GROSS FLOOR AREA	---	---	SC ---
3 SITE COVERAGE	---	---	SC ---
4 EXTERIOR ELEVATIONS	---	---	SC ---
5 CARPARK	---	---	SC ---
6 LOADING & UNLOADING SPACES	---	---	SC ---
7 VEHICULAR ACCESS POINTS	---	---	SC ---
8 CARETAKER'S	---	---	SC ---
- OFFICE ACCOMMODATION	---	---	SC ---
- QUARTERS	---	---	SC ---
9 RECREATIONAL FACILITIES	---	---	SC ---
10 NON-BUILDING AREA	---	---	SC ---
11 FORMATION AREAS (GREEN, YELLOW etc.)	---	---	SC ---
12 TREE PRESERVATION	---	---	SC ---
13 LANDSCAPING	---	---	SC ---
14 OTHER SPECIAL REQUIREMENTS UNDER LEASE (eg. FOOTBRIDGE,OPEN SPACE PROVISION)	---	---	SC ---

E. IN COMPLIANCE WITH THE MASTER LAYOUT PLANS APPROVED ON _____ (IF APPLICABLE).
F. DATE OF LAST SUBMISSION ON (IF APPLICABLE)
G. PRESCRIBED WINDOW & FIRE ACCESS REQUIREMENTS - CHECKED AND COMPLIED WITH

XXXXXXXXXXXXXXXXXXXXXXXXXXXX
Authorised Person [Architect]

FOR OFFICIAL USE

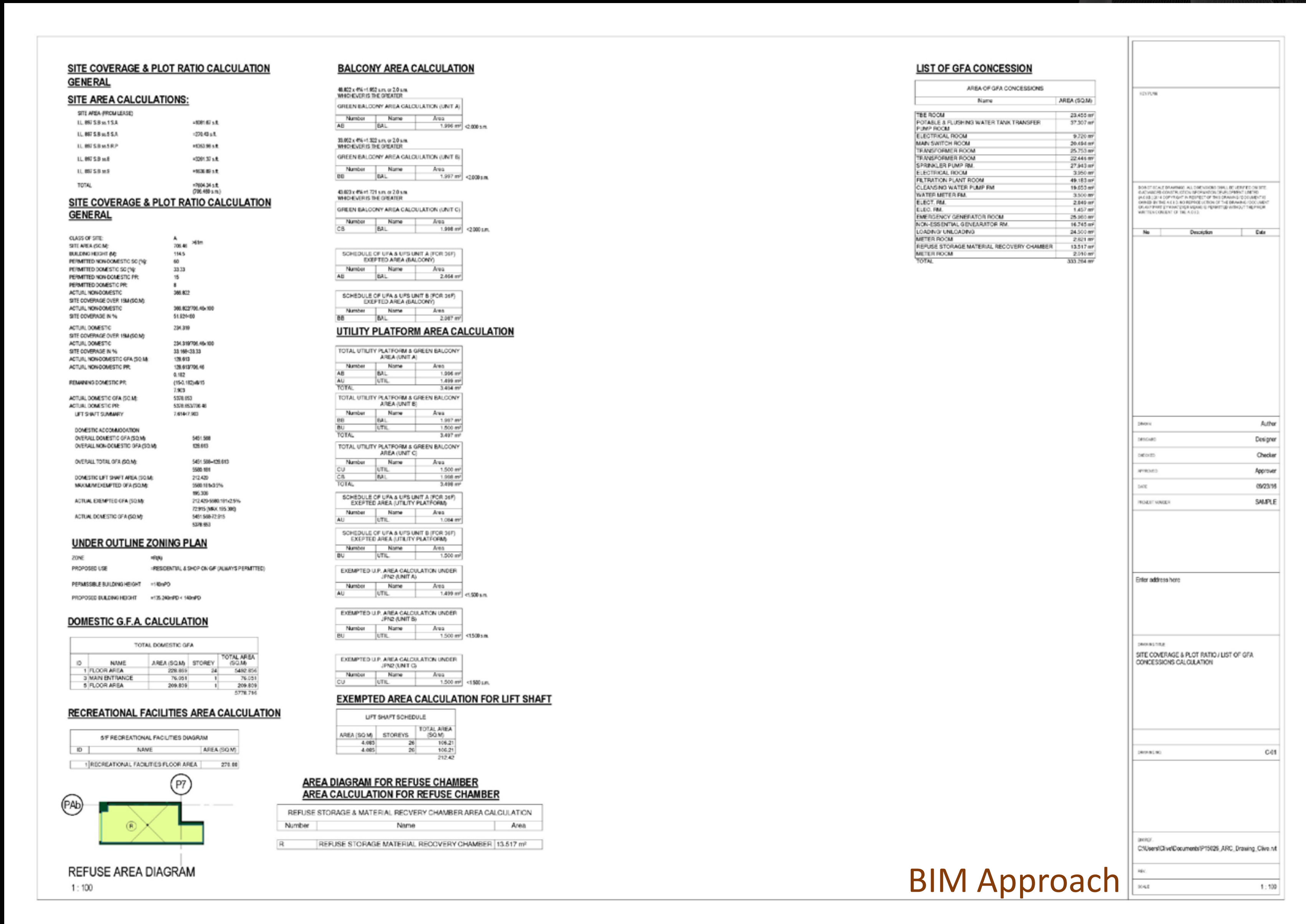
S.O. REFERENCE
F.S.O. REFERENCE
W.M.C. REFERENCE
CAD FILE NAME
NOTES

NO.	REVISIONS	DATE	BY

PROJECT
SAMPLE

DRAWING TITLE
SITE COVERAGE & PLOT RATIO / LIST OF GFA CONCESSIONS CALCULATIONS

SCALE | DATE
DRAWN BY | CHECKED BY
JOB NO. | DRAWING NO. C-01


SITE COVERAGE & PLOT RATIO CALCULATION
GENERAL
SITE AREA CALCULATIONS:
SITE COVERAGE & PLOT RATIO CALCULATION
GENERAL
UNDER OUTLINE ZONING PLAN
DOMESTIC G.F.A. CALCULATION
RECREATIONAL FACILITIES AREA CALCULATION
REFUSE AREA DIAGRAM
1 : 100
BALCONY AREA CALCULATION
UTILITY PLATFORM AREA CALCULATION
EXEMPTED AREA CALCULATION FOR LIFT SHAFT
AREA DIAGRAM FOR REFUSE CHAMBER
AREA CALCULATION FOR REFUSE CHAMBER
REFUSE STORAGE & MATERIAL RECVERY CHAMBER AREA CALCULATION
LIST OF GFA CONCESSION
SITE COVERAGE & PLOT RATIO / LIST OF GFA CONCESSIONS CALCULATION
BIM Approach

SITE COVERAGE & PLOT RATIO CALCULATION

(A) GENERAL:-

SITE AREA (ACCOUNTABLE FOR P.R. & S.C.)	=
CLASS OF SITE	=
HEIGHT OF BUILDING	=
PERMITTED DOMESTIC SITE COVERAGE (OVER 61 m)	=
PROPOSED DOMESTIC SITE COVERAGE (OVER 61 m)	=
PERMITTED NON-DOMESTIC SITE COVERAGE (UNDER 15m)	=
PERMITTED NON-DOMESTIC SITE COVERAGE (OVER 61m)	=
PROPOSED NON-DOMESTIC SITE COVERAGE (OVER 61m)	=
PERMITTED NON-DOMESTIC PLOT RATIO (BPR)	=
PERMITTED DOMESTIC PLOT RATIO (BPR)	=
PERMITTED PLOT RATIO (GZP)	=
PROPOSED NO. OF UNITS	=
PROPOSED DOMESTIC G.F.A.	=
PROPOSED NON-DOMESTIC G.F.A.	=

(B) DOMESTIC G.F.A. CALCULATION:-

5/F To 25/F	=
4/F	=
3/F	=
1/F	=
G/F	=
TOTAL	=

(C) ACTUAL TOTAL G.F.A. CALCULATION FOR DOMESTIC:-

(D) REMAINING NON-DOMESTIC G.F.A.:-

=

(E) NON-DOMESTIC G.F.A. CALCULATION:-

2/F	=
1/F	=
G/F	=
B/F	=
TOTAL	=

(F) ACTUAL PLOT RATIO FOR NON-DOMESTIC:-

(G) ACTUAL TOTAL PLOT RATIO:-

(H) DOMESTIC SITE COVERAGE CALCULATION (LARGEST FL.):-

(J) NON-DOMESTIC SITE COVERAGE CALCULATION:-

(K) RECREATIONAL FACILITIES AREA CALCULATION:-

(L) REFUSE CHAMBER AREA CALCULATION:-

(M) OPEN SPACE PROVISION:-

BALCONY AREA CALCULATION

UTILITY PLATFORM AREA CALCULATION

LIFT SHAFT AREA DIAGRAM

EXEMPTED AREA CALCULATION FOR LIFT SHAFT

AREA DIAGRAM FOR REFUSE CHAMBER AREA CALCULATION FOR REFUSE CHAMBER

ADV-33

SITE COVERAGE & PLOT RATIO CALCULATION

(A) GENERAL:

CLASS OF SITE	A
SITE AREA (SQ.M)	396.46
BUILDING HEIGHT (M)	194.5 >15m
PERMITTED NON-DOMESTIC SC (%)	60
PERMITTED DOMESTIC SC (%)	33.33
PERMITTED NON-DOMESTIC PR	15
PERMITTED DOMESTIC PR	8

(D) REMAINING NON-DOMESTIC G.F.A.:
(E) NON-DOMESTIC G.F.A. CALCULATION:
(F) ACTUAL PLOT RATIO FOR NON-DOMESTIC::

ACTUAL NON-DOMESTIC GFA (SQ.M)	128.613
ACTUAL NON-DOMESTIC PR	128.613/3706.46
	0.162

(G) ACTUAL TOTAL PLOT RATIO::

REMAINING DOMESTIC PR	(15-0.162)x815
	7.903
ACTUAL DOMESTIC GFA (SQ.M)	5578.650
ACTUAL DOMESTIC PR	5578.650/706.46
	7.814<7.903

(H) DOMESTIC SITE COVERAGE CALUILATION:

ACTUAL DOMESTIC	234.319
SITE COVERAGE OVER 15M (SQ.M)	
ACTUAL DOMESTIC	234.319/706.46x100
SITE COVERAGE IN %	33.168<33.33

(J) NON-DOMESTIC SITE COVERAGE CALCULATION:

ACTUAL NON-DOMESTIC	368.822
SITE COVERAGE OVER 15M (SQ.M)	
ACTUAL NON-DOMESTIC	368.822/706.46x100
SITE COVERAGE IN %	51.624<60

(C) ACTUAL TOTAL G.F.A. CALCULATION FOR DOMESTIC:

DOMESTIC ACCOMMODATION	
OVERALL DOMESTIC GFA (SQ.M)	5461.566
OVERALL NON-DOMESTIC GFA (SQ.M)	128.613
OVERALL TOTAL GFA (SQ.M)	5461.566+128.613
	5590.181
DOMESTIC LIFT SHAFT AREA (SQ.M)	212.429
MAXIMUM EXEMPTED GFA (SQ.M)	5590.181x2.5%
	139.754
ACTUAL EXEMPTED GFA (SQ.M)	212.429<139.754
	72.915 (MAX 139.754)
ACTUAL DOMESTIC GFA (SQ.M)	5461.566-72.915
	5388.651

(B) DOMESTIC G.F.A. CALCULATION

TOTAL DOMESTIC GFA

ID	NAME	AREA (SQ.M)	STOREY	TOTAL AREA (SQ.M)
1	FLOOR AREA	226.869	24	5492.856
2	MAIN ENTRANCE	76.051	1	76.051
5	FLOOR AREA	209.809	1	209.809
				5778.716

UNDER OUTLINE ZONING PLAN

ZONE	=R(A)
PROPOSED USE	=RESIDENTIAL & SHOP ON G/F (R/A WAYS PERMITTED)
PERMISSIBLE BUILDING HEIGHT	=140mPD
PROPOSED BUILDING HEIGHT	=135.240mPD < 140mPD

(K) RECREATIONAL FACILITIES AREA CALCULATION

5/F RECREATIONAL FACILITIES DIAGRAM

ID	NAME	AREA (SQ.M)
1	RECREATIONAL FACILITIES FLOOR AREA	276.69

(N) BALCONY AREA CALCULATION

48.822 x 4%=1.952 s.m. or 2.0 s.m. WHICHEVER IS THE GREATER

GREEN BALCONY AREA CALCULATION (UNIT A)

Number	Name	Area	
A/B	BAL	1.996 m²	<2.000 s.m.

33.052 x 4%=1.322 s.m. or 2.0 s.m. WHICHEVER IS THE GREATER

GREEN BALCONY AREA CALCULATION (UNIT B)

Number	Name	Area	
B/B	BAL	1.997 m²	<2.000 s.m.

43.823 x 4%=1.721 s.m. or 2.0 s.m. WHICHEVER IS THE GREATER

GREEN BALCONY AREA CALCULATION (UNIT C)

Number	Name	Area	
C/B	BAL	1.996 m²	<2.000 s.m.

SCHEDULE OF U/FA & U/FS UNIT A (FOR 36/F) EXEMPTED AREA (BALCONY)

Number	Name	Area
A/B	BAL	2.494 m²

SCHEDULE OF U/FA & U/FS UNIT B (FOR 36/F) EXEMPTED AREA (BALCONY)

Number	Name	Area
B/B	BAL	2.987 m²

(O) OUTILITY PLATFORM AREA CALCULATION

TOTAL UTILITY PLATFORM & GREEN BALCONY AREA (UNIT A)

Number	Name	Area
A/B	BAL	1.996 m²
A/U	UTIL	1.499 m²
TOTAL		3.494 m²

TOTAL UTILITY PLATFORM & GREEN BALCONY AREA (UNIT B)

Number	Name	Area
B/B	BAL	1.997 m²
B/U	UTIL	1.500 m²
TOTAL		3.497 m²

TOTAL UTILITY PLATFORM & GREEN BALCONY AREA (UNIT C)

Number	Name	Area
C/U	UTIL	1.500 m²
C/B	BAL	1.996 m²
TOTAL		3.496 m²

SCHEDULE OF U/FA & U/FS UNIT A (FOR 36/F) EXEMPTED AREA (UTILITY PLATFORM)

Number	Name	Area
A/U	UTIL	1.064 m²

SCHEDULE OF U/FA & U/FS UNIT B (FOR 36/F) EXEMPTED AREA (UTILITY PLATFORM)

Number	Name	Area
B/U	UTIL	1.500 m²

EXEMPTED U.P. AREA CALCULATION UNDER JPN2 (UNIT A)

Number	Name	Area	
A/U	UTIL	1.499 m²	<1.500 s.m.

EXEMPTED U.P. AREA CALCULATION UNDER JPN2 (UNIT B)

Number	Name	Area	
B/U	UTIL	1.500 m²	<1.500 s.m.

EXEMPTED U.P. AREA CALCULATION UNDER JPN2 (UNIT C)

Number	Name	Area	
C/U	UTIL	1.500 m²	<1.500 s.m.

(Q) EXEMPTED AREA CALCULATION FOR LIFT SHAFT

LIFT SHAFT SCHEDULE

AREA (SQ.M)	STOREYS	TOTAL AREA (SQ.M)
4.085	25	106.21
4.085	25	106.21
		212.42

(R) AREA DIAGRAM FOR REFUSE CHAMBER AREA CALCULATION FOR REFUSE CHAMBER

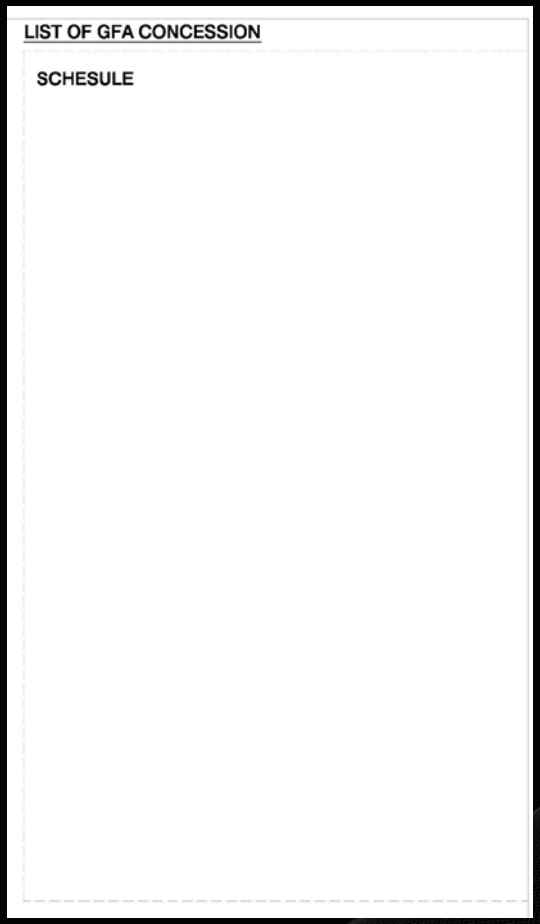
REFUSE STORAGE & MATERIAL RECYCLE CHAMBER AREA CALCULATION

Number	Name	Area
R	REFUSE STORAGE MATERIAL RECOVERY CHAMBER	10.517 m²

REFUSE AREA DIAGRAM

1 : 100

BIM Approach


LIST OF GFA CONCESSION

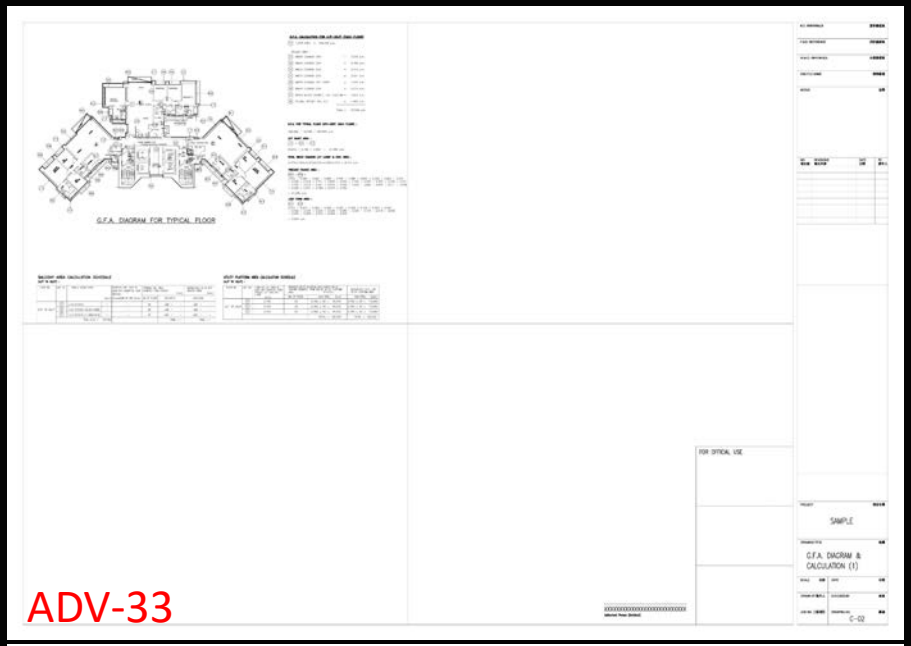
SCHESULE

ADV-33

LIST OF GFA CONCESSION

AREA OF GFA CONCESSIONS	
Name	AREA (SQ.M)
TBE ROOM	23.455 m²
POTABLE & FLUSHING WATER TANK TRANSFER PUMP ROOM	37.307 m²
ELECTRICAL ROOM	9.720 m²
MAIN SWITCH ROOM	20.494 m²
TRANSFORMER ROOM	25.753 m²
TRANSFORMER ROOM	22.446 m²
SPRINKLER PUMP RM.	27.943 m²
ELECTRICAL ROOM	3.950 m²
FILTRATION PLANT ROOM	49.183 m²
CLEANSING WATER PUMP RM	19.653 m²
WATER METER RM.	3.500 m²
ELECT. RM.	2.849 m²
ELEC. RM.	1.457 m²
EMERGENCY GENERATOR ROOM	25.980 m²
NON-ESSENTIAL GENEARATOR RM.	16.745 m²
LOADING/ UNLOADING	24.500 m²
METER ROOM	2.821 m²
REFUSE STORAGE MATERIAL RECOVERY CHAMBER	13.517 m²
METER ROOM	2.010 m²
TOTAL	333.284 m²

BIM Approach



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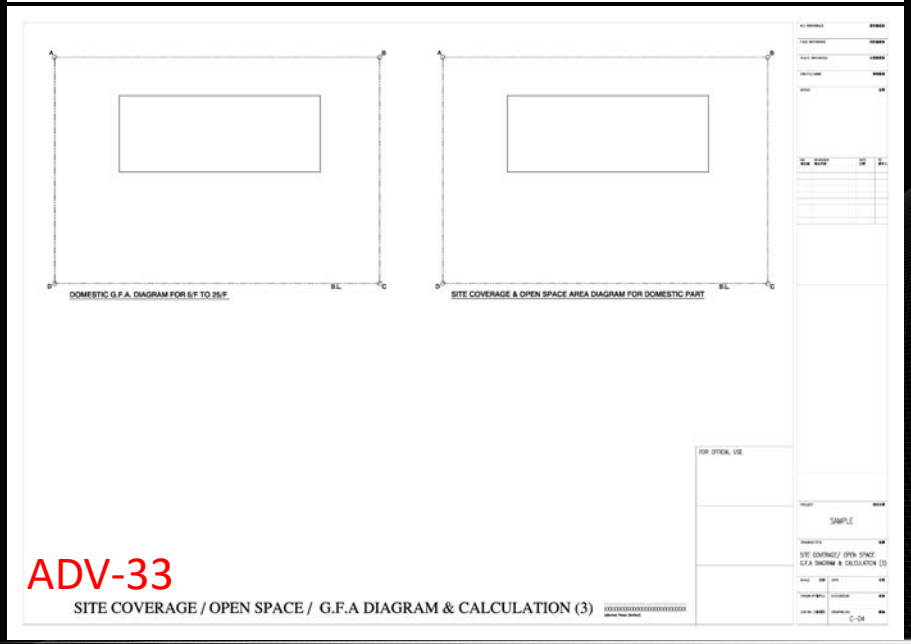
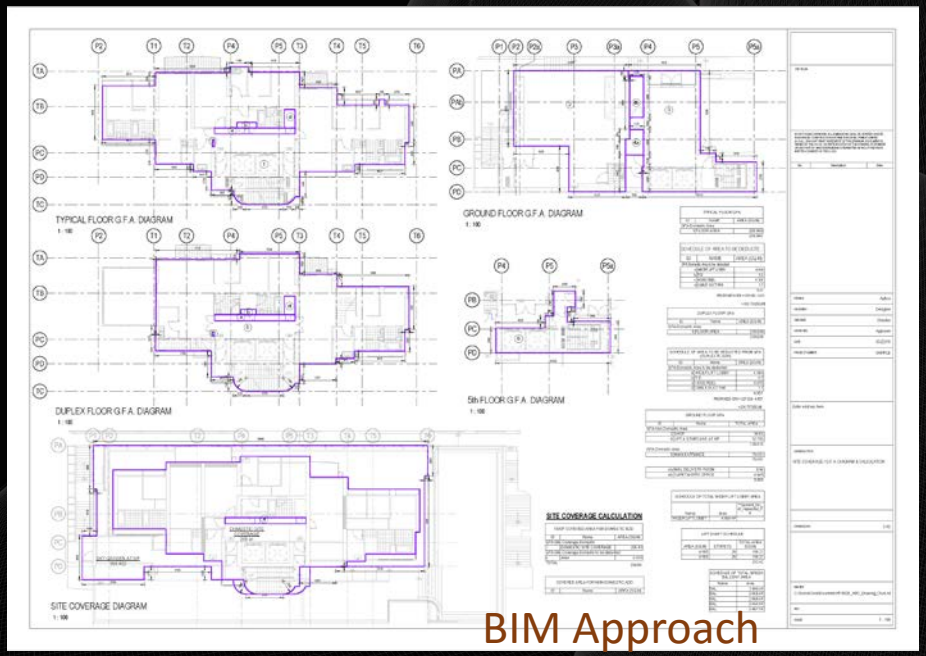
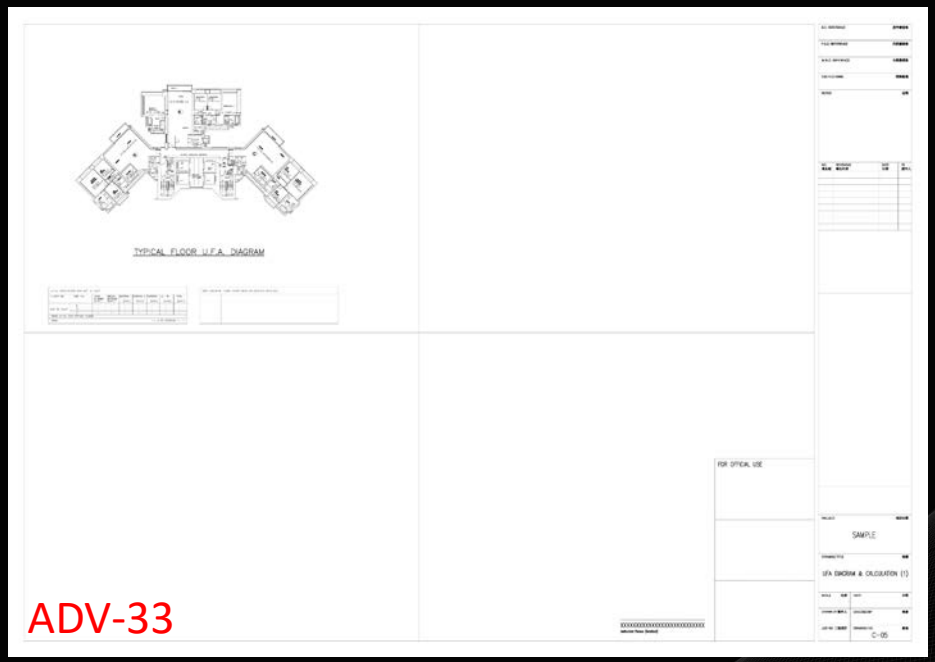


ADV-33

SITE COVERAGE / OPEN SPACE / G.F.A DIAGRAM & CALCULATION (3)



BIM Approach



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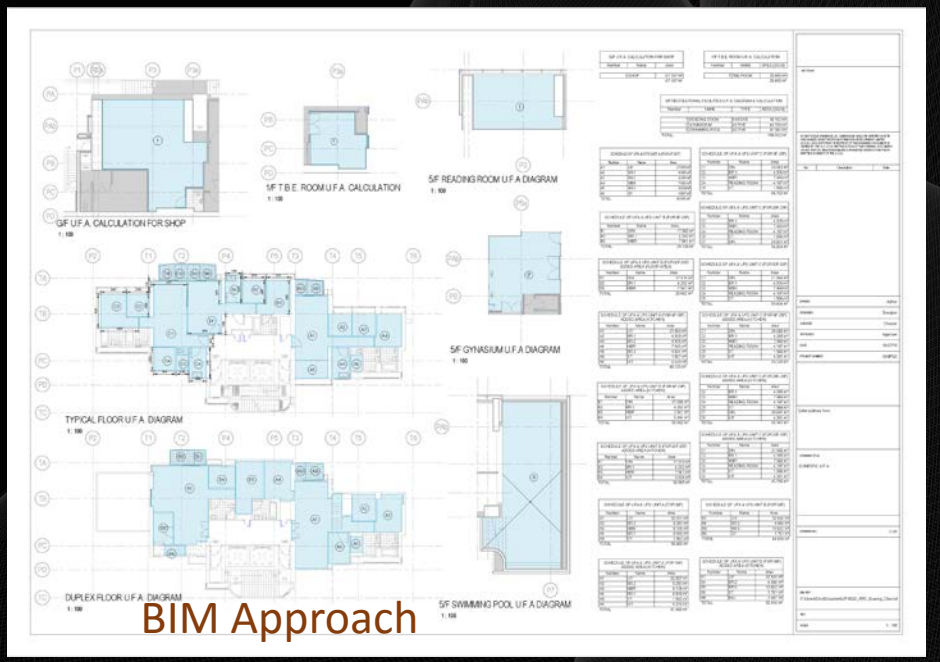

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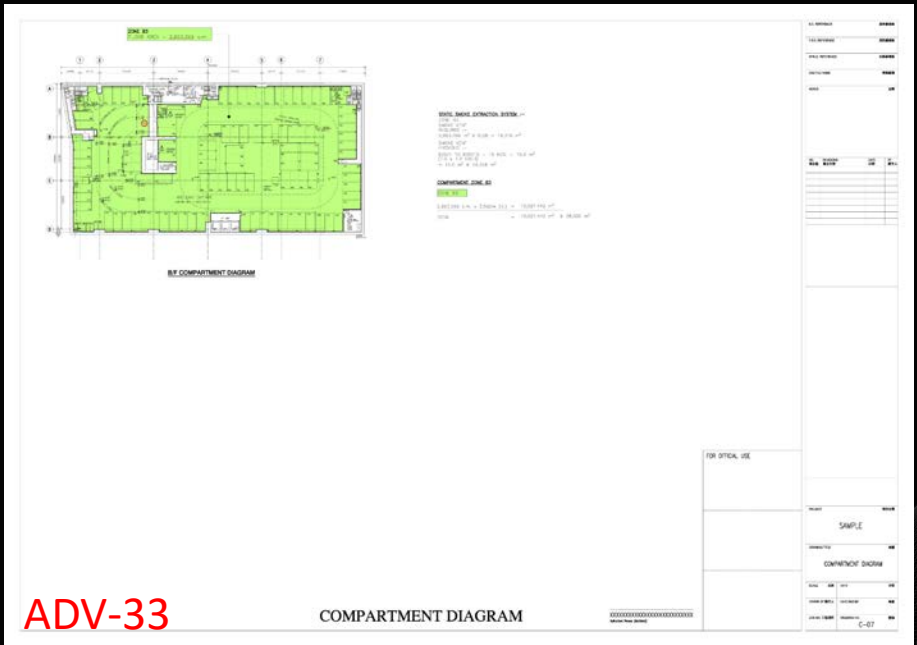

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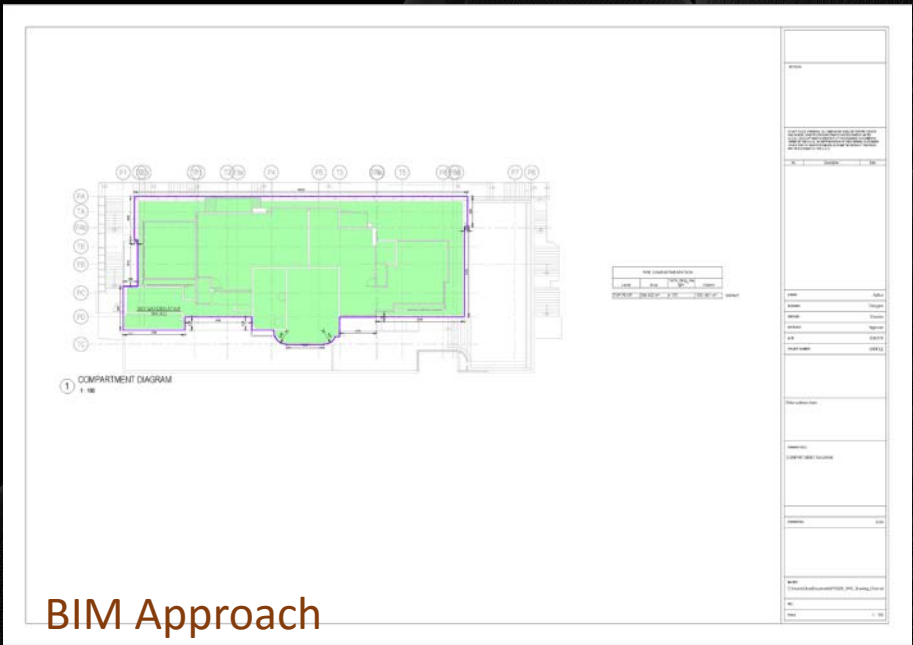

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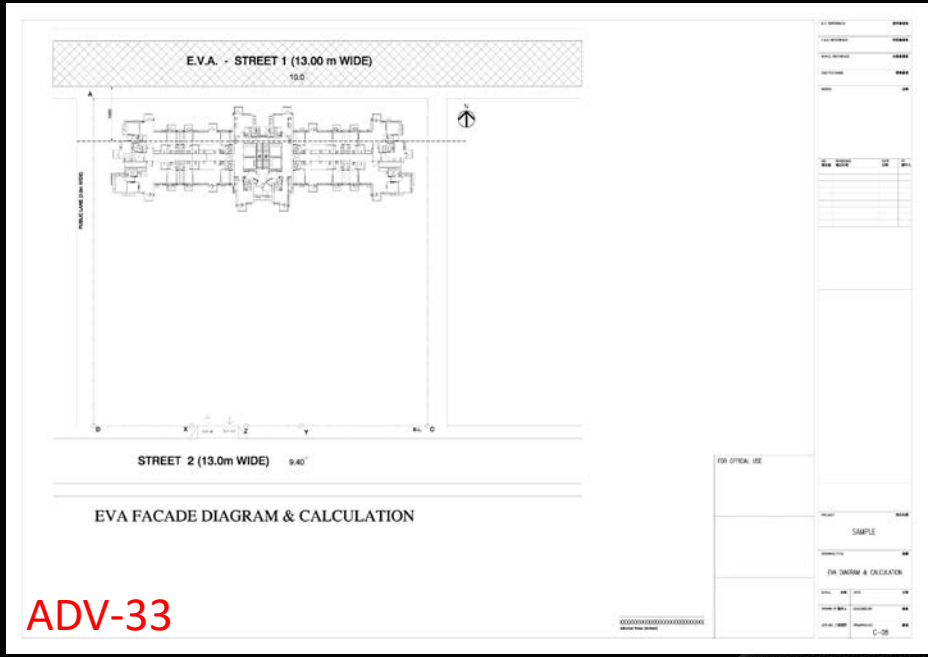

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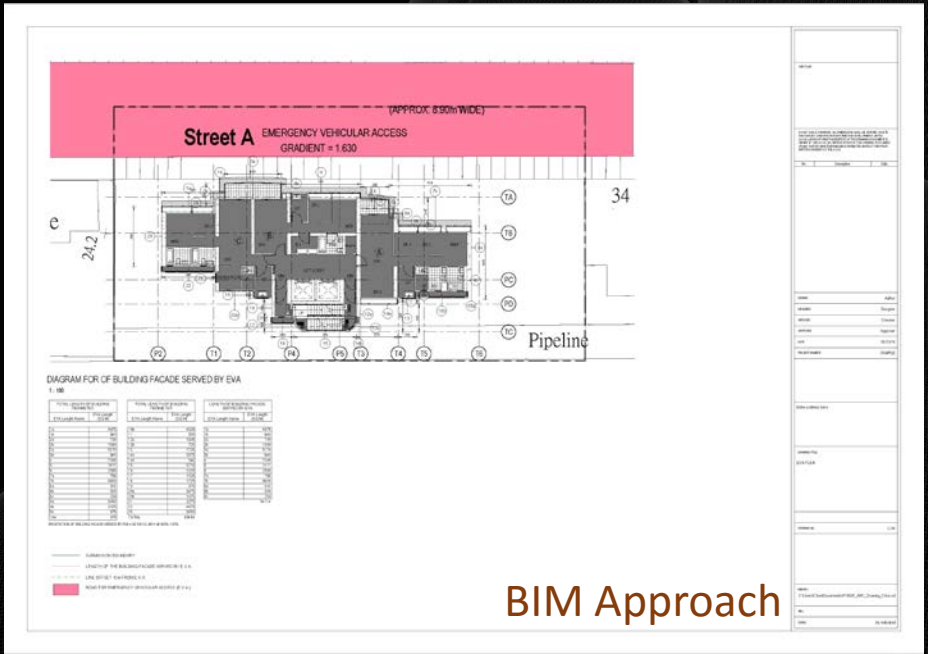
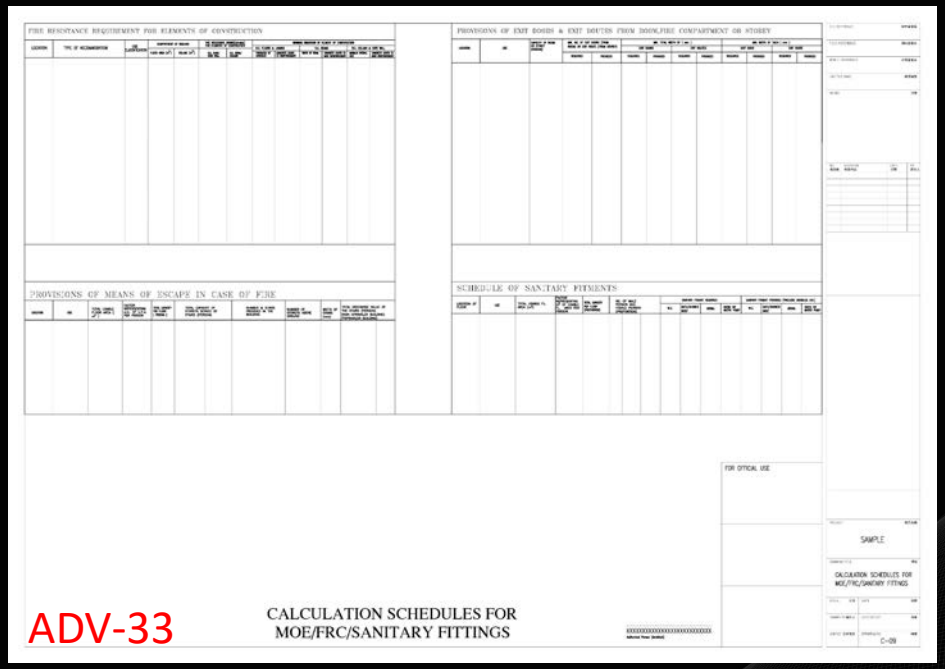
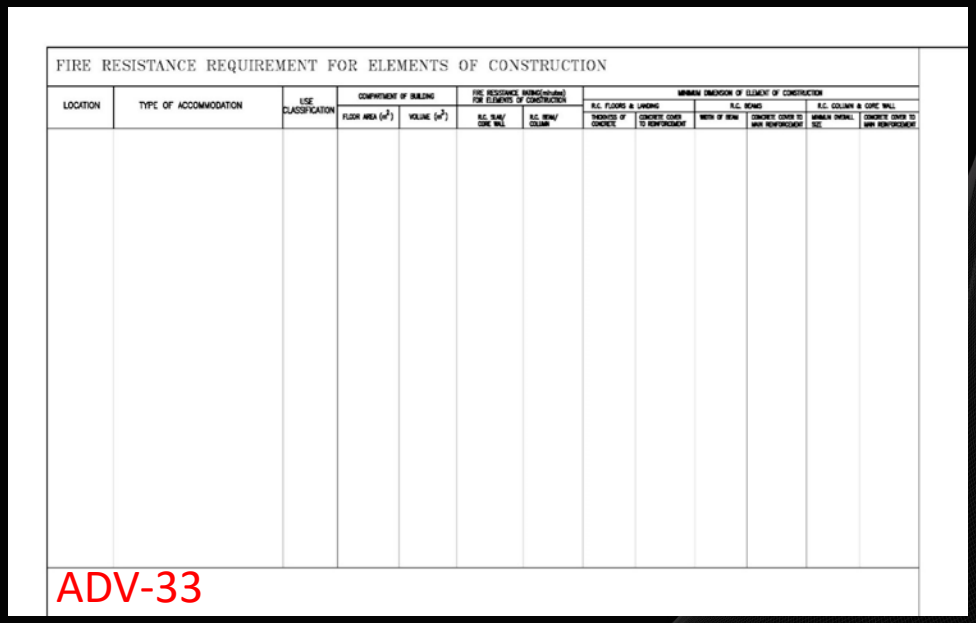


BIM Approach


FIRE RESISTANCE REQUIREMENT FOR ELEMENTS OF CONSTRUCTION
PROVISIONS OF EXIT DOORS & EXIT DOUTES FROM ROOM/FIRE COMPARTMENT OR STOREY
PROVISIONS OF MEANS OF ESCAPE IN CASE OF FIRE
SCHEDULE OF SANITARY FITMENTS
FOR OFFICIAL USE
SAMPLE
CALCULATION SCHEDULES FOR MOE/FRC/SANITARY FITTINGS
ADV-33
CALCULATION SCHEDULES FOR
MOE/FRC/SANITARY FITTINGS


BIM Approach



FIRE RESISTANCE REQUIREMENT FOR ELEMENTS OF CONSTRUCTION

LOCATION	TYPE OF ACCOMMODATION	USE CLASSIFICATION	COMPARTMENT OF BUILDING		FIRE RESISTANCE RATING(minutes) FOR ELEMENTS OF CONSTRUCTION		MINIMUM DIMENSION OF ELEMENT OF CONSTRUCTION					
							R.C. FLOORS & LANDING		R.C. BEAMS		R.C. COLUMN & CORE WALL	
			FLOOR AREA (m^2)	VOLUME (m^3)	R.C. SLAB/ CORE WALL	R.C. BEAM/ COLUMN	THICKNESS OF CONCRETE	CONCRETE COVER TO REINFORCEMENT	WIDTH OF BEAM	CONCRETE COVER TO MAIN REINFORCEMENT	MINIMUM OVERALL SIZE	CONCRETE COVER TO MAIN REINFORCEMENT

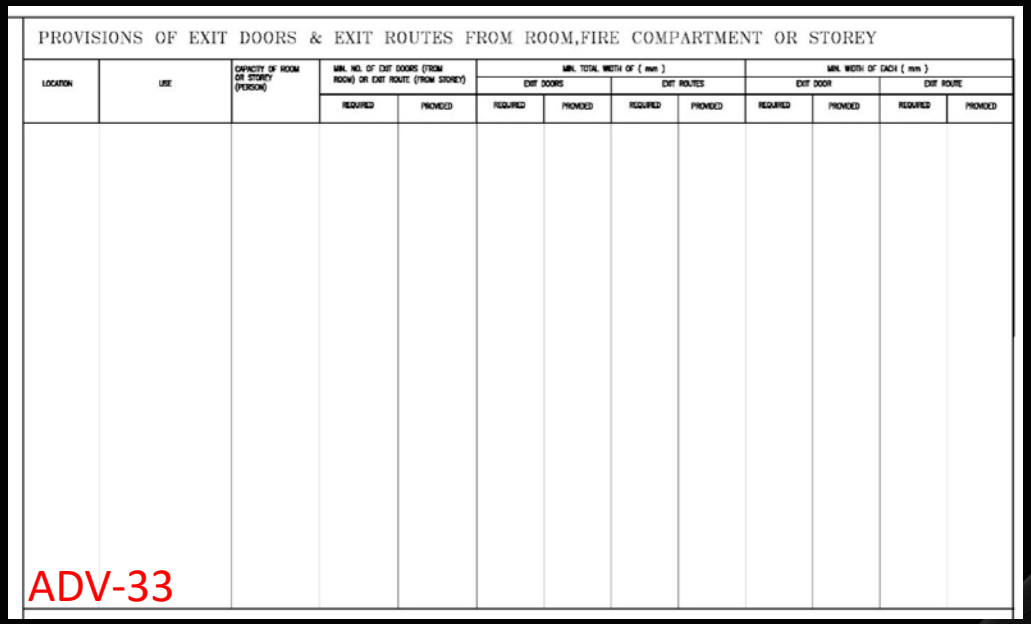
ADV-33

FIRE RESISTANCE REQUIREMENT FOR ELEMENTS OF CONSTRUCTION

LEVEL	NAME	CLASS	FRP REQ'D	R.C. WALL => 1% V.R.		R.C. SLAB		R.C. BEAM		R.C. COLUMN		R.C. STAIR	
				THK.	COVER TO STEEL	THK.	COVER TO STEEL	THK.	COVER TO STEEL	THK.	COVER TO STEEL	THK.	COVER TO STEEL
G/F	LOADING / UNLOADING		60	75	15	100	20	200	30	200	25	95	20
G/F	MAIN ENTRANCE	1a (Residential - House type dwellings)	60	75	15	100	20	200	30	200	25	95	20
G/F	SHOP	4a (Commercial - Business facilities)	60	75	15	100	20	200	30	200	25	95	20
1/F	TRANSFER PUMP ROOM		120	100	25	125	25	200	40	300	35	125	35
1/F	ELECTRICAL ROOM		120	100	25	125	25	200	40	300	35	125	35
1/F	TBE ROOM		120	100	25	125	25	200	40	300	35	125	35
1/F	MAIN SWITCH ROOM		120	100	25	125	25	200	40	300	35	125	35
1/F	TRANSFORMER ROOM		240	180	25	170	45*	280	60*	450	35	170	55*
2/F	SPRINKLER PUMP RM		120	100	25	125	25	200	40	300	35	125	35
2/F	MAIN SWITCH ROOM		120	100	25	125	25	200	40	300	35	125	35
2/F	TRANSFORMER ROOM		240	180	25	170	45*	280	60*	450	35	170	55*
3/F	FS PUMP RM		120	100	25	125	25	200	40	300	35	125	35
3/F	CLEANSING WATER PUMP RM		120	100	25	125	25	200	40	300	35	125	35
5/F	E/M ROOM		120	100	25	125	25	200	40	300	35	125	35
5/F	E/M ROOM		120	100	25	125	25	200	40	300	35	125	35
5/F	E/M ROOM		120	100	25	125	25	200	40	300	35	125	35
5/F	READING ROOM	5a (Assembly - Places of Public Entertainment)	60	75	15	100	20	200	30	200	25	95	20
5/F	SWIMMING POOL	5a (Assembly - Places of Public Entertainment)	60	75	15	100	20	200	30	200	25	95	20
5/F	GYMNASIUM	5d (Assembly - Other Assembly Premises)	60	75	15	100	20	200	30	200	25	95	20
6/F	E/M ROOM		120	100	25	125	25	200	40	300	35	125	35
6/F	SKY GARDEN		60	75	15	100	20	200	30	200	25	95	20
7/F LOWER FLOOR	REFUGE FLOOR	1a (Residential - House type dwellings)	120	100	25	125	25	200	40	300	35	125	35
7/F LOWER FLOOR	REFUGE FLOOR	1a (Residential - House type dwellings)	120	100	25	125	25	200	40	300	35	125	35
8/F	DOMESTIC	1b (Residential - Flats)	60	75	15	100	20	200	30	200	25	95	20
LIFT MACHINE ROOM LEVEL	LIFT MACHINE ROOM		120	100	25	125	25	200	40	300	35	125	35
LIFT MACHINE ROOM LEVEL	METER ROOM		120	100	25	125	25	200	40	300	35	125	35
EMERGENCY GENERATOR & WATER PUMP ROOM	LIFT MACHINE ROOM		120	100	25	125	25	200	40	300	35	125	35
EMERGENCY GENERATOR & WATER PUMP ROOM	PUMP ROOM		120	100	25	125	25	200	40	300	35	125	35

BIM Approach

Statutory Submission Drawings



PROVISIONS OF EXIT DOORS & EXIT ROUTES FROM ROOM,FIRE COMPARTMENT OR STOREY

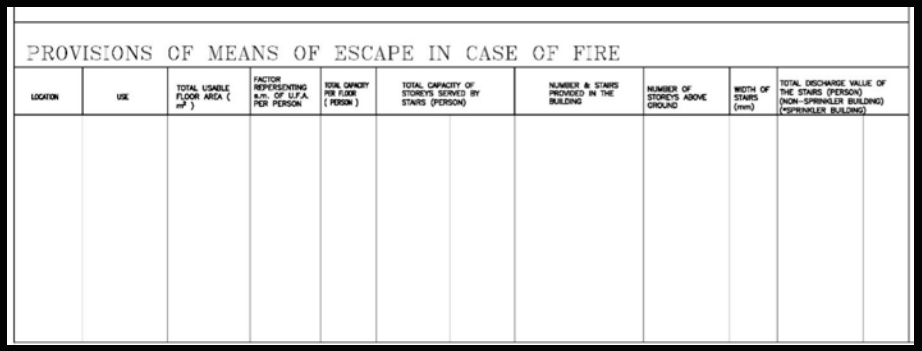
LOCATION	USE	CAPACITY OF ROOM OR STOREY (PERSON)	MIN. NO. OF EXIT DOORS (FROM ROOM) OR EXIT ROUTE (FROM STOREY)		MIN. TOTAL WIDTH OF (mm)				MIN. WIDTH OF EACH (mm)			
					EXIT DOORS		EXIT ROUTES		EXIT DOOR		EXIT ROUTE	
			REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED

ADV-33

SCHEDULE OF MINIMUM NUMBER & WIDTH OF EXIT DOOR & EXIT ROUTE FROM EACH FLOOR

LEVEL	FLOOR CAPACITY	MIN. NO. OF EXIT ROUTE		MIN. TOTAL WIDTH OF				MIN. WIDTH OF EACH			
		REQ'D	PRO'D	EXIT DOORS		EXIT ROUTES		EXIT DOOR		EXIT ROUTE	
				REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D
5/F		2	2	1750	1750	2100	2100	850	875	1050	1050
26/F	39	2	2	1750	1750	2100	2100	850	875	1050	1050

BIM Approach



PROVISIONS OF MEANS OF ESCAPE IN CASE OF FIRE

LOCATION	USE	TOTAL USABLE FLOOR AREA (m^2)	FACTOR REPRESENTING m^2 OF U.F.A. PER PERSON	TOTAL CAPACITY PER FLOOR (PERSON)	TOTAL CAPACITY OF STOREYS SERVED BY STAIRS (PERSON)	NUMBER & STAIRS PROVIDED IN THE BUILDING	NUMBER OF STOREYS ABOVE GROUND	WIDTH OF STAIRS (mm)	TOTAL DISCHARGE VALUE OF THE STAIRS (PERSON) (NON-SPRINKLER BUILDING) (*SPRINKLER BUILDING)	

ADV-33

SCHEDULE OF DISCHARGE VALUE

STAIR NO.	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING WIDTH OF STAIRCASE (mm)	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING PERMITTED	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING PERMITTED	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING CALCULATED PERMITTED	CALCULATED WIDTH OF STAIRCASE	CALCULATED PERMITTED	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING TOTAL NO. OF FLOOR SERVED ABOVE G/F	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING ACTUAL
ST-1		0					48	

BIM Approach

Latest B.D. PNAP ADV-34
Building Information Modelling

Building Information Modelling

The use of Building Information Modelling (BIM) is a relatively new and innovative approach to building design and construction. The Buildings Department (BD) encourages authorized persons (AP), registered structural engineers (RSE) and registered geotechnical engineers (RGE) to consider adopting BIM in their building projects under the Buildings Ordinance. This practice note provides general guidelines on BIM submissions for building proposals as supplementary information to facilitate plan processing by the BD.

BIM Submissions

2. There is a wide range of applications of BIM on new building development and alteration and addition works which are considered useful to facilitate the BD in processing plan submissions. Some examples of BIM applications are given in **Appendix A** and the project AP/RSE/RGE are encouraged to provide the BD with a soft copy of the computer modelling information under the specified format for consideration.

Format and Software Version

3. In addition to the statutory requirement of plan submission in paper format, AP/RSE/RGE are encouraged to present their building and/or building works proposals by the computer aid of BIM information in digital format compatible with BIM viewing software or real-time simulation to enhance illustration of the proposals and/or the construction sequence of the proposed works in the following manner and format:-

(a) The data files should be stored in non-rewritable CD-ROM in ISO 9660 format (i.e. CD format) or non-rewriteable DVD-ROM in ISO/IEC 13346:1995 format (i.e. DVD format);

(b) BIM viewing software (but not web based BIM viewer) shall be available for free download from the Internet for viewing the BIM submission. The link to download the viewing software should also be provided by the AP/RSE/RGE. Each individual file for viewing on BIM viewing software should also be limited to the size of 30 MB; and

(c) The real-time simulation should be in Windows Media Video (wmv) or Audio Video Interleave (avi) format and supported by Windows Media Player 11 or above.

BIM Submission as Reference Material

4. Whilst BIM is submitted as a kind of supplementary information for reference, the BD processes approval of plans under the Buildings Ordinance based on the information contained in the plans. In case of any discrepancy between the plans and BIM submitted, the plans shall prevail. To keep pace with the development of BIM in the building industry, the BD will, from time to time, review the extent of BIM application and evaluate its effectiveness in the plan submission.

(HUI Siu-wai)
Building Authority

Ref. : BD GR/1-125/11/1

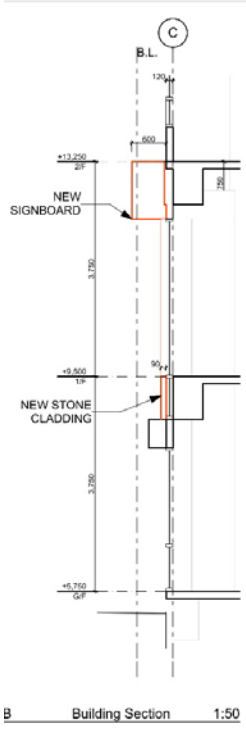
First Issue : September 2016 (AD/NB2)

Appendix A
(PNAP ADV-34)

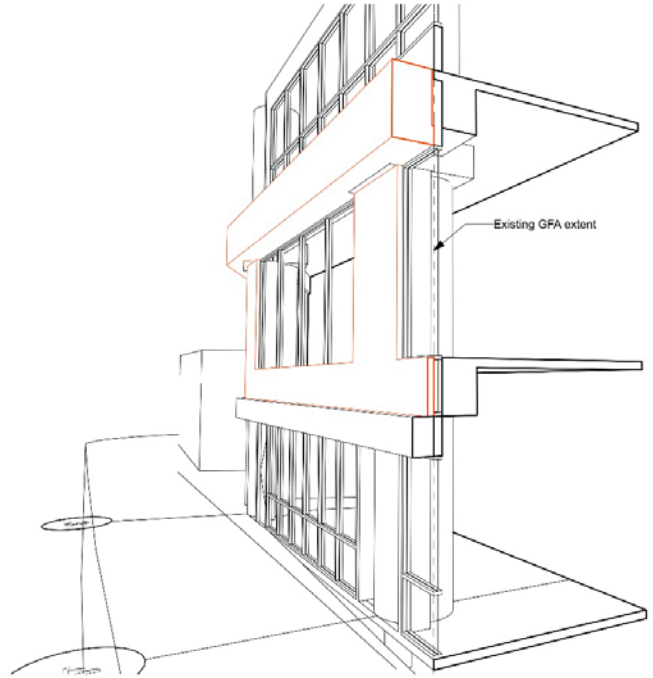
Examples of application of BIM to supplement Plan Submissions

Types of Plan Submission	Examples of Building Information to be illustrated by BIM	
	Building Information Model	**Real-time Simulation**
General Building Plans	• innovative building design, irregular/twisted building form; • projecting features on external wall; • relationship between site profiles/street levels and proposed building; • arrangement of means of escape and compartmentation; • spatial arrangement of building; • relationship between existing building and proposed alteration and addition (A&A) works.	• sequence and phasing of various stages[Note 1] of new building development; • sequence and phasing of A&A works.
Drainage Plans	• complex drainage systems and/or connections • relationship between proposed underground drainage works and foundation works/site formation works etc.	• sequence and phasing of various stages[Note 1] of new building development; • sequence and phasing of A&A works.
Superstructure Plans	• complex steel structures and/or connections; • arrangement of transfer structures and illustration of load path; • basement structures supporting adjoining ground and/or existing geotechnical features; • assembly sequence, structural arrangement and/or connection of façade/glass wall/curtain wall/cladding works, etc.; • relationship between existing structures and proposed A&A works; • working space, temporary supports and strengthening in A&A works.	• sequence and phasing of various stages[Note 1] of new building development; • sequence and phasing of A&A works.
Foundation Plans Excavation and Lateral Support (E&LS) Plans	• relationship between proposed foundations, sub-structures, E&LS works and geological ground profiles, adjoining existing foundations, geotechnical features, sensitive structures, etc.	• sequence and phasing of various stages[Note 1] of new building development; • top-down construction.
Site Formation Plans	• relationship between site profiles, geological ground profiles and proposed works.	• sequence and phasing of various stages[Note 1] of new building development.
Demolition Plans	• final stage of partial demolished structures.	• sequence and phasing of works, method statements and temporary precautionary measures.

Notes : Relevant stages of new building development may include demolition, foundation, E&LS, site formation, sub-structure and superstructure construction, as the case may be.



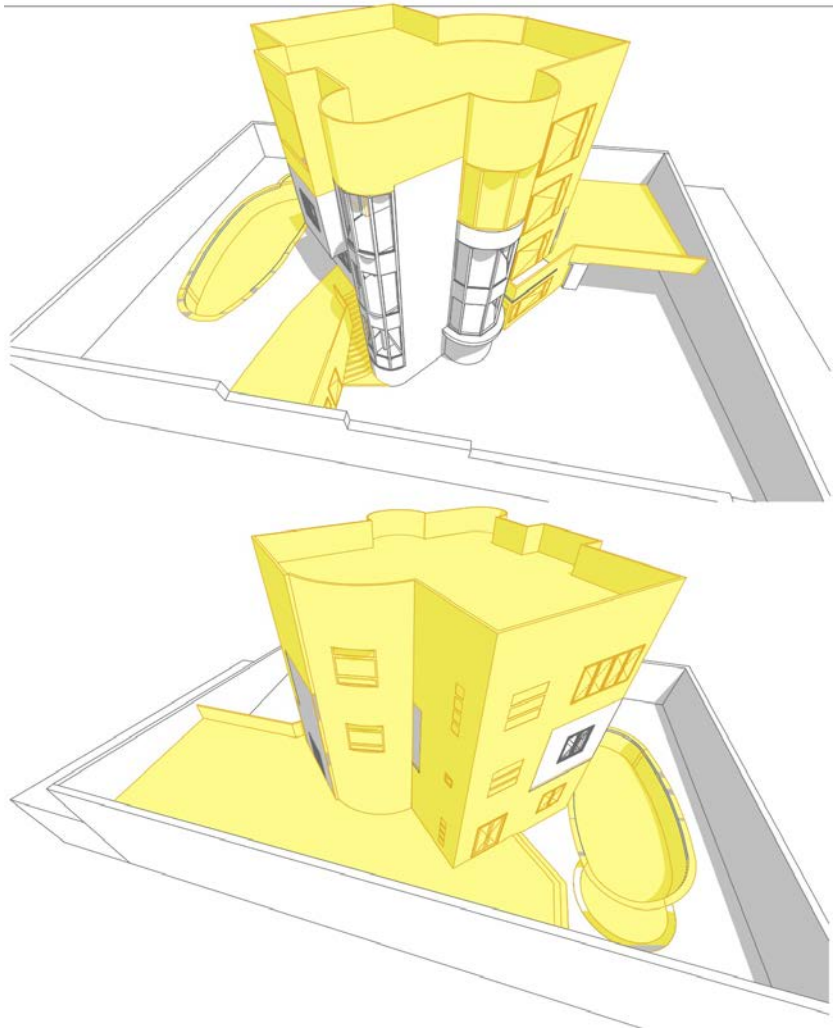
B Building Section 1:50



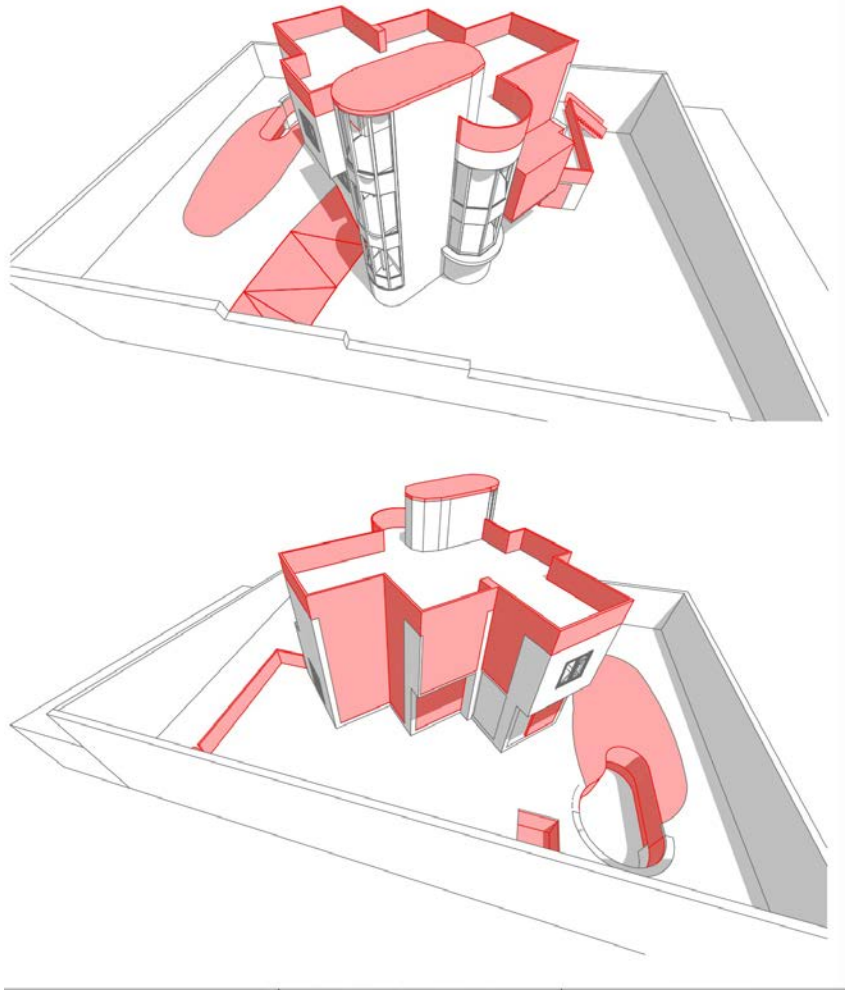
3D-S05 3D Section 1:150

Signboard & External Cladding A&A Works

Parts to be removed



Parts to be re-instated



Phasing diagrams – re-instatement works for unauthorized building structures according to removal order from BD

Immediate, Medium & Long Term Suggestion

Immediate Term Suggestion

BIM Technology can facilitate presenting conventional measurements on plan. For example, in a BIM model, the discharge value and MOE Travel Distance Measurement can easily be done on plan where calculation will be done.

SCHEDULE OF DISCHARGE VALUE			
	DISCHARGE VALUE OF STAIRCASE IN A SPRINKLERED BUILDING		
STAIR NO.	WIDTH OF STAIRCASE (mm)	PERMITTED	TOTAL NO. OF FLOOR SERVED ABOVE G/F
ST-1	1125	420	1
ST-4	1688	640	1

TOTAL PERMITTED DISCHARGE VALUE = 420 + 640
= 1060

TOTAL ACTUAL DISCHARGE VALUE = 425

TOTAL : 1060 > 425

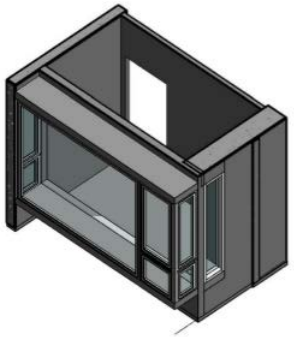
Medium Term Suggestion

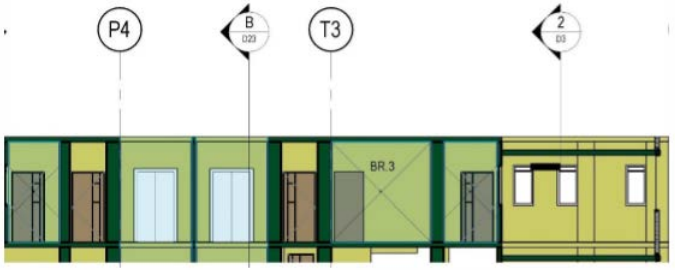
In the traditional presentation of drawings in 2D format, the drawing up of 3D presentation of illustration purpose is extremely time consuming.

With BIM, as the model is already in 3D, issuing 3D drawings is not of much extra work. Thus, it can be a common deliverable with 3D illustrations showing the different part of a project, from the overall building outlook to smallest component part. Besides producing 2D drawings from the BIM model, calculation will also run automatically with related information. This can facilitate the Fire Compartmentation calculation with 3D model supported to counter some problematic building forms or irregular ceilings.
3D presentation, together with latest techniques such as hiding elements, making elements transparent or temporary exploding different components to derive better clarity, revealing a new way of communication, will deliver far better information than traditional 2D representation.

Fire Computational Calculation Schedule

Level	Department	Number	Name	Area	Room Height	Volume
8/F	A	A5	BR.3	4.824 m²	3000	14.472 m³





Long Term Suggestion

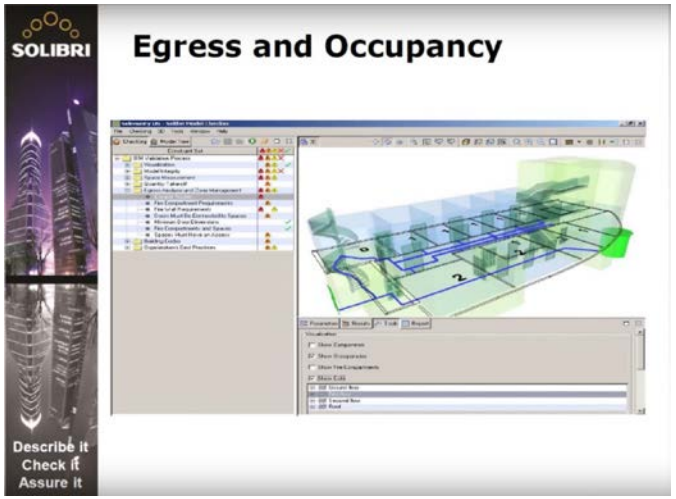
The long term objective is the use of BIM Model Submission as GBP Submissions and Building Regulation Checking. Providing a BIM model for checking is a relatively efficient method of checking for government departments. It easily reveals the building elements hidden under plans. It reduces the tolerance of mislead drawings which costs variation orders, and minimizes the overall project sum and project duration.

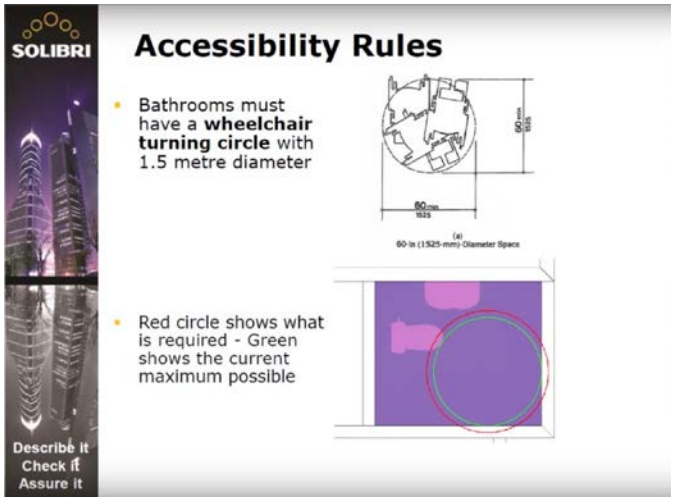
With BIM models, we can produce architectural, structural and building services drawings. Traditional Plans, elevations and Sections can be generated with ease, showing all different aspects of the BIM model.

The 2D drawings can be created by putting views on the sheet in Revit. Then, these sheets can be published in DWF or pdf format.

Moreover, Industry Foundation Classes (IFC) file can also be an alternative for BIM submission. It is cross platform BIM file format which can collaborate between programs.

One of the model checking applications is Solibri Model Checker, for BIM validation, compliance control, design review, analysis, extract BIM information and code checking. It has been used in the U.K. for model checking such as Egress and Occupancy and Accessibility Control, etc.





Thank you !