



CONSTRUCTION INDUSTRY COUNCIL  
建造業議會

# BIM in Statutory Submission

**David Fung**  
BIM Consultant – Architect



# BIM in Statutory Submission

即時新聞

2015年12月03日 請選擇

## 建築師計錯數單位要縮水 懿山發展商入稟索償

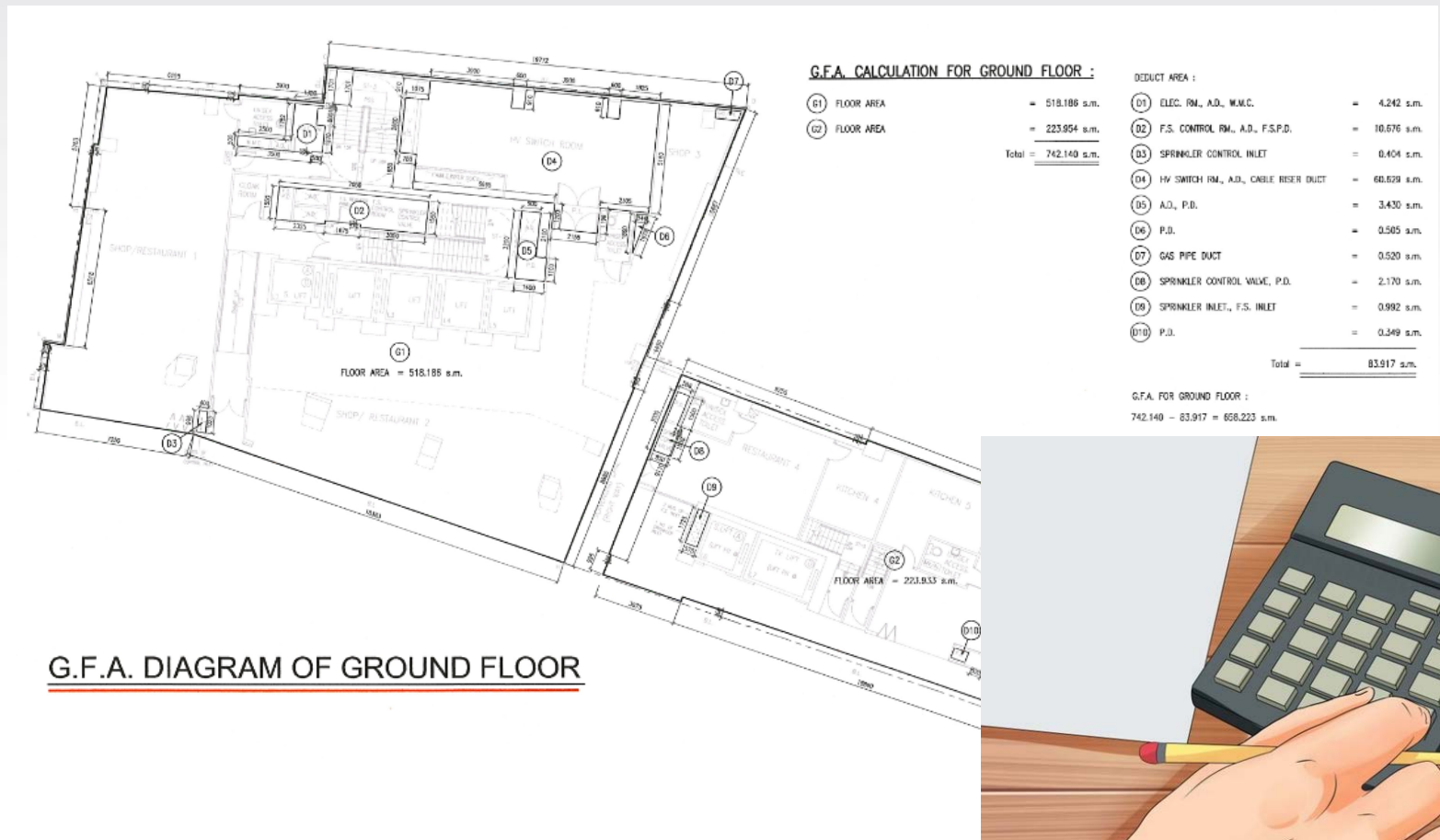
新加坡房地產私募基金利凱發展，指負責其西營盤新盤懿山的建築師在畫圖則時計錯數，圖則面積比地盤面積多出6.6平方米，導致發展商及後要將頂層複式單位及其他單位縮小、重新駁上氣喉及重印宣傳單張等，不單損失1,110萬元，更要將樓盤押後4個月銷售，卻遇上樓市下跌，造成損失。

另外，發展商又指建築師在計算實用面積時再計錯數，將實用面積計少了，令發展商在今年11月停售7天，損失28萬之餘，亦令發展商有可能觸犯《一手住宅物業銷售條例》。

原訴輝凰有限公司控告 · 建築設計有限公司，以及女建築師 · ，要求被告賠償損失。

# BIM in Statutory Submission

## Traditional way of Area calculation in Government Submission:



# BIM in Statutory Submission

B

= Building

建築

I

= Information

資訊

M

= Modelling

模型/ 模擬

# BIM in Statutory Submission

## FAKE BIM

M + ?

JUST 3D MODEL – NOT BIM





# BIM in Statutory Submission

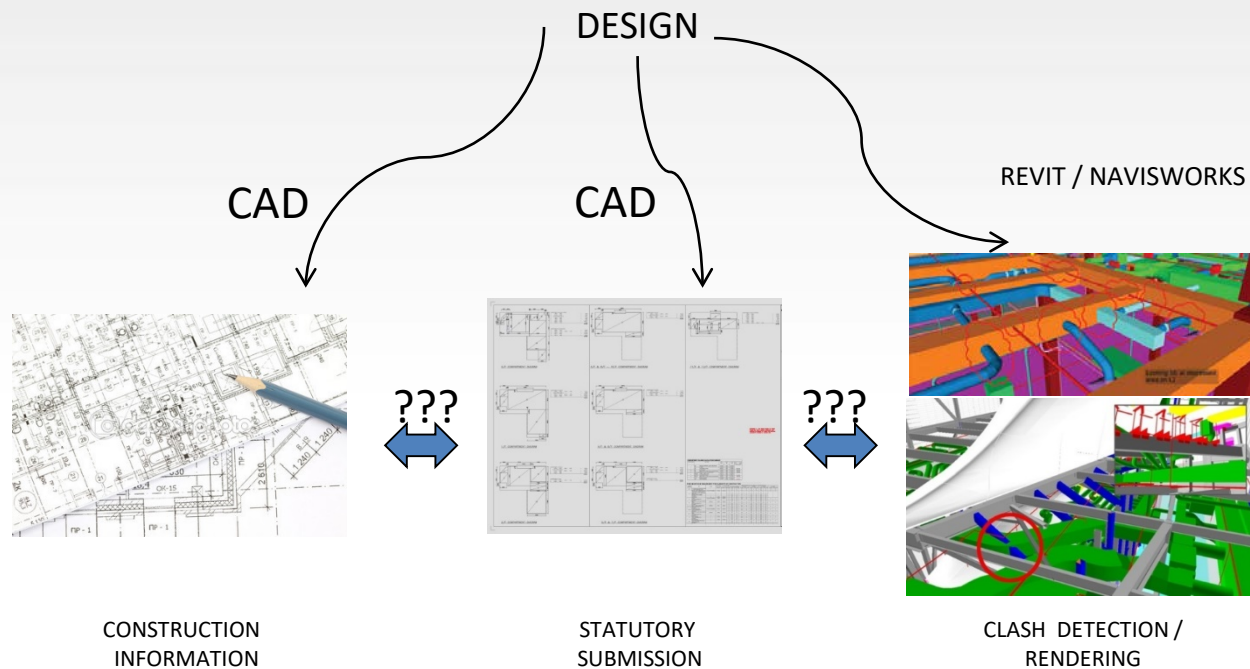
## HALF-BIM

I <> M

3D MODEL >> QTO , CLASH ANALYSIS

# BIM in Statutory Submission

## HALF-BIM



# BIM in Statutory Submission

## REAL BIM

I = M

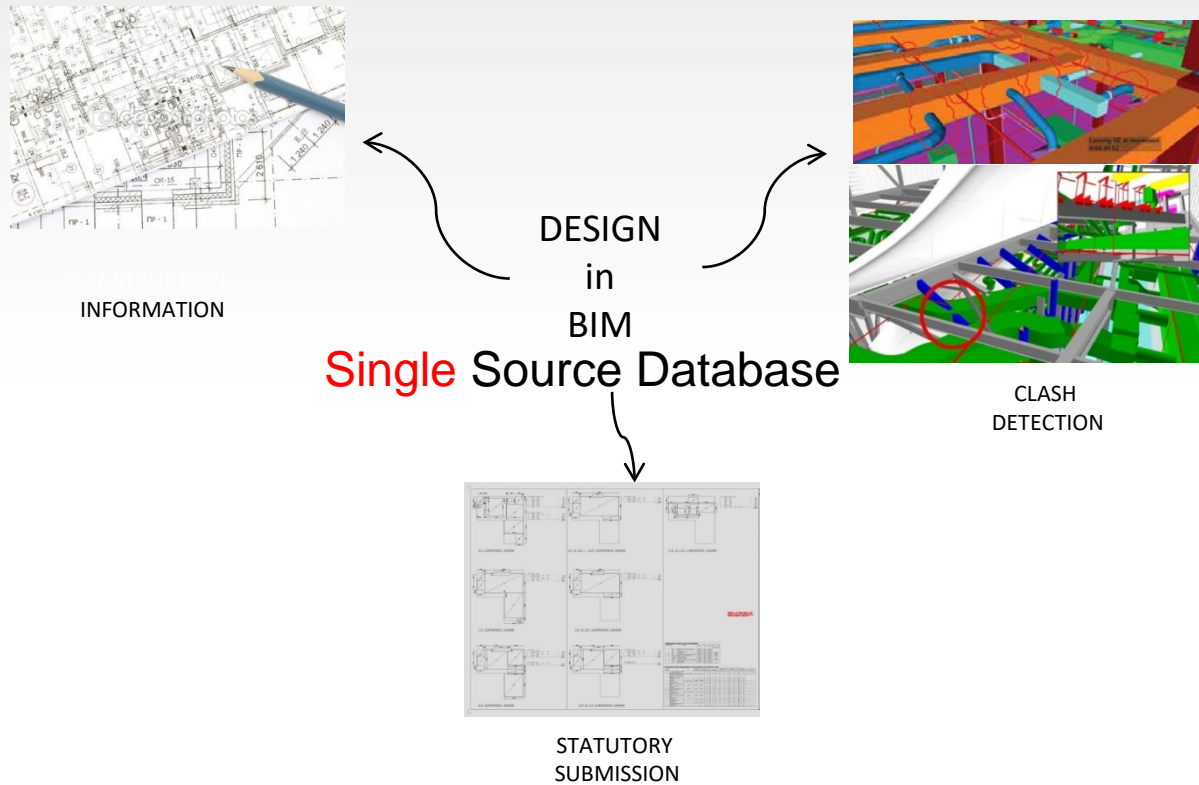
I > M

INFORMATION FROM MODEL,  
INFORMATION MORE IMPORTANT



# BIM in Statutory Submission

## REAL BIM



# BIM in Statutory Submission

## BIM for Government Submission?



# BIM in Statutory Submission

## **Government Submission in Hong Kong:**

### **Purpose:**

**To demonstrate a development complies with statutory requirement and seek government approval using BIM**

# BIM in Statutory Submission

## **Government Submission in Hong Kong:**

**Applicable Development:  
Applied to new building & alternation and addition works in  
Hong Kong**

# BIM in Statutory Submission

## **Government Submission in Hong Kong:**

### **Content of Submission:**

**Plans, sections, elevations, calculations and other relevant documents**



# BIM in Statutory Submission

## Source of Reference:

Height of building in metres	Domestic buildings						Non-domestic buildings					
	Percentage site coverage			Plot ratio			Percentage site coverage			Plot ratio		
	Class A site	Class B site	Class C site	Class A site	Class B site	Class C site	Class A site	Class B site	Class C site	Class A site	Class B site	Class C site
Not exceeding 15 m	66.6	75	80	3.3	3.75	4.0	100	100	100	5	5	5
Over 15 m but not exceeding 18 m	60	67	72	3.6	4.0	4.3	97.5	97.5	97.5	5.8	5.8	5.8
Over 18 m but not exceeding 21 m	56	62	67	3.9	4.3	4.7	95	95	95	6.7	6.7	6.7
Over 21 m but not exceeding 24 m	52	58	63	4.2	4.6	5.0	92	92	92	7.4	7.4	7.4
Over 24 m but not exceeding 27 m	49	55	59	4.4	4.9	5.3	89	90	90	8.0	8.1	8.1
Over 27 m but not exceeding 30 m	46	52	55	4.6	5.2	5.5	85	87	88	8.5	8.7	8.8
Over 30 m but not exceeding 36 m	42	47.5	50	5.0	5.7	6.0	80	82.5	85	9.5	9.9	10.2
Over 36 m but not exceeding 40 m	39	44	47	5.4	6.1	6.5	75	77.5	80	10.5	10.8	11.2
Over 40 m but not exceeding 49 m	37	41	44	5.9	6.5	7.0	69	72.5	75	11.0	11.6	12.0
Over 49 m but not exceeding 55 m	35	39	42	6.3	7.0	7.5	64	67.5	70	11.5	12.1	12.6
Over 55 m but not exceeding 61 m	34	38	41	6.8	7.6	8.0	60	62.5	65	12.2	12.5	13.0
Over 61 m	33.33	37.5	40	8.0	9.0	10.0	60	62.5	65	15	15	15

(L.N. 294 of 1976)

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

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Table 5 : Discharge Value of a Staircase in a Non-sprinklered Building

No. of Storey served	Width of Staircase						
	1050mm but under 1200mm	1200mm but under 1350mm	1350mm but under 1500mm	1500mm but under 1600mm	1600mm but under 1700mm	1700mm but under 1800mm	1800mm but under 1900mm
1	210	240	270	300	320	340	360
2	242	278	315	351	377	402	428
3	274	316	360	402	434	464	496
4	306	354	405	453	491	526	564
5	338	392	450	504	548	588	632
6	370	430	495	555	605	650	700
7	402	468	540	606	662	712	768
8	434	506	585	657	719	774	836
9	466	544	630	708	776	836	904
10	498	582	675	759	833	898	972
Each additional storey add	32	38	45	51	57	62	68

Table 1

Intended use of storey	Factor representing usable floor area in m <sup>2</sup> 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, seminars rooms, function room and waiting rooms	1
(e) Kitchens attached to restaurants	4.5
(f) Museums, exhibition halls, trademarks 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	
- Department, 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) Flatlet factories	4.5
(n) Warehouses, godowns and storage areas	30
(o) Classrooms of school not covered by Education Ordinance and other specific rooms, library and study rooms	2

TABLE A

WALLS CONSTRUCTED WHOLLY OF NON-COMBUSTIBLE MATERIALS

Construction and Materials	Minimum thickness in mm (excluding plaster) for period of		
	4 hrs.	2 hrs.	1 hr.
<b>SOLID CONSTRUCTION</b>			
Solid bricks of clay, concrete or sand lime without plaster	225	225*	100
Reinforced concrete -			
(a) containing not less than 1 per cent of vertical reinforcement	180	100	75
Concrete cover to main reinforcement	25	25	15
(b) containing less than 1 per cent of vertical reinforcement	240	160	120
Concrete cover to main reinforcement	25	25	25
<b>HOLLOW BLOCK CONSTRUCTION</b>			
Clay blocks (lower with not less than 13 mm thick) of 2 cells not less than 50 per cent solid finished with 13 mm gypsum plaster on each side	100		100
Concrete blocks of one cell in wall thickness not less than 50 per cent solid finished with 13 mm gypsum plaster on each side			190

\* Where finished with 13 mm gypsum plaster on each side, the thickness may be reduced to 100 mm.

# BIM in Statutory Submission


















## Source of Reference:



# BIM in Statutory Submission

## 2 key aspects of Government Submission

### COLOUR INDICATION :

	BRICK
	CONCRETE SLAB (LIGHTER WASH)
	CONCRETE (PLAIN OR REINFORCED)
	SOLID CONCRETE BLOCK
	HOLLOW CONCRETE BLOCK
	LIGHTWEIGHT PARTITION
	PLASTER OR CEMENT RENDERING
	MOSAIC OR OTHER NON-ABSORBENT FLOOR / WALL TILES
	GLASS
	TIMBER
	METAL WORK OR STEEL
	STONE FINISH
	SANITARY FITTINGS
	PROVISION FOR THE DISABLED
	EARTH (UNEXCAVATED)
	EXISTING STRUCTURE
	EXISTING WOOD DECK

### SITE COVERAGE

CALCULATION FOR MAXIMUM SITE COVERAGE UNDER PNAP APP-132

NON-DOMESTIC BUILDING:-

BUILDING SET BACK AREA = 68.420 s.m.

PERCENTAGE OF SITE AREA =  $68.420 \text{ s.m.} / 842.329 \text{ s.m.} \times 100 = \underline{8.122\%}$

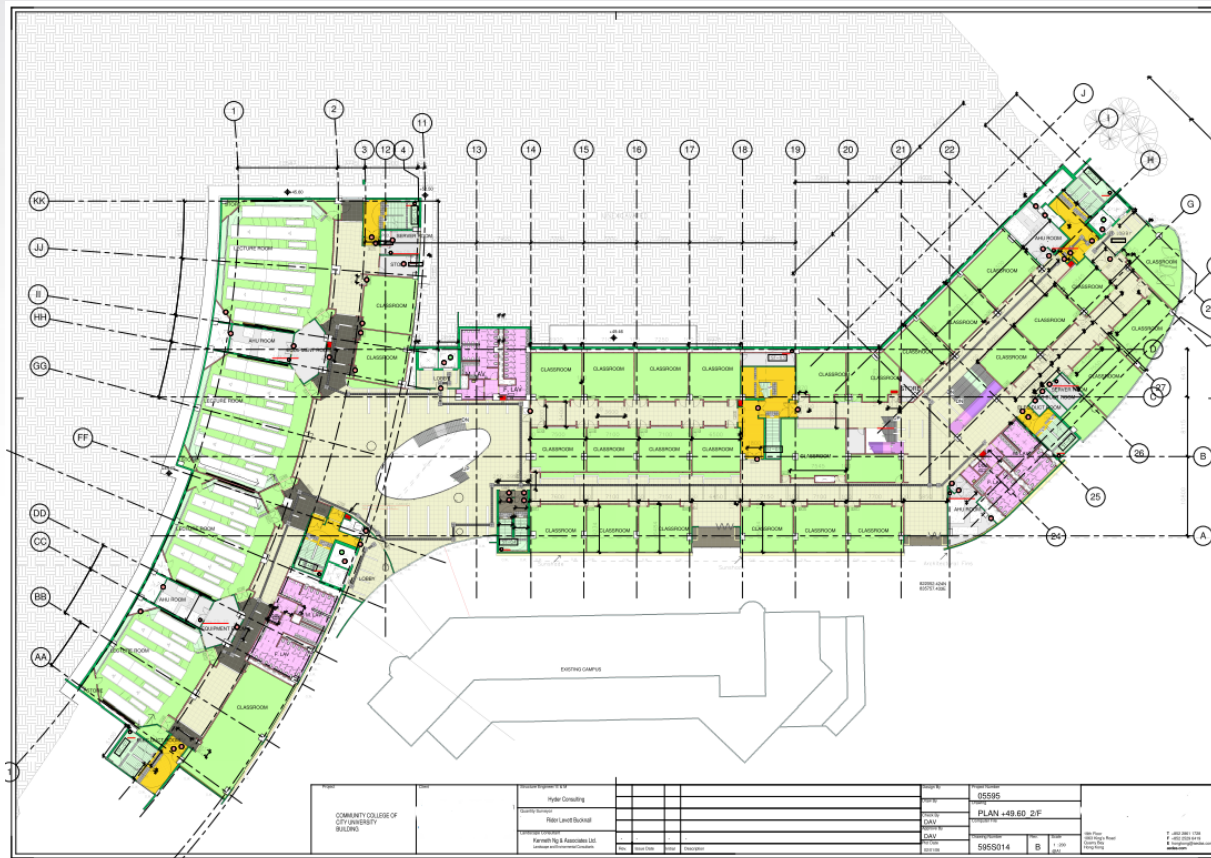
PERMISSIBLE SITE COVERAGE UNDER PNAP APP-132 APPENDIX B

FLOOR	PROVIDED		PERMISSIBLE	
	ACTUAL SITE COVERAGE (% OF SITE)	ACTUAL HEIGHT OF LEVEL OF BUILDING FROM MEAN LEVEL OF STREET (METER)	HEIGHT OF LEVEL OF BUILDING FROM MEAN LEVEL OF STREET (METER)	PERCENTAGE SITE COVERAGE
G/F	88.703%	9.110	NOT EXCEED 24	92
1/F	87.433%	12.810		
2/F	87.433%	16.460		
3/F	86.801%	20.110		
4/F	86.801%	23.760		
5/F	86.801%	27.410	28	90
6/F	86.801%	31.060	32	88
7/F	84.479%	34.710	35	85
8/F	82.960%	38.360	39	83
9/F	77.433%	41.860	42	80
10/F	77.001%	45.060	46	77
11/F	67.687%	50.160	51	73
12/F	64.267%	54.610	55	70
13/F TO ROOF	59.872%	OVER 61	OVER 61	65



# BIM in Statutory Submission

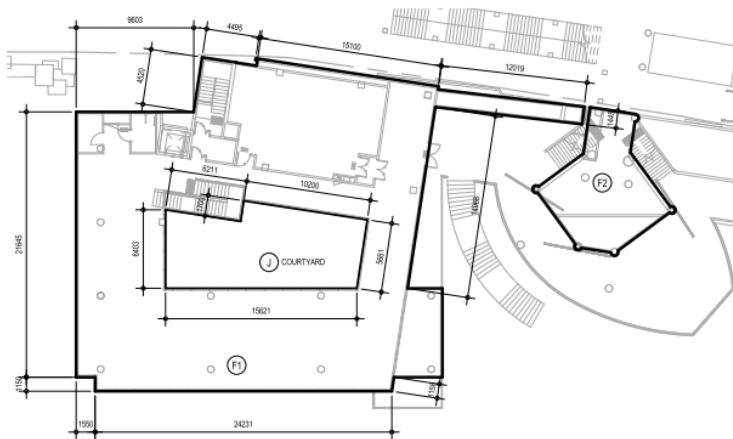
## Graphics



# BIM in Statutory Submission

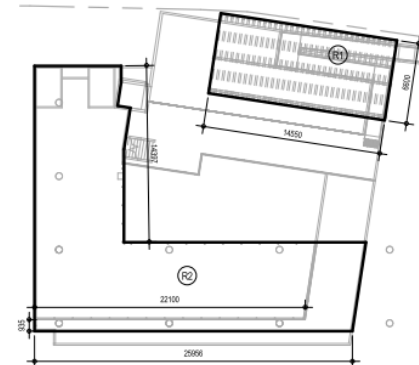
## Calculation

GROSS FLOOR AREA DIAGRAM OF FIRST FLOOR



GFA		
ID	AREA (SQ.M)	TOTAL AREA (SQ.M)
G/F		
G1	1309.052	1309.052
1/F		
F1	735.243	735.243
F2	73.024	73.024
		808.267
ROOF		
R1	96.03	96.03
R2	297.212	297.212
		393.242
TOTAL		2510.561

GROSS FLOOR AREA DIAGRAM OF ROOF FLOOR



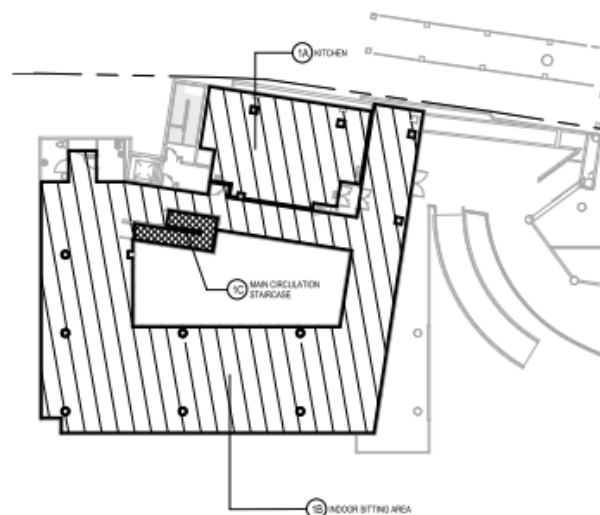
SCHEDULE OF AREA TO BE DEDUCTED FROM GFA			
ID	Name	AREA (SQ.M)	TOTAL AREA (SQ.M)
G/F			
A	EXISTING TX RM	26.747	26.747
B	EXISTING SWITCH RM	7.613	7.613
C	F.S. INLET	3.104	3.104
D	WATER METER CABINET	2.58	2.58
E	MAIN SWITCH RM	13.414	13.414
F	WATER PUMP RM	45.618	45.618
G	F.S. PUMP RM	77.045	77.045
H	COURTYARD	99.855	99.855
L	TBE ROOM	3.557	3.557
		SUB-TOTAL	279.533
1/F			
J	COURTYARD	99.855	99.855
		SUB-TOTAL	99.855
TOTAL			379.388






# BIM in Statutory Submission

## Calculation

1/F UFA DIAGRAM



UFA

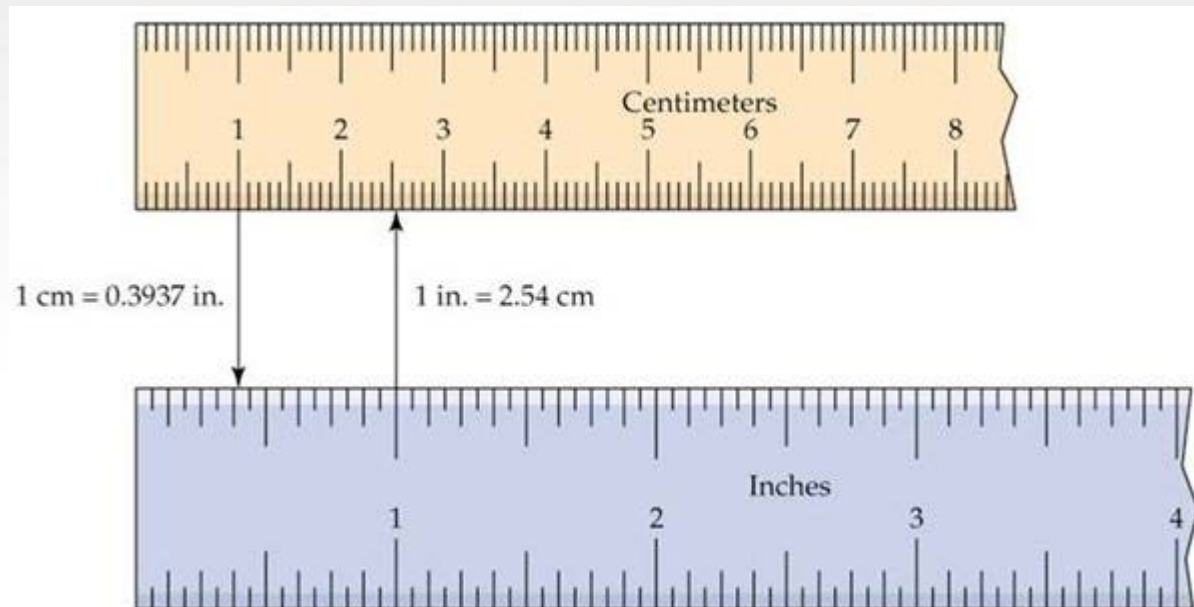
-  Circulation
-  CIRCULATION AREA
-  COUNTABLE UFA

U.F.A. CALCULATION FOR GROUND AND FIRST FLOOR

SCHEDULE OF UFA		
ID	ROOM NAME	AREA (SQ.M)
GA	STORE	32.910
GB	EX. STORE ROOM	44.188
GC	STAFF CHANGING ROOM	7.693
GD	EX. ST. ROOM	14.499
GE	EX. ST.	6.229
SUB-TOTAL		105.519
1A	KITCHEN	90.506
1B	INDOOR SITTING AREA	396.631
SUB-TOTAL		487.336
TOTAL		592.855

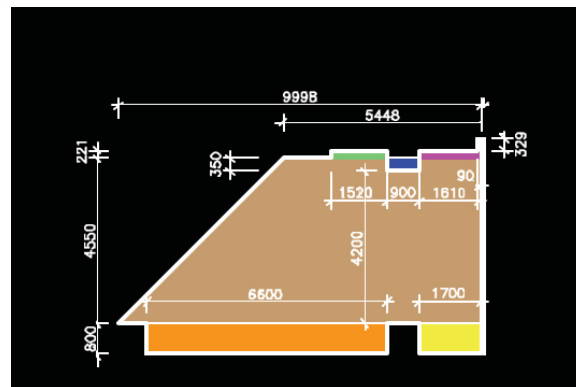
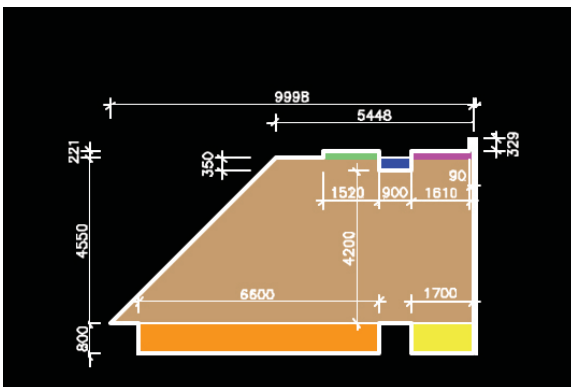
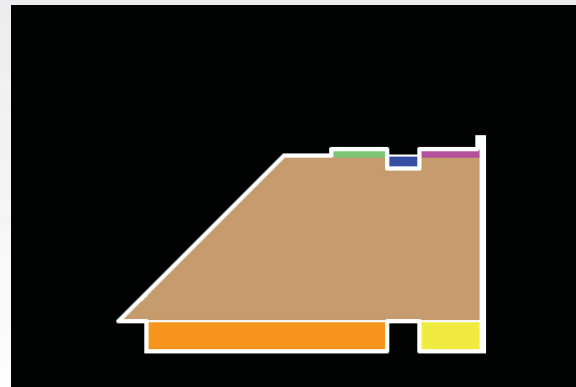
# BIM in Statutory Submission

## Drawing Unit



# BIM in Statutory Submission

## Dimension and Area



# BIM in Statutory Submission

## Naming of Area Type

**Diagram B**

Code	Building Plan Area Type
1	Site Coverage (SC) – Non-domestic
2	Site Coverage (SC) – Domestic
4	Gross Floor Area (GFA) – Non-domestic
5	Gross Floor Area (GFA) – Domestic
9	Usable Floor Area (UFA)
0	Open Space (OS)
	Elements common to all area type

# BIM in Statutory Submission

## **Computational Solution for the Checking of Statutory Submission**

**An area based calculation**

**convert areas into following figures through checking of  
regulations & codes of practice:**

**plot ratio**

**room capacity**

**fire compartment**

**sanitary fitment provision etc.**

**site coverage**

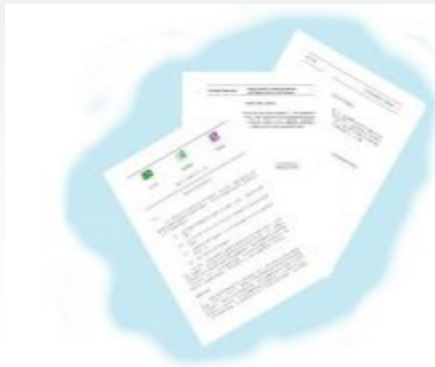
**width of escape route**

**fire resisting period**



# BIM in Statutory Submission

## Fundamental Checking Equivalent to the Standards as per Current Practice Notes



- Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers
- Practice Notes for Registered Contractors
- Joint Practice Notes
- Practice Note for Mandatory Building and Window Inspection Schemes
- Circular Letters

# BIM in Statutory Submission

## Checking of Gross Floor Area

<b>Buildings Department</b>	<b>Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers</b>	<b>APP-2</b>
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**Calculation of Gross Floor Area and Non-accountable Gross Floor Area  
Building (Planning) Regulation 23(3)(a) and (b)**

**Calculation of Gross Floor Area**

# BIM in Statutory Submission

## Checking of Means of Escape

<SCHEDULE OF PERSONS FOR MEANS OF ESCAPE>															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
LOCATION	Number	Use	UFA (SQ.M)	PERM. DENSITY	ROOM CAPACITY	MIN. NO. EXIT ROUTE		MIN. WIDTH OF EACH				MIN. TOTAL WIDTH OF			
						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
Level 34.00_LG2/F	B2610.0	STORE	88.138	30	3	1	1	-	-	-	-	-	-	-	-
Level 34.00_LG2/F	B2620.0	STORE	88.138	30	3	1	1	-	-	-	-	-	-	-	-
Level 34.00_LG2/F	ST-05	STORE	88.138	30	3	1	1	-	-	-	-	-	-	-	-
			264.414												
Level 34.00_LG2/F: 3			264.414												
Level 37.80_LG1/F	B1410.0	OFFICE	282.329	9	32	2	2	850	850	105	105	1750	175	2100	210
Level 37.80_LG1/F	B1410.0	STORE	11.590	30	1	1	1	-	-	-	-	-	-	-	-
			293.919												
Level 37.80_LG1/F: 2			293.919												
Level 41.60_G/F	GF119.	CLASSROOM	48.422	-	40	2	2	850	850	105	105	1750	175	2100	210
Level 41.60_G/F	GF510.	CLASSROOM	301.604	2	151	2	2	850	850	105	105	1750	175	2100	210
Level 41.60_G/F	GF610.	CLASSROOM	105.646	-	80	2	2	850	750	105	105	1750	175	2100	210
Level 41.60_G/F	GF610.	CLASSROOM	105.646	-	80	2	2	850	750	105	105	1750	175	2100	210
Level 41.60_G/F	GF621.	CLASSROOM	48.422	-	40	2	2	850	850	105	105	1750	175	2100	210
Level 41.60_G/F	GF622.	CLASSROOM	51.337	-	40	2	2	850	850	105	105	1750	175	2100	210
Level 41.60_G/F	GF623.	CLASSROOM	48.422	-	40	2	2	850	850	105	105	1750	175	2100	210
			709.499												

# BIM in Statutory Submission

## Checking of Usable Floor Area

Level 41.60_G/F	GF101.	WATER METER	18.585
Level 41.60_G/F	GF110.	STORE	17.150
Level 41.60_G/F	GF110.	STORE	45.897
Level 41.60_G/F	GF111.	CLASSROOM	143.297
Level 41.60_G/F	GF111.	CLASSROOM	143.297
Level 41.60_G/F	GF111.	CLASSROOM	143.297
Level 41.60_G/F	GF111.	CLASSROOM	143.297
Level 41.60_G/F	GF210.	CLASSROOM	160.724
Level 41.60_G/F	GF221.	CLASSROOM	165.256
Level 41.60_G/F	GF310.	CLASSROOM	73.645
Level 41.60_G/F	GF311.	CLASSROOM	48.243
Level 41.60_G/F	GF312.	CLASSROOM	38.808
Level 41.60_G/F	GF313.	CLASSROOM	38.437
Level 41.60_G/F	GF314.	CLASSROOM	35.624
Level 41.60_G/F	GF320.	CLASSROOM	105.736
Level 41.60_G/F	GF320.	CLASSROOM	105.736
Level 41.60_G/F	GF321.	CLASSROOM	107.846
Level 41.60_G/F	GF620.	STORE	17.150
			1552.025

# BIM in Statutory Submission

## Checking of Number and Width of Exit Routes and Doors Provided

SCHEDULE MINIMUM NUMBER & WIDTH OF EXIT DOOR & EXIT ROUTE FROM EACH FLOOR											
LOCATION	FLOOR CAPACITY	MIN. NO. OF EXIT ROUTE		MIN. WIDTH OF EACH				MIN. TOTAL WIDTH OF			
		REQ'D	PRO'D	EXIT DOOR		EXIT ROUTE		EXIT DOORS		EXIT ROUTES	
				REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D
Level 34.00_LG2/F	3	1	1	-	-	-	-	-	-	-	-
Level 37.80_LG1/F	33	2	2	850	1500	1050	1800	1750	3300	2100	3600
Level 41.60_G/F	6815	7	7	1500	1500	1500	1800	41100	16200	41100	13800
Level 45.60_1/F			7		1500		1800				
Level 49.60_2/F	1964	7	7	1500	1500	1500	1800	12000	12000	12000	12000
Level 53.80_3/F	2469	7	7	1500	1500	1500	1800	15000	15000	15000	15000
Level 58.20_4/F	870	4	7	1200	1500	1200	1800	6000	15600	6000	13800
Level 62.00_5/F	915	4	7	1200	1200	1200	1800	6000	14400	6000	13800
Level 65.80_6/F	1297	6	7	1350	1500	1350	1800	9000	15000	9000	13800



# BIM in Statutory Submission

## Checking of Number of People, Required Number and Width of Exit Route and Doors

Discharge Value Calculation					
Staircase No.	No. of storey served	Width of Staircase (mm)	Discharge Value (Person)	Factor	Remarks
ST-01	6	2400	1410		
ST-02	6	1800	1060		
ST-03	4	1800	739	*0.8	Escape upwards
ST-04	8	1800	1196		
ST-05	8	1800	1196		
ST-06	8	1800	1196		
ST-07	7	2400	1500		
ST-08	1	1050	420		
Permitted discharge value			8717		
Actual capacity of CCCUB			8196		
Therefore, Permitted Discharge Value (Person) > Actual Capacity (Person)					

# BIM in Statutory Submission

## Checking of Sanitary Fitment Provision

SCHEDULE OF SANITARY FITMENTS PROVISIONS															
LOCATION	USE	CAPACITY			WC				BASIN				URINAL		
		TOTAL	M.	F.	M		F		M		F		REQ'D	PRO'D	
					REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D			
3/F	RESTAURANT	1465	733	732	6	6	10	12	6	8	9	9	15	15	
3/F	WORKPLACE	106	53	53	3	4	4	5	3	5	3	3	2	2	
6/F	OFFICE	225	150	75	5	8	4	10	5	8	3	4	3	6	
6/F	PLACE OF PUBLIC	350	175	175	2	2	4	4	2	2	2	2	4	4	
6/F	RESTAURANT	175	88	87	1	2	2	4	1	2	2	3	2	3	
6/F	WORKPLACE	41	21	20	1	2	2	2	1	3	1	2	1	2	
G/F	SHOP/DEPAR MENT STORE	40	20	20	1	1	2	2	1	3	1	1	1	2	
G/F - 6/F	OFFICE	386	258	128	8	8	7	9	8	10	5	5	6	6	
G/F - 6/F	SCHOOL	6000	3000	3000	100	121	150	184	100	113	150	150	200	200	

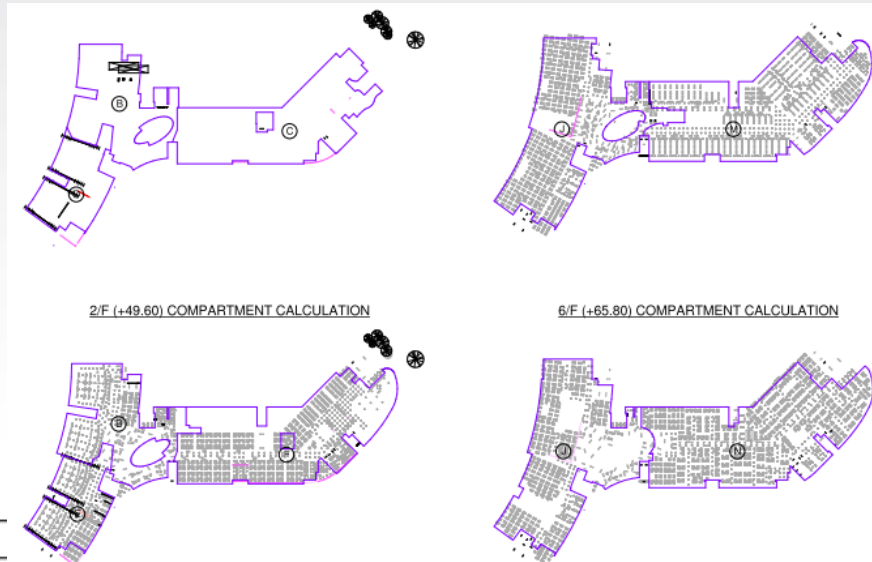
Education Ordinance Reg. 43 (Latrines & urinals in school premises other than boarding school premises)

1. For latrines and urinals connected a flush system to the requirement shall be -

- a) For boys - Two urinals for every 30 pupils
- b) For girls - One pan for every 20 pupils

# BIM in Statutory Submission

## Checking of Fire Compartment and Fire Resisting Construction



COMPART MENT	CLASS	TOTAL VOLUME	FRP REQD	THK.	COVER TO STEEL	THK.	COVER TO STEEL	THK.	COVER TO STEEL	THK.	AB		
											COVER TO STEEL	THK.	COVER TO STEEL
B	7 (PLACE OF ASSEMBLY)	24012.101	2	100	25	200	40	300	35	125	25	125	35
C	7 (PLACE OF ASSEMBLY)	15707.896	2	100	25	200	40	300	35	125	25	125	35
D	7 (PLACE OF ASSEMBLY)	3602.552	1	75	15	200	30	200	25	100	20	95	20
E	7 (PLACE OF ASSEMBLY)	3826.527	1	75	15	200	30	200	25	100	20	95	20
F	7 (PLACE OF ASSEMBLY)	10440.620	2	100	25	200	40	300	35	125	25	125	35
G	7 (PLACE OF ASSEMBLY)	4007.463	1	75	15	200	30	200	25	100	20	95	20
H	7 (PLACE OF ASSEMBLY)	12165.001	2	100	25	200	40	300	35	125	25	125	35
J	7 (PLACE OF ASSEMBLY)	25703.293	2	100	25	200	40	300	35	125	25	125	35
K	7 (PLACE OF ASSEMBLY)	9929.591	1	75	15	200	30	200	25	100	20	95	20
L	3 (OFFICE)	10569.210	1	75	15	200	30	200	25	100	20	95	20
M	3 (OFFICE)	11077.661	1	75	15	200	30	200	25	100	20	95	20
N	3 (OFFICE)	12536.920	1	75	15	200	30	200	25	100	20	95	20

# BIM in Statutory Submission

## **Government Department Involvement:**

- |            |   |                                     |
|------------|---|-------------------------------------|
| - BD / CIC | - | Submission Standard                 |
| - HKHA     | - | BIM Standard Revamp /GBP Submission |
| - ArchSD   | - | SSCU BIM Statutory Submission       |

# BIM in Statutory Submission

## **Stakeholder Engagement:**

### **Statutory Authorities and Concerned Departments:**

- Buildings Department
- Planning Department
- Lands Department
- Architectural Services Department
- Fire Services Department

# BIM in Statutory Submission

## **Stakeholder Engagement:**

### **Professional Organizations:**

- Hong Kong Institute of Architects
- Hong Kong Institution of Engineers
- Hong Kong Institute of Surveyors
- Hong Kong Institute of Building Information Modelling



# BIM in Statutory Submission

**Additional support from:**

- Business Associations & Academia**
- Non-Governmental Organizations**
- Corporations**

# BIM in Statutory Submission

## **Approach - Sample Project:**

- Re-build in BIM Software**
- Drawing Production**
- Submission Standard**

# BIM in Statutory Submission

## **Result:**

- BIM Standards in Statutory Submission**
- BIM Workflow**
- Specification in Semi-automatic / automatic Computational Solution**

# BIM in Statutory Submission

AutoCad → Printed Drawing → Checking

Revit → Printed Drawing → Checking

Revit → **Autocad** → Printed Drawing  
(Conversion discrepancy) → ???

Revit → Printed Drawing → Checking  
Revit → Information Model → Software Checking