



BIM Conference 2013

How does BIM fit in the legal process of Plan Submission, Approval and Inspection in Hong Kong building industry

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B

= Building

建築

I

= Information

資訊

M

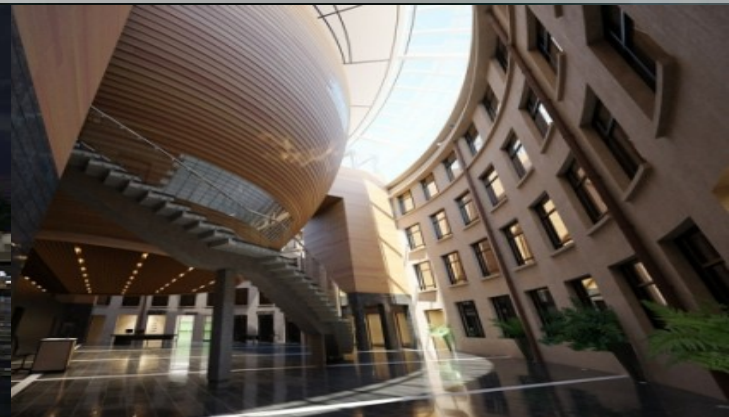
= Modelling

模型/ 模擬

Fake BIM

M + ?

JUST 3D MODEL – NOT BIM

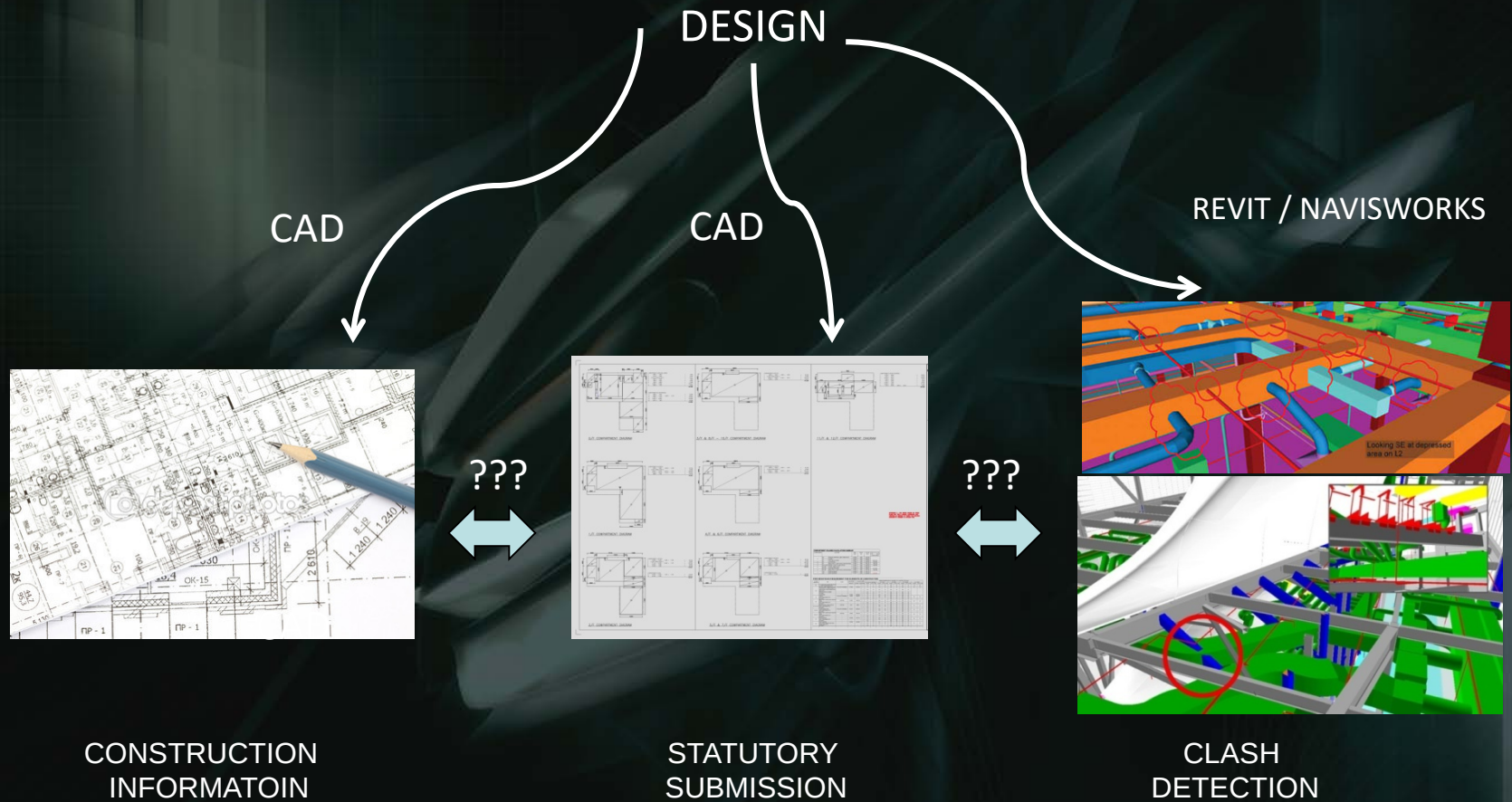


HALF-BIM

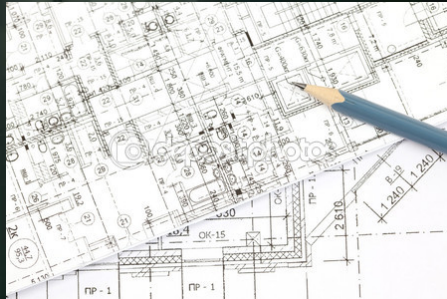
I <> M

3D MODEL >> QTO , CLASH ANALYSIS

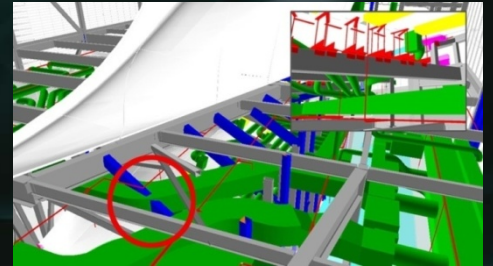
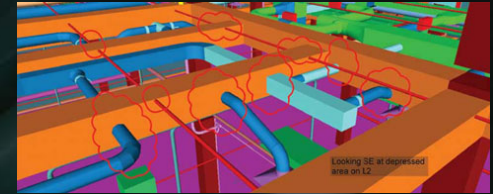
HALF BIM



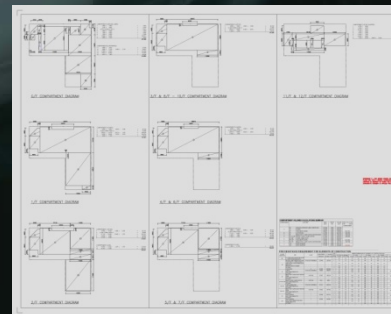
REAL BIM



CONSTRUCTION
INFORMATOIN



CLASH
DETECTION



STATUTORY
SUBMISSION

REAL BIM

I = M

I > M

INFORMATION FROM MODEL,
INFORMATION MORE IMPORTANT

B I M



Modelling

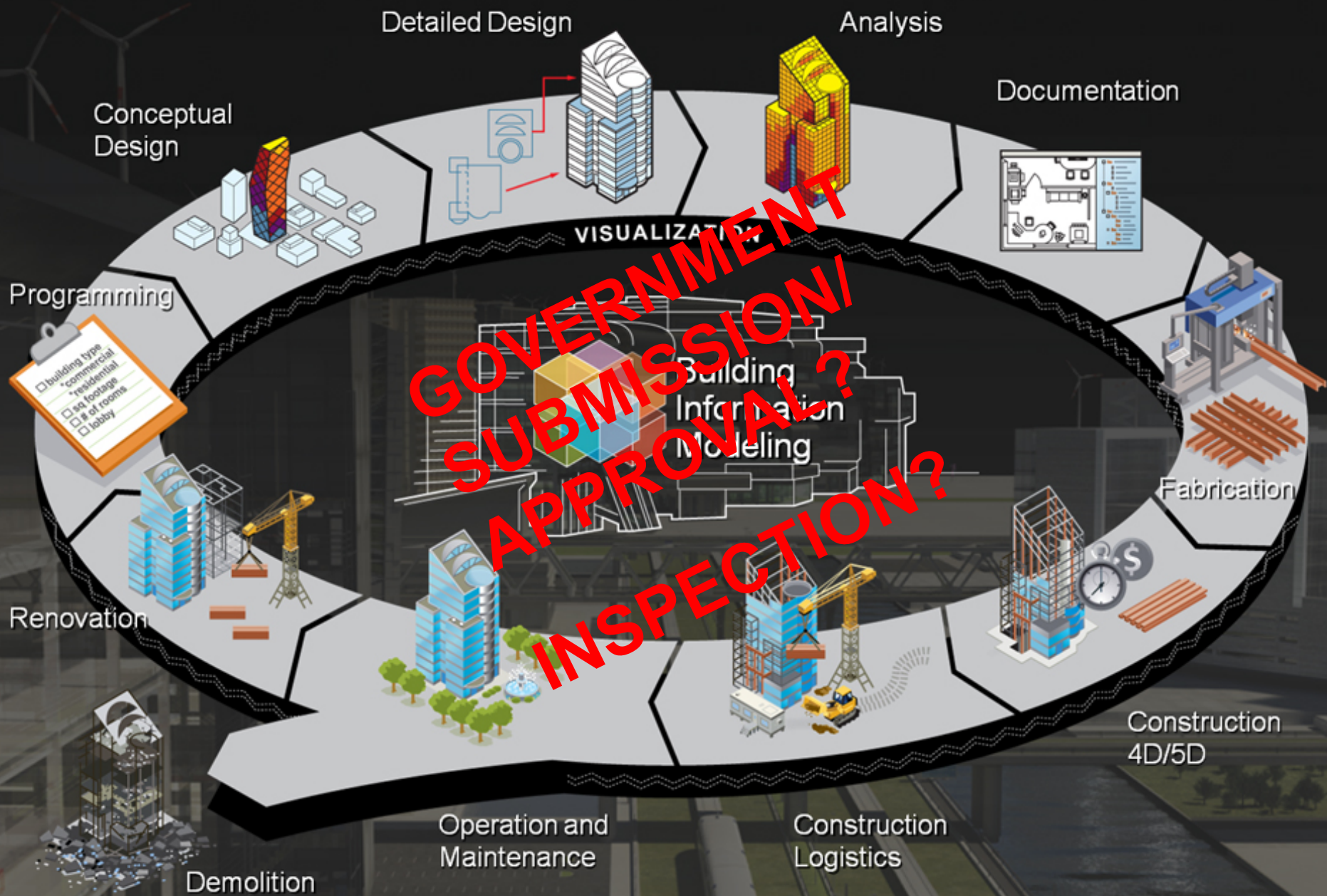
Information

Business

REAL BIM

$$M + I = B$$

BIM is a process, Business is the objective



REAL BIM

$$M + I = B \text{ (Statutory Submission)}$$

GOVERNMENT SUBMISSION IN HONG KONG

Purpose:

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

Applicable Development:

Applied to new building & alteration and addition works in Hong Kong

Content of Submission:

Plans, sections, elevations, calculations and other relevant documents

TODAY'S TOPIC: ANOTHER WAY TO PREPARE THE CALCULATION FOR GOVERNMENT 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

COMMON WAY:

STEP 2: CHECKING OF REGULATIONS & CODES

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 43 m	39	44	47	5.4	6.1	6.5	75	77.5	80	10.5	10.8	11.2
Over 43 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 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, tradenants 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

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 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.
SOLID CONSTRUCTION			
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
HOLLOW BLOCK CONSTRUCTION			
Clay blocks (outer web 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.

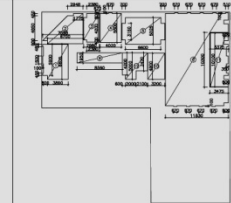
COMMON WAY: STEP 2: CHECKING OF REGULATIONS & CODES



[illegible]

[illegible]

26 36 48 60 72 84 96 108 120 132 144 156 168 180 192 216 240 270 300 324 360 396 432 480 540 600 648 720 810 900 1080 1260 1440 1620 1800 2160 2520 2880 3240 3600 4320 4860 5400 6480 7200 8100 9000 10800 12600 14400 16200 18000 21600 25200 28800 32400 36000 43200 48600 54000 64800 72000 81000 90000 108000 126000 144000 162000 180000 216000 252000 288000 324000 360000 432000 486000 540000 648000 720000 810000 900000 1080000 1260000 1440000 1620000 1800000 2160000 2520000 2880000 3240000 3600000 4320000 4860000 5400000 6480000 7200000 8100000 9000000 10800000 12600000 14400000 16200000 18000000 21600000 25200000 28800000 32400000 36000000 43200000 48600000 54000000 64800000 72000000 81000000 90000000 108000000 126000000 144000000 162000000 180000000 216000000 252000000 288000000 324000000 360000000 432000000 486000000 540000000 648000000 720000000 810000000 900000000 1080000000 1260000000 1440000000 1620000000 1800000000 2160000000 2520000000 2880000000 3240000000 3600000000 4320000000 4860000000 5400000000 6480000000 7200000000 8100000000 9000000000 10800000000 12600000000 14400000000 16200000000 18000000000 21600000000 25200000000 28800000000 32400000000 36000000000 43200000000 48600000000 54000000000 64800000000 72000000000 81000000000 90000000000 108000000000 126000000000 144000000000 162000000000 180000000000 216000000000 252000000000 288000000000 324000000000 360000000000 432000000000 486000000000 540000000000 648000000000 720000000000 810000000000 900000000000 1080000000000 1260000000000 1440000000000 1620000000000 1800000000000 2160000000000 2520000000000 2880000000000 3240000000000 3600000000000 4320000000000 4860000000000 5400000000000 6480000000000 7200000000000 8100000000000 9000000000000 10800000000000 12600000000000 14400000000000 16200000000000 18000000000000 21600000000000 25200000000000 28800000000000 32400000000000 36000000000000 43200000000000 48600000000000 54000000000000 64800000000000 72000000000000 81000000000000 90000000000000 108000000000000 126000000000000 144000000000000 162000000000000 180000000000000 216000000000000 252000000000000 288000000000000 324000000000000 360000000000000 432000000000000 486000000000000 540000000000000 648000000000000 720000000000000 810000000000000 900000000000000 1080000000000000 1260000000000000 1440000000000000 1620000000000000 1800000000000000 2160000000000000 2520000000000000 2880000000000000 3240000000000000 3600000000000000 4320000000000000 4860000000000000 5400000000000000 6480000000000000 7200000000000000 8100000000000000 9000000000000000 10800000000000000 12600000000000000 14400000000000000 16200000000000000 18000000000000000 21600000000000000 25200000000000000 28800000000000000 32400000000000000 36000000000000000 43200000000000000 48600000000000000 54000000000000000 64800000000000000 72000000000000000 81000000000000000 90000000000000000 108000000000000000 126000000000000000 144000000000000000 162000000000000000 180000000000000000 216000000000000000 252000000000000000 288000000000000000 324000000000000000 360000000000000000 432000000000000000 486000000000000000 540000000000000000 648000000000000000 720000000000000000 810000000000000000 900000000000000000 1080000000000000000 1260000000000000000 1440000000000000000 1620000000000000000 1800000000000000000 2160000000000000000 2520000000000000000 2880000000000000000 3240000000000000000 3600000000000000000 4320000000000000000 4860000000000000000 5400000000000000000 6480000000000000000 7200000000000000000 8100000000000000000 9000000000000000000 10800000000000000000 12600000000000000000 14400000000000000000 16200000000000000000 18000000000000000000 21600000000000000000 25200000000000000000 28800000000000000000 32400000000000000000 36000000000000000000 43200000000000000000 48600000000000000000 54000000000000000000 64800000000000000000 72000000000000000000 81000000000000000000 90000000000000000000 108000000000000000000 126000000000000000000 144000000000000000000 162000000000000000000 180000000000000000000 216000000000000000000 252000000000000000000 288000000000000000000 324000000000000000000 36000000000	
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[illegible][illegible]

Technical drawing of a mechanical assembly, likely a pump or motor component, showing a cross-section with various parts labeled with numbers and letters. Dimensions are provided in millimeters (mm). The drawing includes a main view and a detailed view of a specific component.

[illegible]

DATA SET 1	DATA SET 2	
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CHARACTER 2	1	0.0000
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CHARACTER 3	1	0.0000
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CHARACTER 4	1	0.0000
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[illegible]

THE 10% INFLATION RATE		
1	$5,500 \times 0.4000 = 2,200$	$0.7500 \times 0.4000 = 0.3000$
2	$4,000 \times 0.4000$	
3	$1,500 \times 0.4000$	
4	$27,000 \times 0.7500 = 20,250$	$0.7500 \times 0.7500 = 0.5625$
5	$8,000 \times 0.6575 = 5,260$	$0.7500 \times 0.5625 = 0.4219$
		100.00

THE 10% INFLATION RATE (POTENTIAL FOR INFLATION)		
1	$0.7500 \times 0.4000 = 0.3000$	
2	$0.5000 \times 0.4000 = 0.2000$	
3	$0.1875 \times 0.4000 = 0.0750$	
4	$0.7500 \times 0.5625 = 0.4219$	
5	$0.4219 \times 0.5625 = 0.2375$	
		100.00

STATEMENT 2: THE WORKS SHOWN ON THESE PLANS ARE TYPE 2 WORKS, ALTERATION AND ADDITION IN RESPECT OF WHICH THE BUILDING AUTHORITY'S CONSENT IS REQUIRED. E000

UPPER PLAN OF 12/F UFA DIAGRAM

COMMON WAY: STEP 1: CALCULATE AREA

Outline area



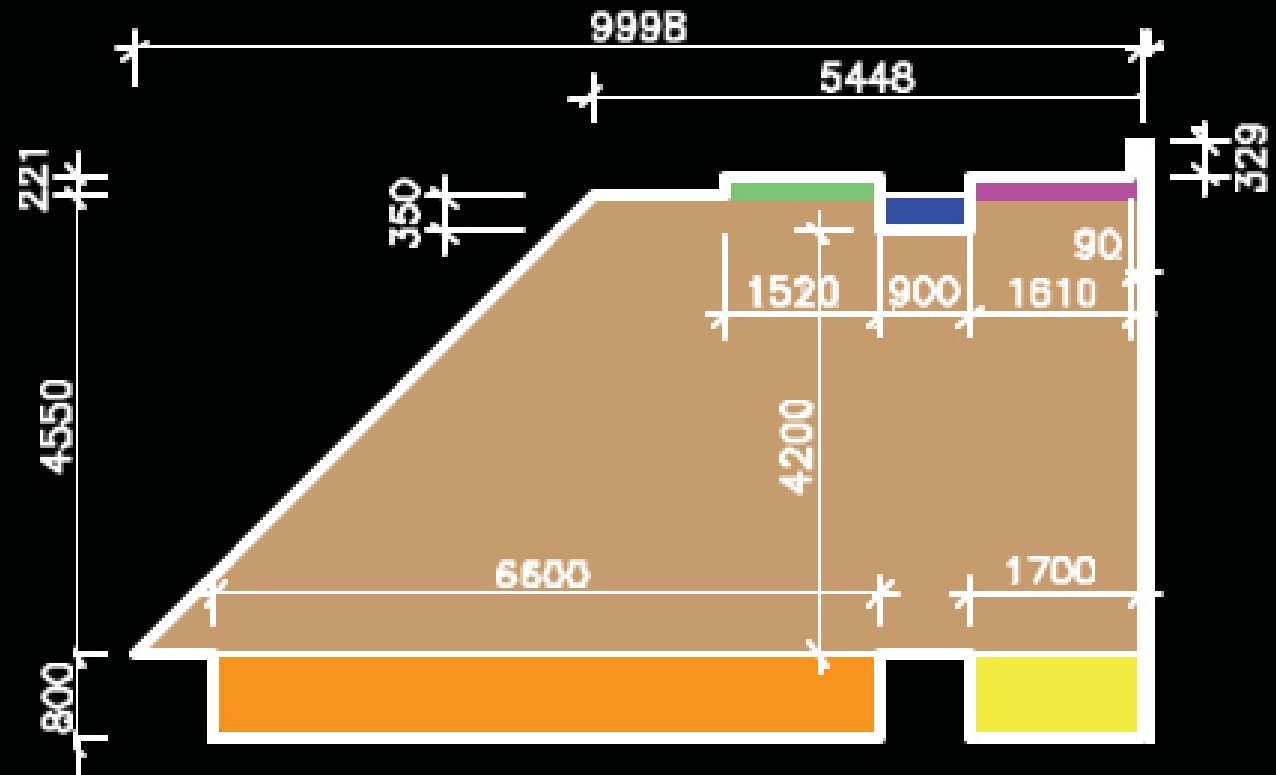
COMMON WAY: STEP 1: CALCULATE AREA

Subdivide area into simple geometry such as rectangle, triangle, circle, etc.



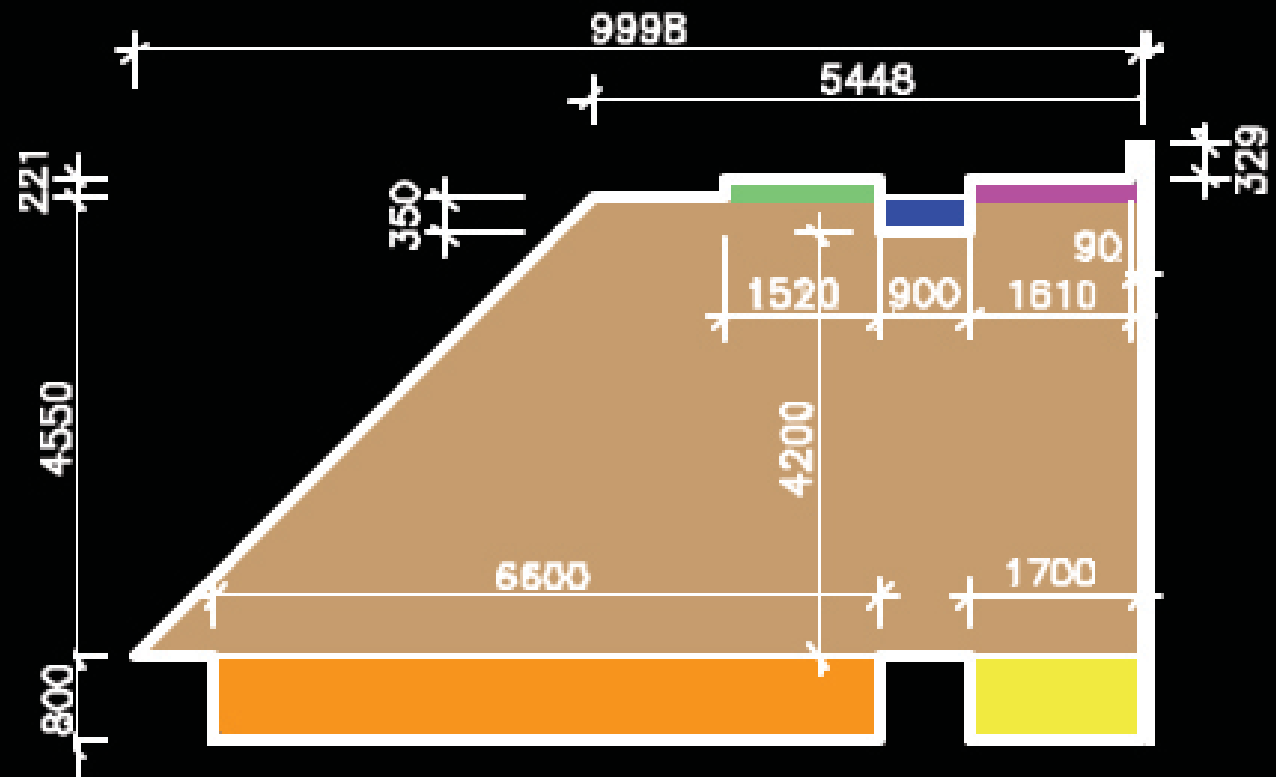
COMMON WAY: STEP 1: CALCULATE AREA

Measure dimension

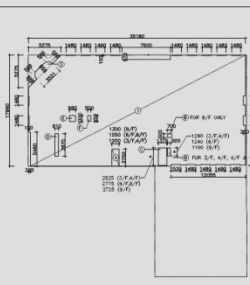


COMMON WAY: STEP 1: CALCULATE AREA

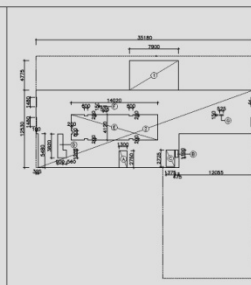
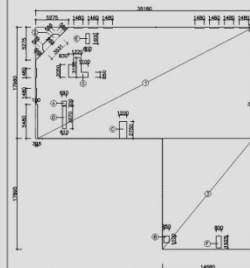
Calculate area by applying geometric formula



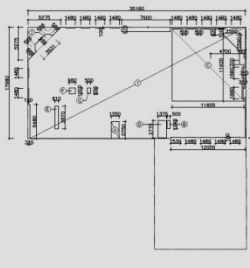
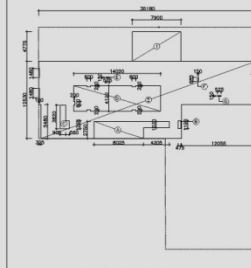
$$(5.448+9.998) \times 4.550 / 2 + 6.600 \times 0.800 + 1.700 \times 0.800 + 0.221 \times 1.520 - 0.350 \times 0.900 + 0.221 \times 1.610 + 0.329 \times 0.090 = 42.186$$

[illegible]

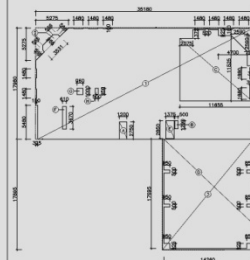
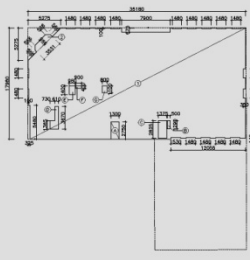
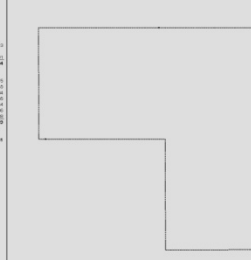
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	IJ	JK	KL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	<td>TW</td> <td>TX</td> <td>TY</td> <td>TZ</td> <td>UA</td> <td>UB</td> <td>UC</td> <td>UD</td> <td>UE</td> <td>UF</td> <td>UG</td> <td>UH</td> <td>UI</td> <td>UJ</td> <td>UK</td> <td>UL</td> <td>UM</td> <td>UN</td> <td>UO</td> <td>UP</td> <td>UQ</td> <td>UR</td> <td>US</td> <td>UT</td> <td>UU</td> <td>UV</td> <td>UW</td> <td>UX</td> <td>UY</td> <td>UZ</td> <td>VA</td> <td>VB</td> <td>VC</td> <td>VD</td> <td>VE</td> <td>VF</td> <td>VG</td> <td>VH</td> <td>VI</td> <td>VJ</td> <td>VK</td> <td>VL</td> <td>VM</td> <td>VN</td> <td>VO</td> <td>VP</td> <td>VQ</td> <td>VR</td> <td>VS</td> <td>VT</td> <td>VU</td> <td>VV</td> <td>VW</td> <td>VX</td> <td>VY</td> <td>VZ</td> <td>WA</td> <td>WB</td> <td>WC</td> <td>WD</td> <td>WE</td> <td>WF</td> <td>WG</td> <td>WH</td> <td>WI</td> <td>WJ</td> <td>WK</td> <td>WL</td> <td>WM</td> <td>WN</td> <td>WO</td> <td>WP</td> <td>WQ</td> <td>WR</td> <td>WS</td> <td>WT</td> <td>WU</td> <td>WV</td> <td>WW</td> <td>WX</td> <td>WY</td> <td>WZ</td> <td>XA</td> <td>XB</td> <td>XC</td> <td>XD</td> <td>XE</td> <td>XF</td> <td>XG</td> <td>XH</td> <td>XI</td> <td>XJ</td> <td>XK</td> <td>XL</td> <td>XM</td> <td>XN</td> <td>XO</td> <td>XP</td> <td>XQ</td> <td>XR</td> <td>XS</td> <td>XT</td> <td>XU</td> <td>XV</td> <td>XW</td> <td>XX</td> <td>XY</td> <td>XZ</td> <td>YA</td> <td>YB</td> <td>YC</td> <td>YD</td> <td>YE</td> <td>YF</td> <td>YG</td> <td>YH</td> <td>YI</td> <td>YJ</td> <td>YK</td> <td>YL</td> <td>YM</td> <td>YN</td> <td>YO</td> <td>YP</td> <td>YQ</td> <td>YR</td> <td>YS</td> <td>YT</td> <td>YU</td> <td>YV</td> <td>YW</td> <td>YX</td> <td>YZ</td> <td>ZA</td> <td>ZB</</td>	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YZ	ZA	ZB</
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[illegible]

1/2 OF CALCULATION		
1	100,000 - 177,000 = - 77,000 (17 - 13,300 = 4,400)	0
2	1,400 x 5 = 7,000 - 4,400 = 2,600 (2,600)	0
3	17,000 - 17,000 = 0 (100 - 100 = 0)	0
4	10,000 x 2 = 20,000	0
5	0,000 x 0 = 0,000	0
6	0,000 x 1 = 0,000	0
7	1,000 x 0 = 0,000	0
8	0,000 x 1 = 0,000	0
9	2,000 (100,000 - 177,000) + 2,000 = 1,000 (4,400)	0
10	TOTAL OF 1/2 OF CALCULATION = 10,000	0

[illegible]

10% MPA CALCULATOR			
1	10000	4	1700
2	24 10000 = 0.0004	10 10000 = 0.0004	0.0004 = 0.0004
	0.0004 = 0.0004	0.0004 = 0.0004	0.0004 = 0.0004
DEDUCT			
1	0.0004	2 1000	0.0004
2	0.0004	0.0004	0.0004
3	0.0004	0.0004	0.0004
4	0.0004	0.0004	0.0004
5	0.0004	0.0004	0.0004
6	0.0004	0.0004	0.0004
7	0.0004	0.0004	0.0004
8	0.0004	0.0004	0.0004
9	0.0004	0.0004	0.0004
10	0.0004	0.0004	0.0004
TOTAL DEDUCT 10%			
	0.0004	0.0004	0.0004

[illegible][illegible]

UPPER PART OF 12/F GFA DIAGRAM

STATEMENT B : THE WORKS SHOWN ON THESE PLANS ARE TYPE B WORKS, ALTERATION AND ADDITION IN RESPECT OF WHICH THE BUILDING AUTHORITY'S CONSENT IS APPLIED FOR.

COMMON WAY: HOW LONG DOES IT TAKE?

Previous Submission Involves

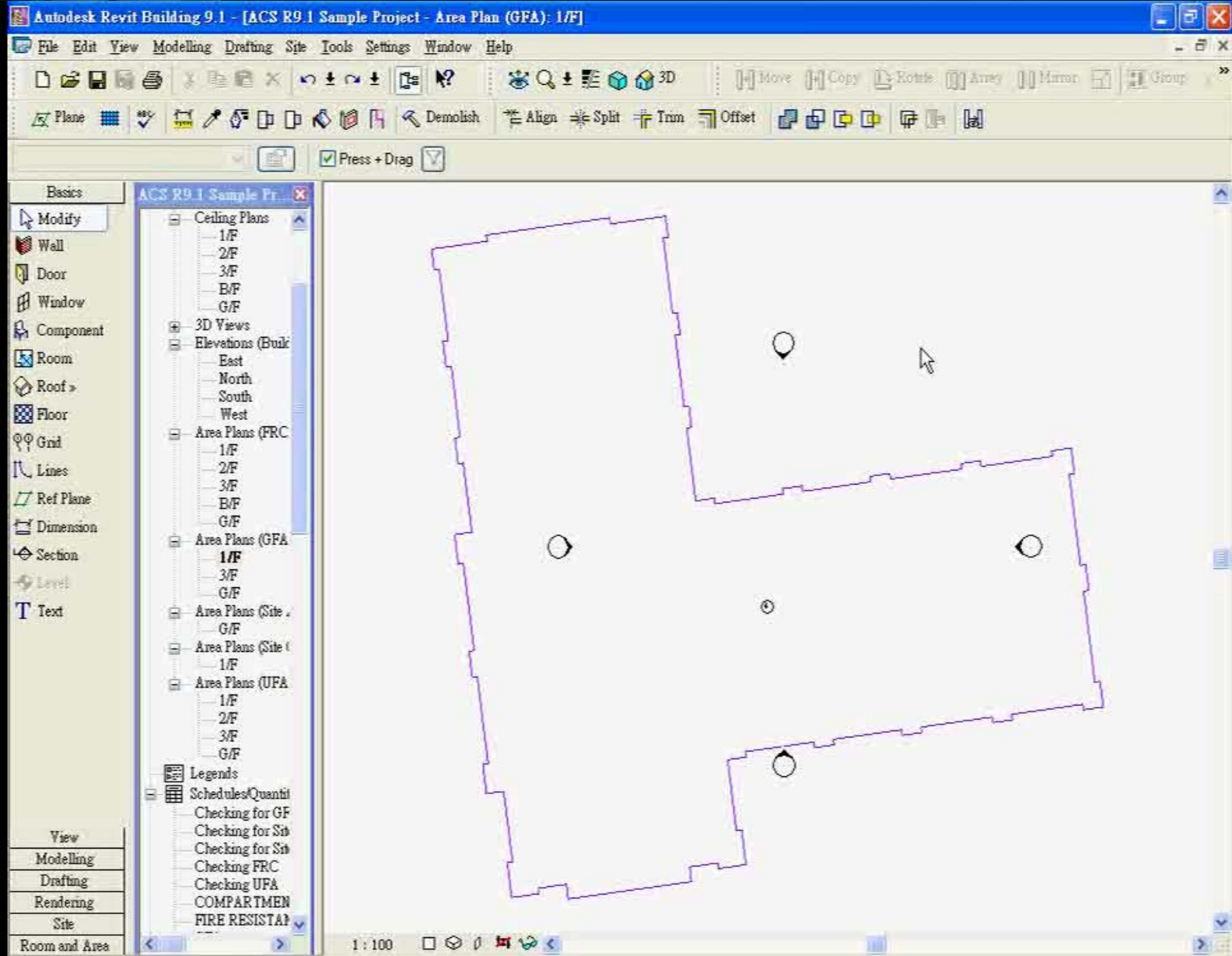
- ~1200 raw data
- ~1700 mathematical operations
- ~1000 statutory checking
- ~5000 data input

Require 2 weeks to complete

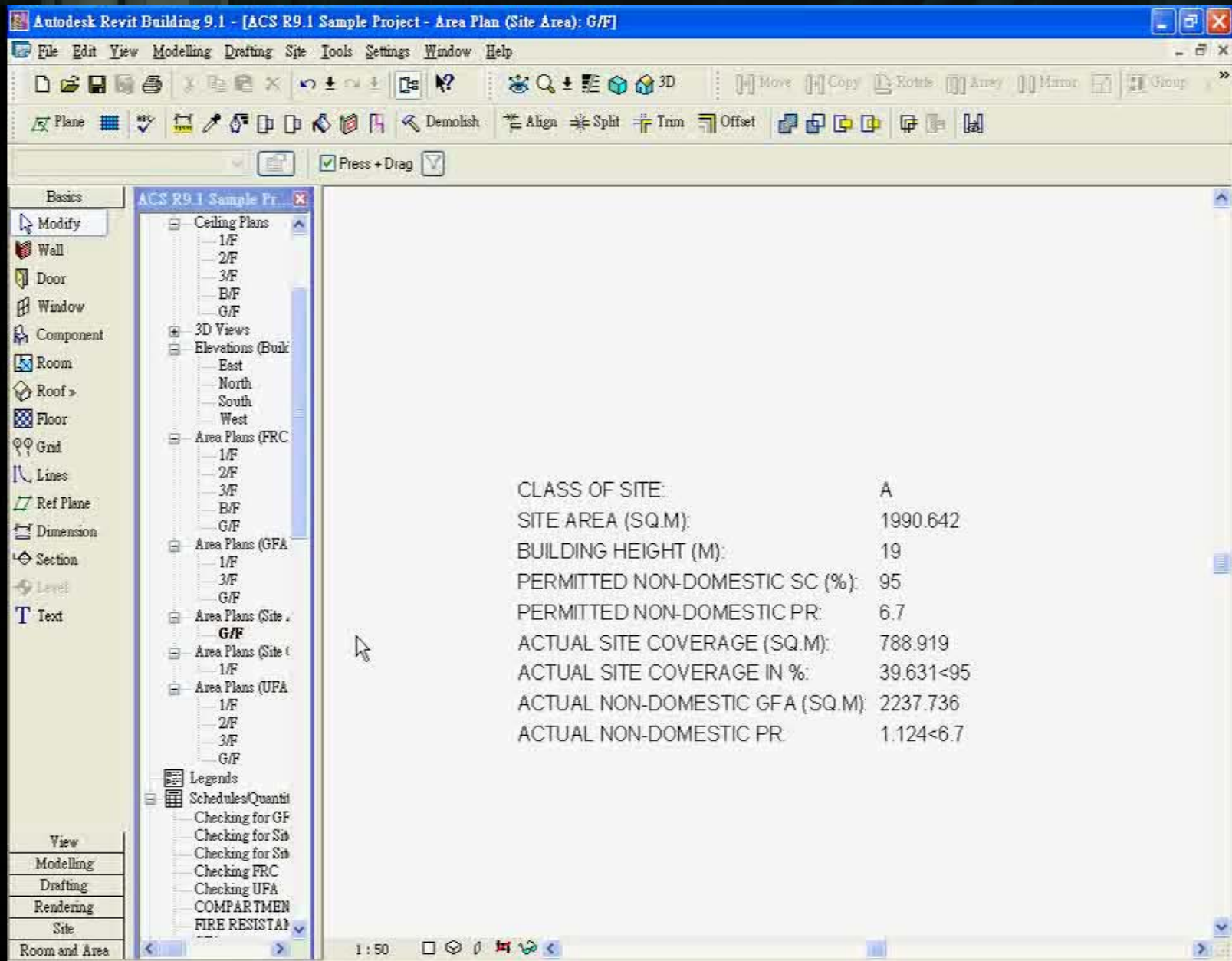
a step by step calculation: any change in layout will affect the calculation significantly

Takes another 1 week in average for every amendment submission

BIM method: GFA CALCULATION

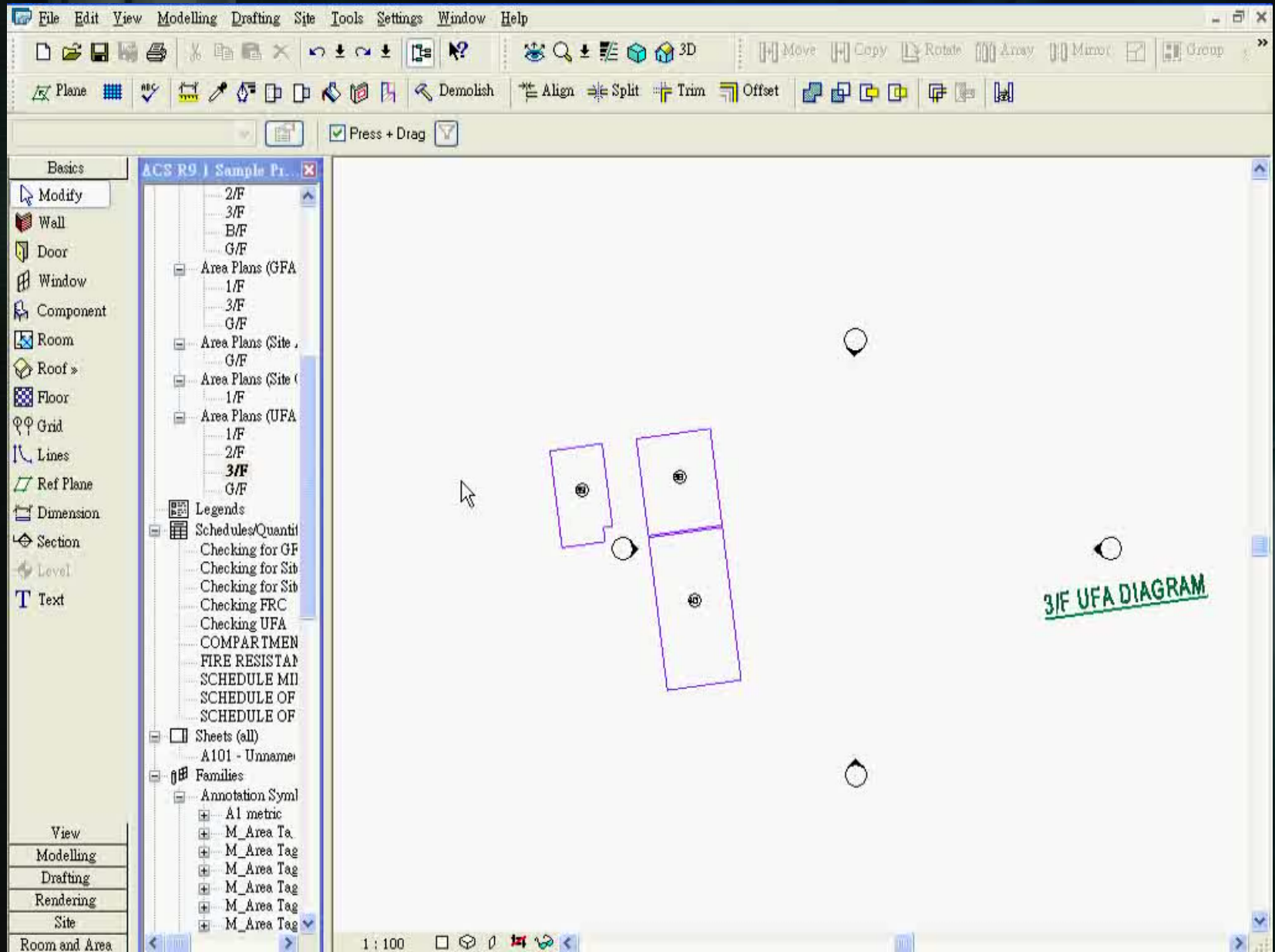


BIM method: GFA CALCULATION

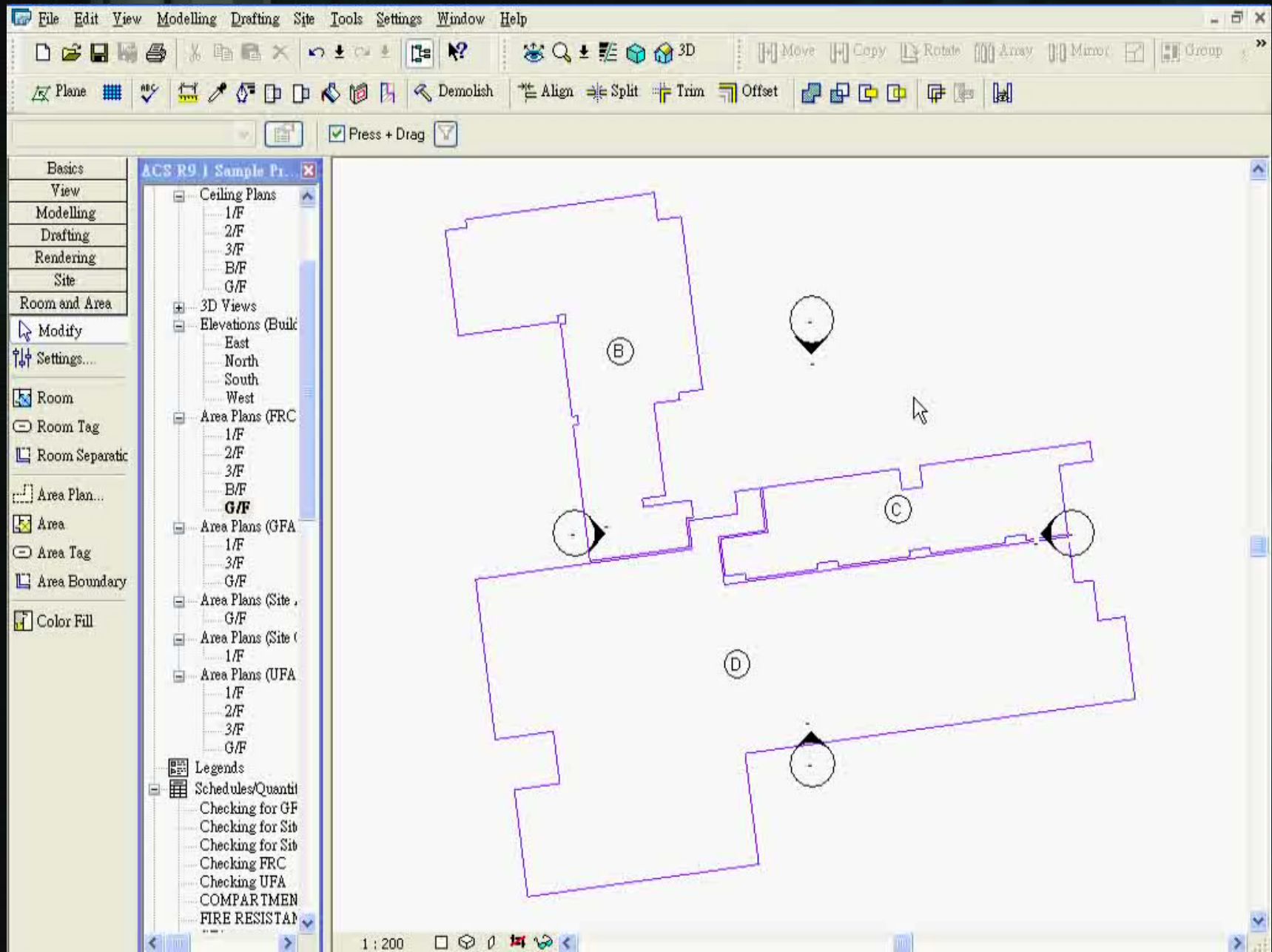


The screenshot shows the Autodesk Revit 9.1 software interface. The title bar indicates the project is 'ACS R9.1 Sample Project - Area Plan (UFA) - G/F'. The left-hand pane shows the project hierarchy, with 'Area Plans (UFA)' selected for the 'G/F' (Ground Floor) level. The main view area displays a floor plan with several rooms numbered 1 through 8. A large central area is labeled 'G/F UFA DIAGRAM'. The status bar at the bottom shows 'Areas: Area: ROOM' and 'CAP. NUM'.

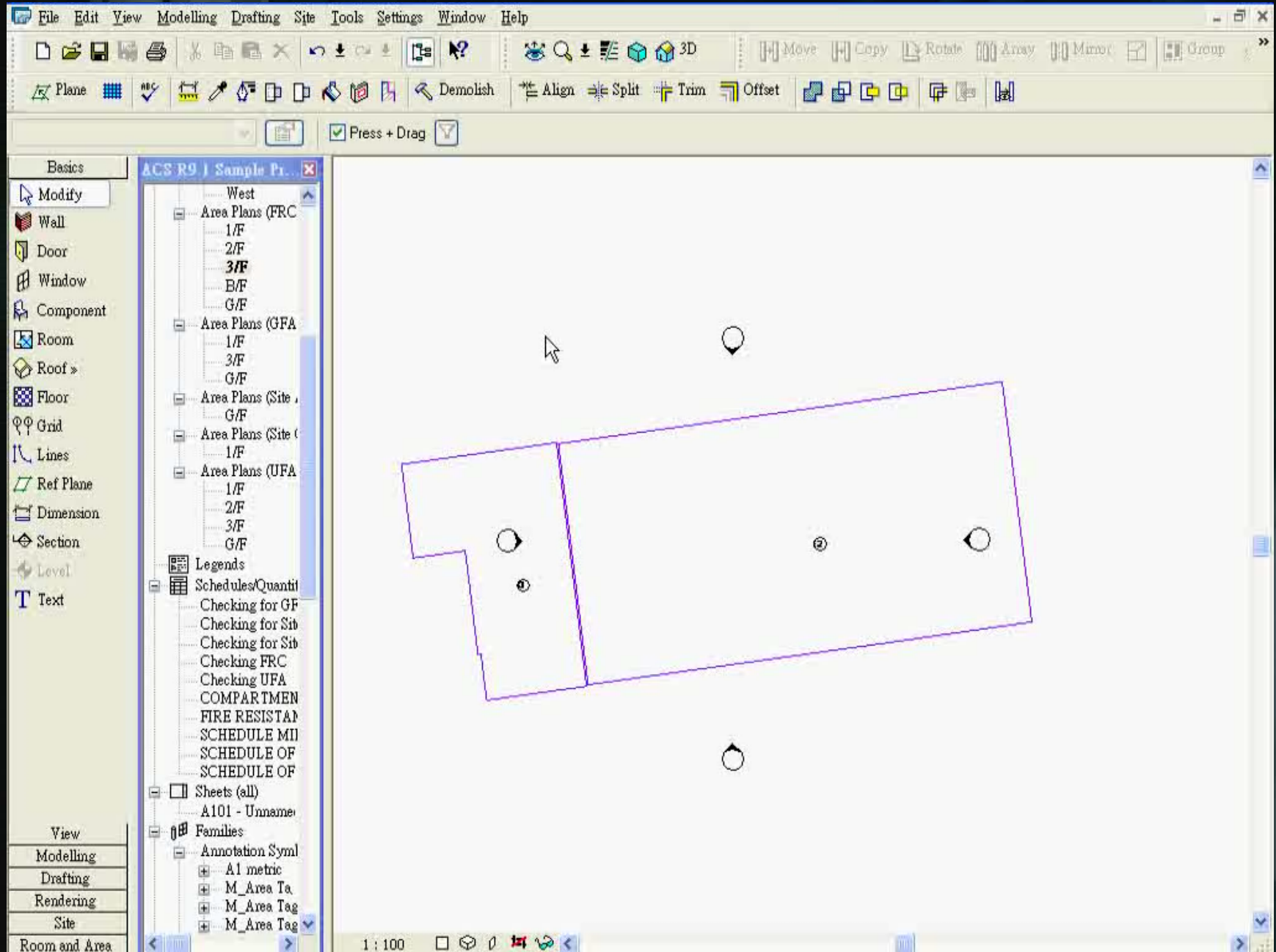
MEANS OF ESCAPE & SANITARY FITMENT PROVISION



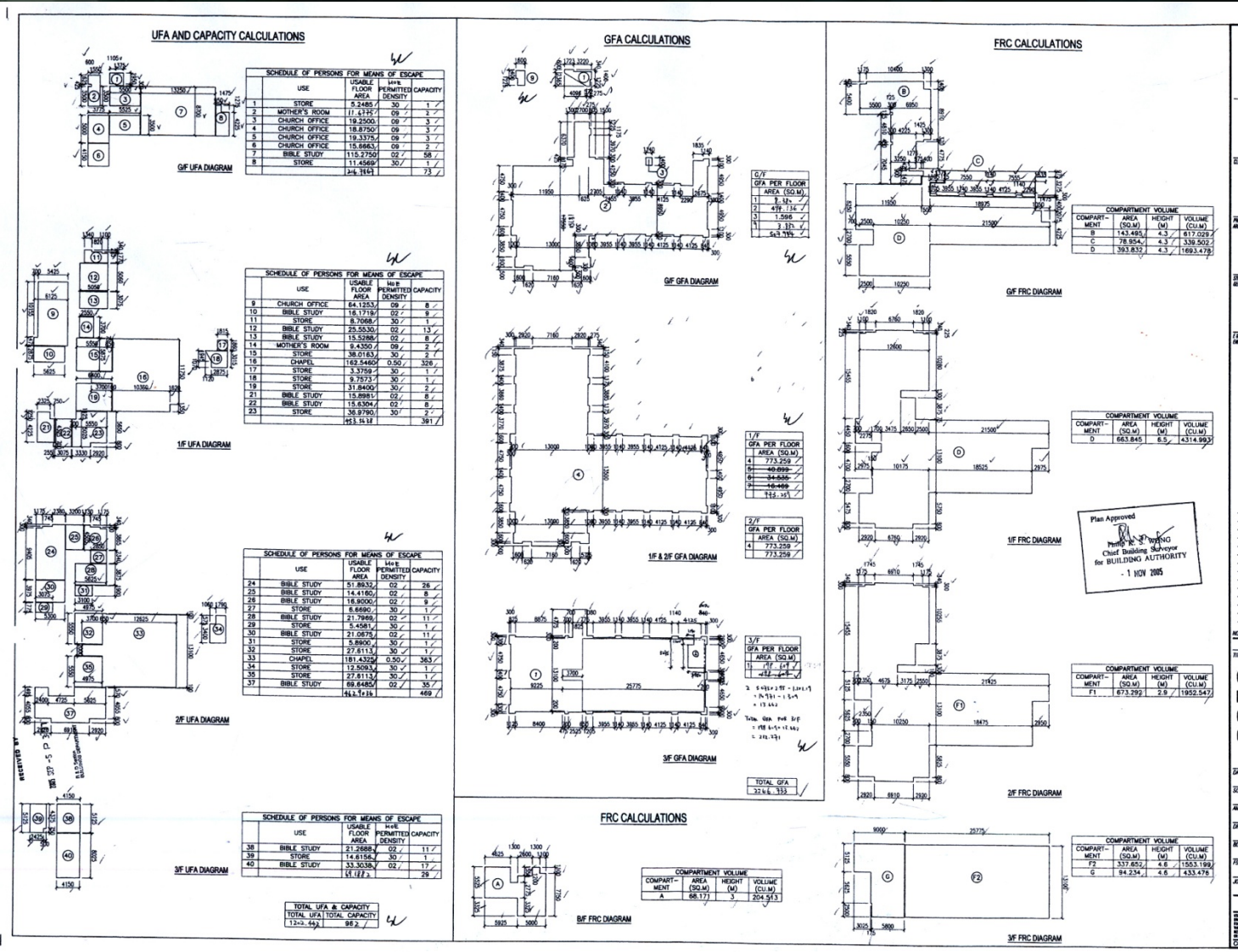
FIRE RESISTING CONSTRUCTION



FIRE RESISTING CONSTRUCTION



EXAMPLE OF GOVERNMENT SUBMISSION ADOPTING BIM

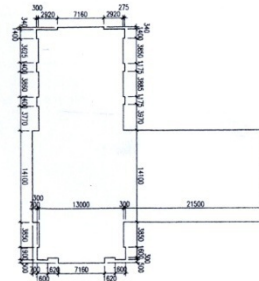


EXAMPLE OF GOVERNMENT SUBMISSION ADOPTING BIM

SITE COVERAGE & PLOT RATIO CALCULATION

1. UNDER BUILDING REGULATION

- A. CLASS OF SITE = A
- B. AREA OF SITE (FROM LEASE) = 1990.8 s.m.
- PROPOSED USE OF SITE = NON-DOMESTIC
- MEAN STREET LEVEL = 12.000
- BUILDING TOP LEVEL = 33.000 s.m.
- PROPOSED HEIGHT OF BUILDING = 24.00 m
- NON-DOMESTIC PERMITTED PERCENTAGE SITE COVERAGE = 95 %
- NON-DOMESTIC PERMITTED PLOT RATIO = 6.7
- C. SITE COVERAGE = 788.919 s.m.
- THEREFORE SITE COVERAGE = 39.63 % < 95 %
- D. PLOT RATIO = 24.00 / 27.71 s.m.
- PROPOSED NON-DOMESTIC GROSS FLOOR AREA = 1.01 < 6.7 (O.K.)
- PROPOSED NON-DOMESTIC PLOT RATIO = 2336.587 s.m. / 1990.8 s.m.



SITE COVERAGE DIAGRAM

2. UNDER LEASE CONDITION

- A. PERMITTED USE OF SITE = CHURCH TOGETHER WITH ANCILLARY CHURCH FACILITIES
- PROPOSED USE OF SITE = AS ABOVE
- B. GROSS FLOOR AREA : MAXIMUM PERMISSIBLE GFA UNDER LEASE = 2,520 s.m.
- TOTAL GFA OF PROPOSED DEVELOPMENT = 2,746.71 s.m.
- C. BUILDING HEIGHT : MEAN FORMATION LEVEL OF SITE : 12.000
- BUILDING TOP LEVEL : 33.000 s.m.
- BUILDING HEIGHT : 24.00 m
- D. SITE COVERAGE : MAXIMUM PERMISSIBLE SITE COVERAGE : 40%
- PROPOSED SITE COVERAGE : 39.63% < 40% (O.K.)
- E. PARKING SPACE : PARKING REQUIREMENT UNDER LEASE = 14 CARPARKING SPACES AND 1 U/L BAY
- PROPOSED PARKING PROVISION = SAME AS ABOVE

STAIR	WIDTH OF STAIR PROVIDED (NOS. OF STOREY SERVED ABOVE GROUND)	DISCHARGE VALUE	ACTUAL NO. OF PERSON ABOVE
ST-A	1300	3	556
ST-B	1050	3	484
ST-C	1175	3	484
			1524

SCHEDULE MINIMUM NUMBER & WIDTH OF EXIT DOOR & EXIT ROUTE FROM EACH FLOOR										
FLOOR	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			
			REQUIRED		PROVIDED		REQUIRED		PROVIDED	
			EXIT DOORS	EXIT ROUTES	EXIT DOORS	EXIT ROUTES	EXIT DOORS	EXIT ROUTES	EXIT DOOR	EXIT ROUTE
			Include	Normal						
1/F	391	2	3	3000	3000	3550	3575	1050	1050	1050
2/F	489	2	3	3000	3000	3550	3575	1050	1050	1050
3/F	29	1	3	1700	1700	2350	750	1050	850	850

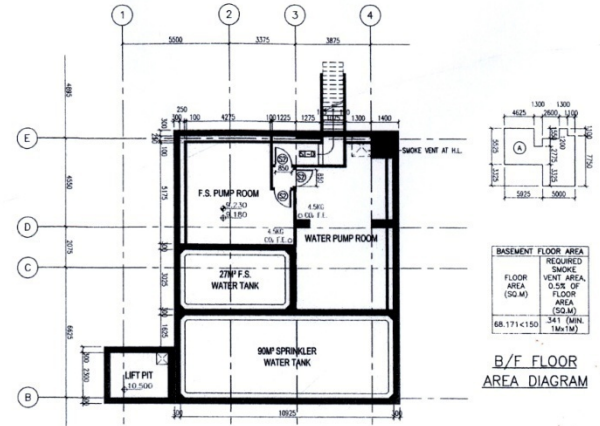
LOCATION	USE	CAPACITY	W.C.			BATH			URINAL		
			M.	F.	P.	M.	F.	P.	M.	F.	P.
G/F-2/F	OFFICE	18	1	1	1	1	1	1	1	1	1
G/F-3/F	PLACE OF PUBLIC	843	47	47	1	5	34	30	7	10	5

FIRE RESISTANCE REQUIREMENT FOR ELEMENTS OF CONSTRUCTION													
COMPARTMENTS	CLASS	COMPARTMENT VOLUME	FRP REQ'D	R.C. WALL		R.C. SLAB		R.C. COLUMN		R.C. BEAM		R.C. STAIR	
				THK	COVER	THK	COVER	THK	COVER	THK	COVER	THK	COVER
A	(BASEMENT)	204,513	4	180	25	170	45*	35	450	280	60*	170	55*
B	8 (CARPARKING)	617,629	1	75	15	100	20	25	200	200	30	65	20
C	8 (CARPARKING)	339,502	1	75	15	100	20	25	200	200	30	65	20
D	7 (PLACE OF ASSEMBLY)	1063,478	1	75	15	100	20	25	200	200	30	65	20
E	7 (PLACE OF ASSEMBLY)	4314,693	1	75	15	100	20	25	200	200	30	65	20
F (1+2)	7 (PLACE OF ASSEMBLY)	3505,746	1	75	15	100	20	25	200	200	30	65	20
G	7 (PLACE OF ASSEMBLY)	4314,478	1	75	15	100	20	25	200	200	30	65	20
	WALL/SLAB BETWEEN DIFFERENT USES/CLASS	-	2	100	25	125	25	35	300	200	40	125	35

REFUSE STORAGE CALCULATION

UFS = 1241.442 s.m. < 3,960 s.m.

THEREFORE, STORAGE CHAMBER IS NOT REQUIRED ACCORDING TO BERS(COR), 53(3)



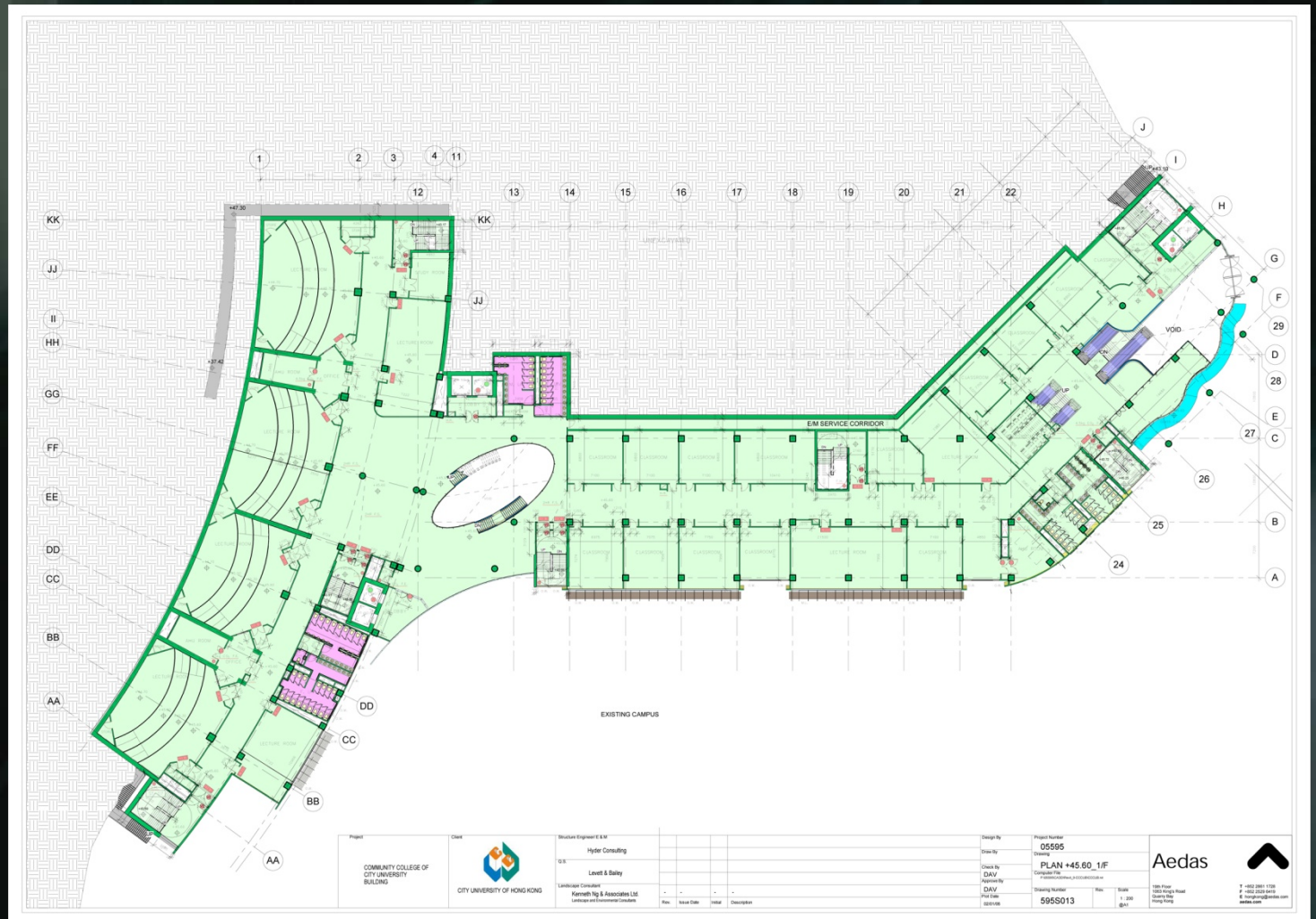
B/F PLAN, 1:100

SCHEDULE OF PERSONS FOR MEANS OF ESCAPE										
G/F	USE	CAPACITY OF EXIT DOOR	MIN. TOTAL WIDTH OF				MIN. WIDTH OF EACH			
			REQUIRE		PROVIDED		REQUIRE		PROVIDED	
			EXIT DOORS	EXIT ROUTE	EXIT DOORS	EXIT ROUTE	EXIT DOOR	EXIT ROUTE	EXIT DOOR	EXIT ROUTE
1	STORE	1	-	-	750	1050	-	-	750	1050
2	METHEOSES ROOM	2	1	-	750	1050	-	-	750	1050
3	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050
4	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
5	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
6	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
7	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
8	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
9	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
10	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
11	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
12	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
13	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
14	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
15	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
16	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
17	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
18	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
19	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
20	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
21	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
22	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
23	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
24	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
25	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
26	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
27	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
28	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
29	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
30	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
31	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
32	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
33	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
34	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
35	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
36	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
37	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
38	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
39	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
40	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
41	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
42	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
43	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
44	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
45	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
46	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
47	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
48	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
49	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050
50	CHURCH OFFICE	2	1	-	750	1050	-	-	750	1050

1/F		JOURNAL OF PARSONS FOR MEN AND WOMEN									
1/F	USE	CAPACITY OF EXIT	MIN. TOTAL WIDTH OF				MIN. WIDTH OF EACH				EX. REQ.
			REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	
1	CHURCH OFFICE	0	-	-	750	1050	-	-	750	1050	
2	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
3	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
4	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
5	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
6	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
7	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
8	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
9	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
10	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
11	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
12	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
13	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
14	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
15	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
16	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
17	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
18	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
19	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
20	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
21	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
22	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
23	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
24	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
25	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
26	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
27	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
28	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
29	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
30	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
31	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
32	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
33	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
34	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
35	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
36	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
37	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
38	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
39	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
40	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
41	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
42	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
43	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
44	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
45	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
46	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
47	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
48	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
49	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	
50	CHURCH OFFICE	1	-	-	750	1050	-	-	750	1050	

SCHEDULE OF PERSONS FOR MEANS OF ESCAPE										
2/F	USE	CAPACITY	NO. OF EXITS	REQUIREMENTS		TOTAL WIDTH OF		MIN. WIDTH OF EACH		PROVIDED
				EXIT	EXIT	EXIT	EXIT	EXIT	EXIT	
14	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
15	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
16	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
17	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
18	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
19	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
20	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
21	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
22	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
23	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
24	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
25	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
26	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
27	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
28	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
29	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
30	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
31	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
32	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
33	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
34	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
35	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
36	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
37	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
38	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
39	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
40	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
41	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
42	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
43	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
44	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
45	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
46	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
47	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
48	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
49	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
50	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
51	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
52	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
53	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
54	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
55	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
56	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
57	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
58	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
59	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
60	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
61	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
62	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
63	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
64	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
65	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
66	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
67	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
68	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
69	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
70	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
71	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
72	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
73	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
74	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
75	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
76	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
77	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
78	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
79	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
80	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
81	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
82	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
83	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
84	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
85	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
86	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
87	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
88	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
89	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
90	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
91	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
92	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
93	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
94	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
95	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
96	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
97	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
98	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
99	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750
100	CHURCH OFFICE	1	1	-	-	750	1050	750	1050	750

EXAMPLE OF GOVERNMENT SUBMISSION ADOPTING BIM

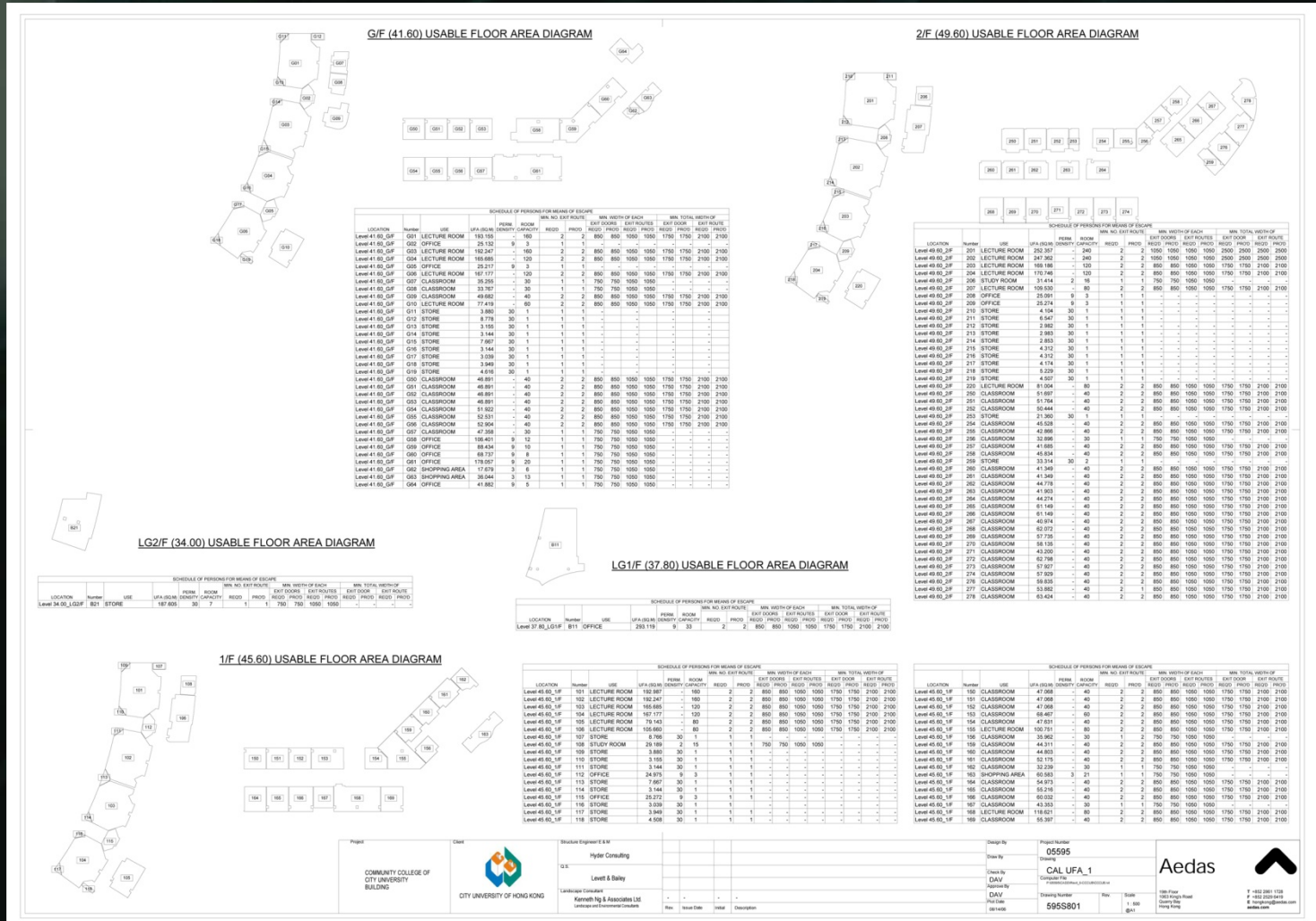


The image displays a set of architectural drawings for the Community College of City University Building. The drawings include:

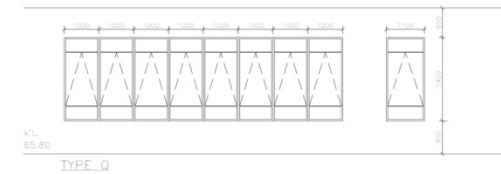
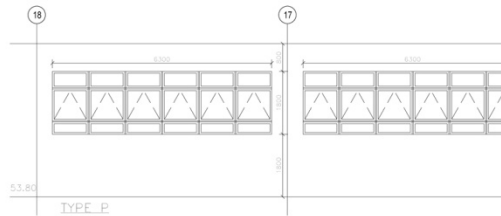
- Section A-A (1:200):** A longitudinal section showing the building's internal structure, including lecture rooms, libraries, offices, a canteen, and a restaurant. It features a grid system from 12 to 21.
- Section B-B (1:200):** A longitudinal section showing the building's internal structure, including lecture rooms, libraries, offices, and a canteen. It features a grid system from 12 to 21.
- Section C-C (1:200):** A longitudinal section showing the building's internal structure, including lecture rooms, libraries, and offices.
- Section D-D (1:200):** A longitudinal section showing the building's internal structure, including lecture rooms, libraries, and offices.
- Elevation 2 (1:200):** A vertical elevation showing the building's facade, including a large curved section and a series of windows.
- Curtain Wall section (1:50):** A detailed section of the curtain wall, showing the glazing and structural elements.

The drawings are color-coded and include various annotations, such as room names, dimensions, and grid lines. The building is shown in a yellow color, with internal walls and furniture in various shades of blue, green, and brown. The drawings are presented on a white background with a grid system.

EXAMPLE OF GOVERNMENT SUBMISSION ADOPTING BM



EXAMPLE OF GOVERNMENT SUBMISSION ADOPTING BIM



Discharge Value Calculation				
Staircase No.	No. of storey served	Width of Staircase (mm)	Discharge Value (Person)	Factor
ST-01	6	2400	1480	
ST-02	6	1800	1060	
ST-03	4	1800	739	0.8
ST-04	8	1800	1196	
ST-05	8	1800	1196	
ST-06	8	1800	1196	
ST-07	8	2400	1688	
ST-08	2	1800	788	
Permitted discharge value			9175	
Actual capacity of CCUB			8788	
Therefore, Permitted Discharge Value (Person) > Actual Capacity (Person)				

SCHEDULE OF SANITARY FITMENTS PROVISIONS														
LOCATION		CAPACITY		W.C.				BATH				URINAL		
				REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D	REQ'D	PRO'D			
3/F	RESTAURANT	1485	733	733	6	6	10	12	6	8	9	10	10	10
3/F	WORKPLACE	156	83	83	3	4	4	5	3	3	3	2	2	2
6/F	OFFICE	225	150	150	5	8	4	10	5	8	3	4	3	6
6/F	PLAZA	350	175	175	5	7	4	4	5	7	3	4	4	4
6/F	PUBLIC	175	88	88	1	2	2	4	1	2	2	3	3	3
6/F	WORKPLACE	41	21	21	1	2	2	3	1	3	1	2	1	2
6/F	SHOP/STREET MENT STORE	40	20	20	1	1	2	2	1	1	1	1	1	1
6/F	OFFICE	300	300	300	8	8	7	8	8	10	5	5	5	6
6/F	SCHOOL	8000	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

KITCHEN		GLAZED WINDOW AREA		OPENABLE WINDOW AREA	
TYPE/LOCATION	UFA (sq.m)	TOTAL WIDTH	HEIGHT	TOTAL LENGTH	HEIGHT
P LEVEL +53.80 Gridline 14-18/C-D	472.540	12.600	2.850	12.600	2.030
Q LEVEL +65.80 Gridline 2-11/HH-JJ	182.511	12.600	1.800	12.600	0.980
sub-total		49.802	>	47.254	>
sub-total		18.964	>	18.251	>

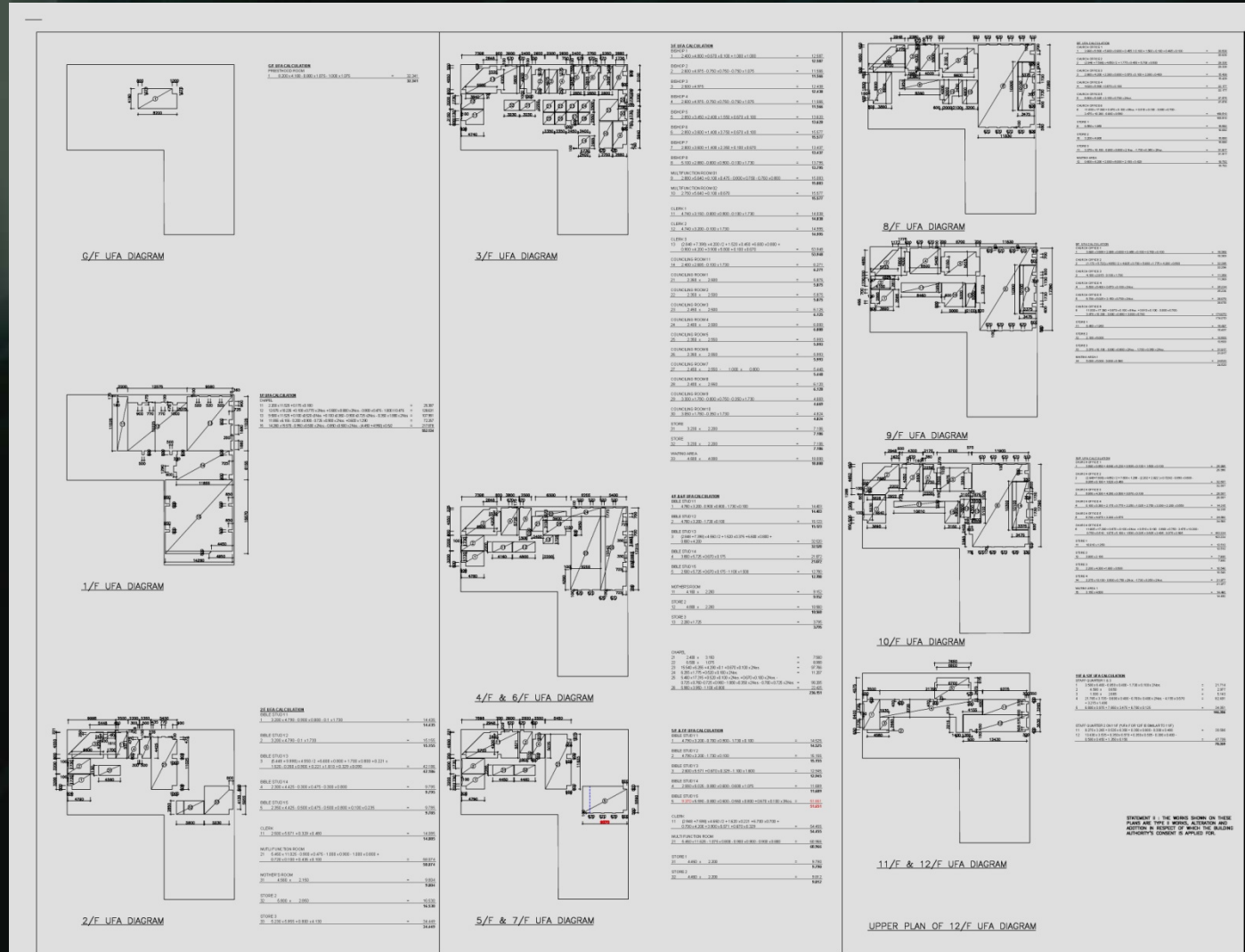
OFFICE		GLAZED WINDOW AREA		OPENABLE WINDOW AREA	
LOCATION	UFA (sq.m)	TOTAL LENGTH (m)	HEIGHT (m)	PROVIDED (85% EFFECTIVE) (sq.m)	REQUIRED (1/10 of UFA) (sq.m)
LEVEL +37.80 Gridline 12-13/A-C	293.119	13.380	3.800	43.217	> 29.319
LEVEL +41.60 Gridline 18-21/A-B	178.057	21.850	2.330	43.472	> 17.8057
LEVEL +62.00 Gridline 13-29/F-J	2615.380	43.900	2.440	91.048	>
		10.500	2.700	24.098	>
		48.300	2.250	88.549	>
		43.000	3.800	138.890	>
sub-total		2022.023	2.440	342.585	>
LEVEL +65.80 Gridline 13-18/F-H, 19-26/F-J	43.900	2.440	31.048		>
	10.500	2.700	24.098		>
	30.450	2.250	88.549		>
	43.000	3.800	138.890		>
sub-total		312.272	>	202.202	>

OFFICE (CURTAIN WALL)		OPENABLE WINDOW AREA	
LOCATION	UFA (sq.m)	TOTAL LENGTH (m)	HEIGHT (m)
LEVEL +37.80 Gridline 12-13/A-C	293.119	1.115	0.900
LEVEL +62.00 Gridline 14-29/E-J	2615.38	1.240	1.800
LEVEL +65.80 Gridline 14-29/E-J	2022.023	1.240	1.800

SCHEDULE OF A/C PLANT ROOM AREA				
LOCATION	LOCATION OF THE PLANT ROOM	TOTAL G.P.A. OF FLOOR WHERE THE PLANT ROOM IS SITUATED	TOTAL AREA	PERCENTAGE OF AREA OF PLANT ROOM AT EACH FLOOR
3/F (+14.80)	GRID 11H-HH		24.309	
	GRID 22C-CB		24.478	
	GRID 22A-A	4511.267	38.316	87.164
	GRID 22C-CB		24.309	1.931
1F (+45.60)	GRID 22C-CB		24.478	
	GRID 22A-A	4532.757	35.873	84.721
	GRID 22C-D		16.048	1.873
	GRID 22C-D		24.526	
2F (+49.80)	GRID 11H-HH		24.309	
	GRID 22A-A	5235.757	38.851	112.816
	GRID 23F-E		12.554	
	GRID 12C-D		25.176	
3/F (+53.80)	GRID 22A-A		26.857	
	GRID 22C-D	5387.226	44.131	111.718
	GRID 23B-E		3.303	2.074
	GRID 22C-BB		25.384	
4/F (+58.20)	GRID 22A-A		25.176	
	GRID 22A-BB	5618.292	30.089	100.492
	GRID 22C-BB		21.294	
	GRID 22A-BB		25.368	
5/F (+62.80)	GRID 22A-BB		25.725	
	GRID 22A-A	5548.517	102.232	1.845
	GRID 22C-BB		25.443	
	GRID 22A-BB		17.623	
6/F (+65.80)	GRID 22A-B		20.378	
	GRID 22A-BB		25.488	
	GRID 22A-BB	5416.730	33.973	97.063
	GRID 22A-BB		25.379	

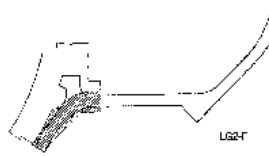
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COMMON WAY: PROJECT EXAMPLE

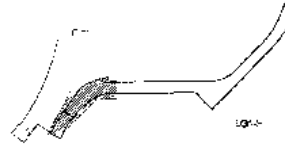


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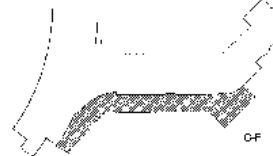
STATUTORY SUBMISSION



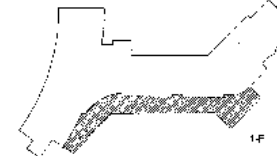
① EVA of Level 34.00_LG2/F
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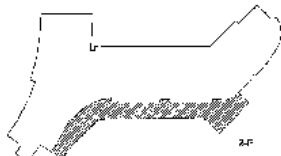
② EVA of Level 37.80_LG1/F
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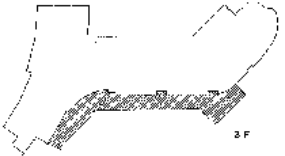
③ EVA of Level 41.60_GF
1:1000



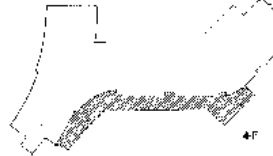
④ EVA of Level 45.80_1/F
1:1000



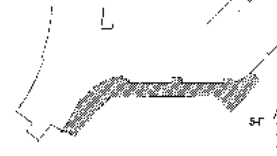
⑤ EVA of Level 49.80_2/F
1:1000



⑥ EVA of Level 53.80_3/F
1:1000

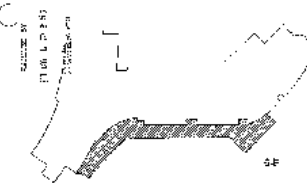


⑦ EVA of Level 58.20_4/F
1:1000



⑧ EVA of Level 62.00_5/F
1:1000

B D SUBMISSION



⑨ EVA of Level 65.80_6/F
1:1000

*Hatch area represents the total length of the building facade served by the EVA

CALCULATION ON TOTAL LENGTH OF BUILDING FACADE TO BE SERVED BY EVA AND PERCENTAGE OF SUCH LENGTH OVER THE TOTAL LENGTH OF ALL THE PERIMETER WALLS OF THE BUILDING

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL FACADE LENGTH (m)	LEVEL FACADE LENGTH PERCENTAGE (%)
LG2/F	34.00	LG2/F	1000	100	100	100
LG1/F	37.80	LG1/F	1000	100	100	100
GF	41.60	GF	1000	100	100	100
1/F	45.80	1/F	1000	100	100	100
2/F	49.80	2/F	1000	100	100	100
3/F	53.80	3/F	1000	100	100	100
4/F	58.20	4/F	1000	100	100	100
5/F	62.00	5/F	1000	100	100	100
6/F	65.80	6/F	1000	100	100	100

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL FACADE LENGTH (m)	LEVEL FACADE LENGTH PERCENTAGE (%)
LG2/F	34.00	LG2/F	1000	100	100	100
LG1/F	37.80	LG1/F	1000	100	100	100
GF	41.60	GF	1000	100	100	100
1/F	45.80	1/F	1000	100	100	100
2/F	49.80	2/F	1000	100	100	100
3/F	53.80	3/F	1000	100	100	100
4/F	58.20	4/F	1000	100	100	100
5/F	62.00	5/F	1000	100	100	100
6/F	65.80	6/F	1000	100	100	100

LEVEL	LEVEL NO.	LEVEL DESCRIPTION	LEVEL AREA (sqm)	LEVEL PERIMETER (m)	LEVEL FACADE LENGTH (m)	LEVEL FACADE LENGTH PERCENTAGE (%)
LG2/F	34.00	LG2/F	1000	100	100	100
LG1/F	37.80	LG1/F	1000	100	100	100
GF	41.60	GF	1000	100	100	100
1/F	45.80	1/F	1000	100	100	100
2/F	49.80	2/F	1000	100	100	100
3/F	53.80	3/F	1000	100	100	100
4/F	58.20	4/F	1000	100	100	100
5/F	62.00	5/F	1000	100	100	100
6/F	65.80	6/F	1000	100	100	100

The Applicant
CITYVIEW HOLDINGS
PLANNING & SURVEY
1/F, 10/F, 20/F

DESIGNED BY CITYVIEW HOLDINGS	APPROVED BY CITYVIEW HOLDINGS	DESIGNED BY CITYVIEW HOLDINGS	APPROVED BY CITYVIEW HOLDINGS	DESIGNED BY CITYVIEW HOLDINGS	APPROVED BY CITYVIEW HOLDINGS	DESIGNED BY CITYVIEW HOLDINGS	APPROVED BY CITYVIEW HOLDINGS
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Aedas

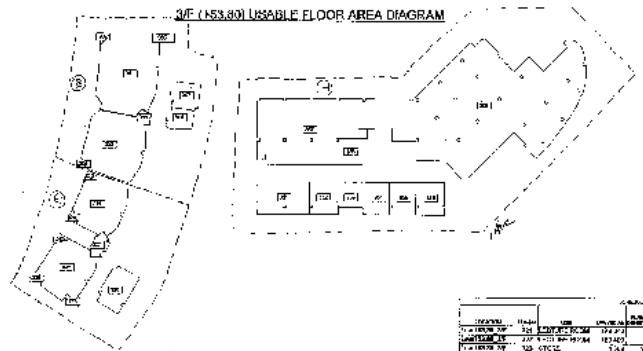
Aedas

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10000

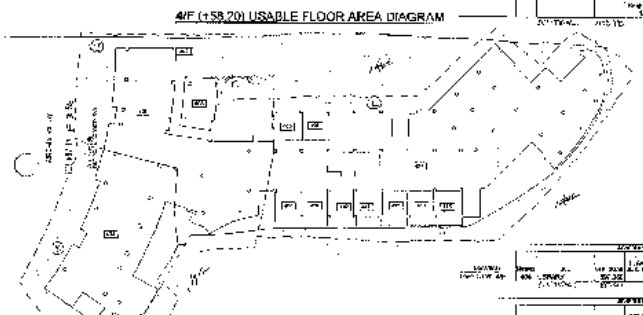
T. 02/2411.100
F. 02/2411.101
F. 02/2411.102
F. 02/2411.103

STATUTORY SUBMISSION

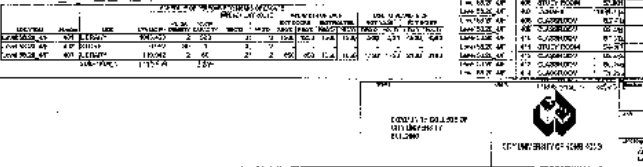
.. 3/F (153.80) USABLE FLOOR AREA DIAGRAM

[illegible]

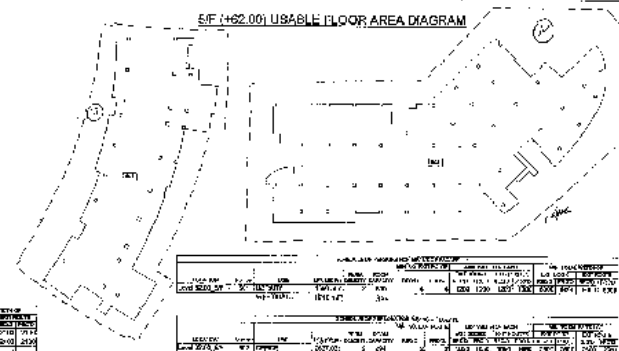
4/F (+58.20) USABLE FLOOR AREA DIAGRAM

[illegible]

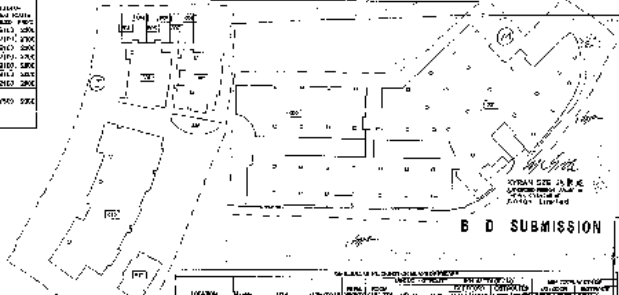
Project Name	Project Manager	Project Status	Project Budget
Project A	John Doe	Completed	\$1,200,000
Project B	Jane Smith	In Progress	\$800,000
Project C	Mike Johnson	On Hold	\$500,000
Project D	Sarah Brown	Completed	\$300,000
Project E	David Wilson	In Progress	\$200,000
Project F	Emily Davis	On Hold	\$100,000
Project G	Chris Miller	Completed	\$50,000
Project H	Alexander Lee	In Progress	\$25,000
Project I	Olivia White	On Hold	\$10,000
Project J	Benjamin Green	Completed	\$5,000



5/F (+62.00) USABLE FLOOR AREA DIAGRAM

[illegible]

6/F (+85.80) USABLE FLOOR AREA DIAGRAM



CLASSIFICATION OF STUDENT-TEACHER INTERACTIONS										TOTAL NUMBER OF STUDENT-TEACHER INTERACTIONS	
LEVEL	TYPE	NO.	PERCENT	LEVEL	TYPE	NO.	PERCENT	LEVEL	TYPE	NO.	PERCENT
1	1	1	1.0	1	1	1	1.0	1	1	1	1.0
2	2	2	2.0	2	2	2	2.0	2	2	2	2.0
3	3	3	3.0	3	3	3	3.0	3	3	3	3.0
4	4	4	4.0	4	4	4	4.0	4	4	4	4.0
5	5	5	5.0	5	5	5	5.0	5	5	5	5.0
6	6	6	6.0	6	6	6	6.0	6	6	6	6.0
7	7	7	7.0	7	7	7	7.0	7	7	7	7.0
8	8	8	8.0	8	8	8	8.0	8	8	8	8.0
9	9	9	9.0	9	9	9	9.0	9	9	9	9.0
10	10	10	10.0	10	10	10	10.0	10	10	10	10.0
11	11	11	11.0	11	11	11	11.0	11	11	11	11.0
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13	13	13	13.0	13	13	13	13.0	13	13	13	13.0
14	14	14	14.0	14	14	14	14.0	14	14	14	14.0
15	15	15	15.0	15	15	15	15.0	15	15	15	15.0
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17	17	17	17.0	17	17	17	17.0	17	17	17	17.0
18				18	18	18	18.0	18	18	18	18.0
19				19	19	19	19.0	19	19	19	19.0
20				20	20	20	20.0	20	20	20	20.0
21				21	21	21	21.0	21	21	21	21.0
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95				95	95	95	95.0	95	95	95	95.0
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98				98	98	98	98.0	98	98	98	98.0
99				99	99	99	99.0	99	99	99	99.0
100				100	100	100	100.0	100	100	100	100.0

B D SUBMISSION

LEWIS & CLARK
Book Talking Series
on BUILDING A U.S. SOCIETY

2013-01-01

[illegible]

Aedae



E. 400x, 1.00x, 1.00x
 F. 400x, 1.00x, 1.00x
 G. 400x, 1.00x, 1.00x

SUMMARY:

WHAT ARE THE DIFFERENCES?

Efficiency:

2 weeks vs 1 day

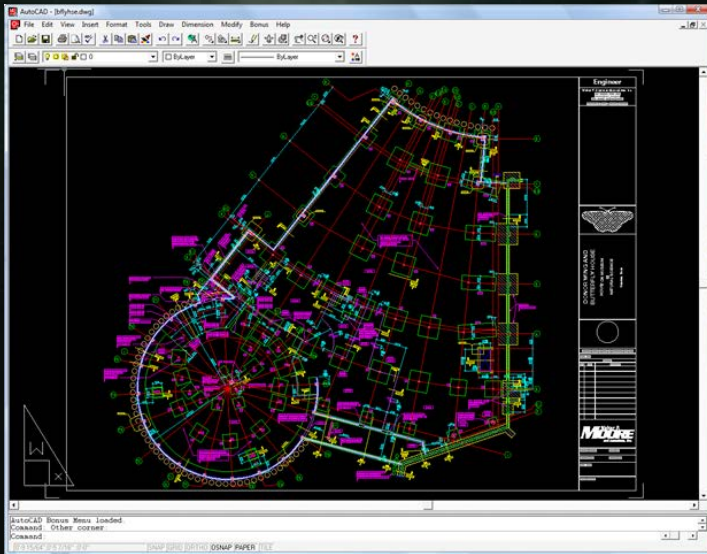
Consistency:

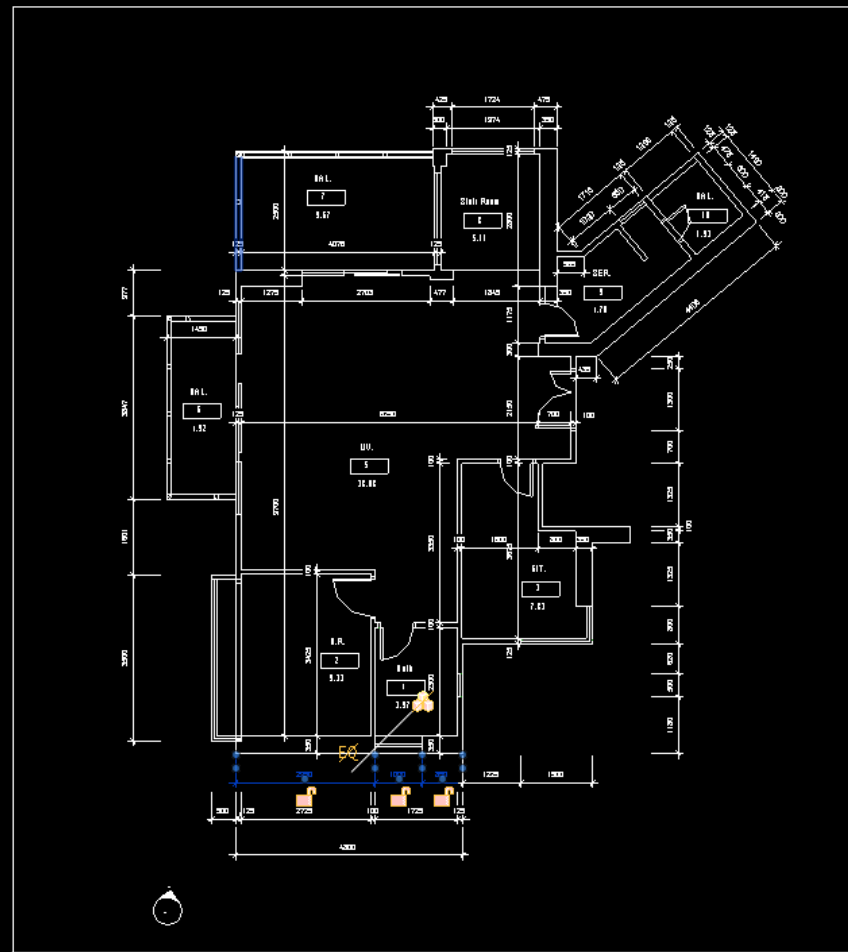
update automatically according to any change in layout, minimize error and mistakes

CHALLENGES?

1. Government Acceptance – Another way (Better way) than CAD AutoCAD / Microstation
PNAP 272 Appendix F only accepts AutoCAD / Microstation, not BIM
2. Paradigm Shift – alternative way (more efficient way) of submission. Automatic calculation & Checking
3. Co-operation of other disciplines – all consultants adopt similar system
4. Future – automatic submission/checking system e.g. Singapore ?

Design / Approved Information = As built Information?





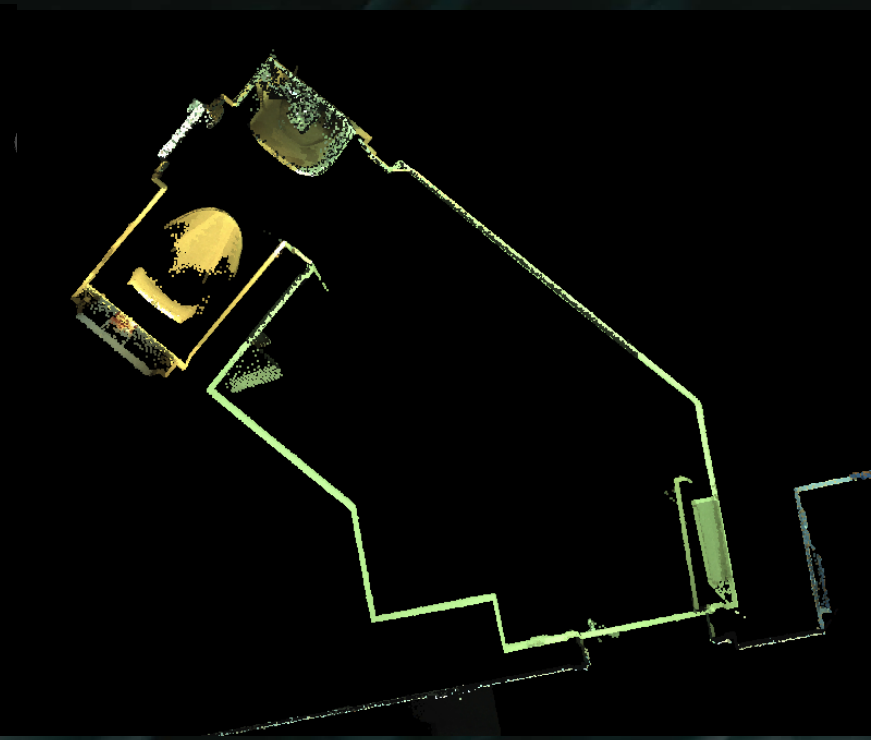
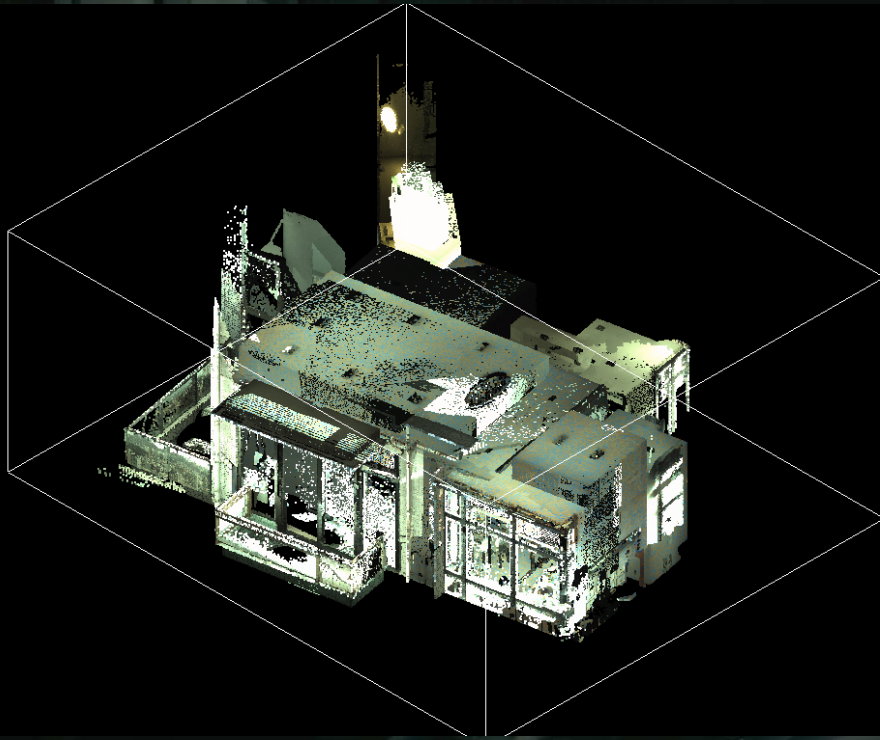
Design / Approved drawing information



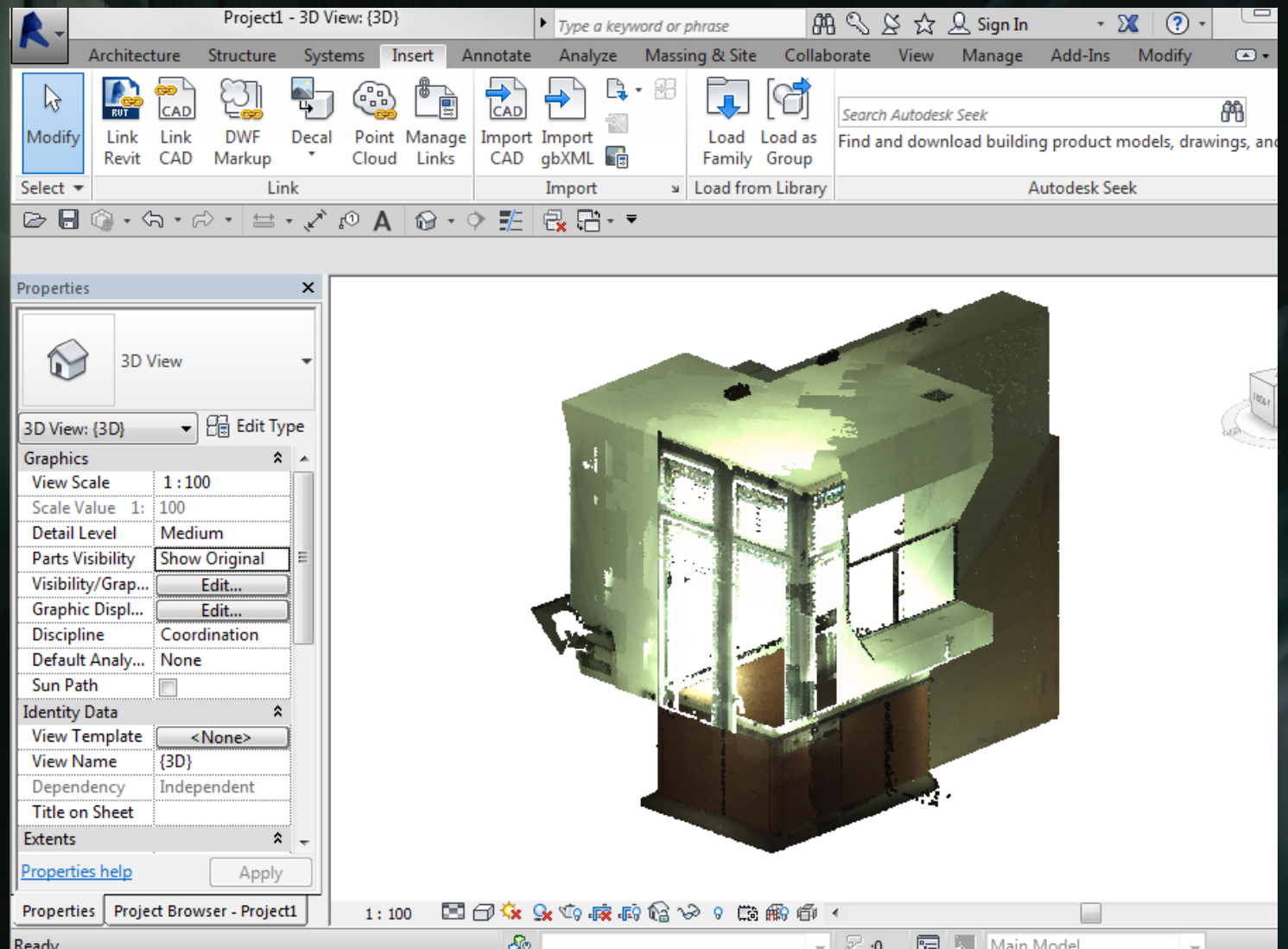
Laser Scanner - 50,000 pts /s; Range: 300m; Accuracy 6mm



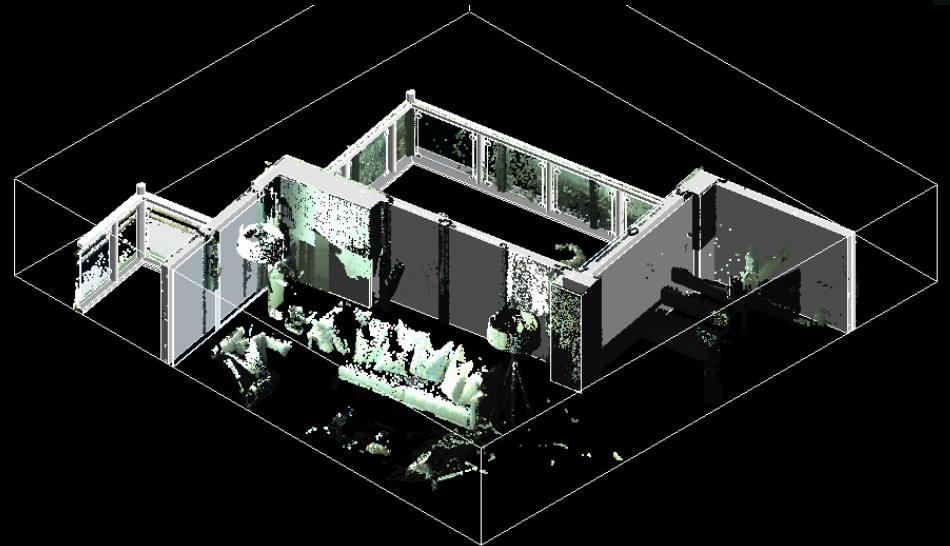
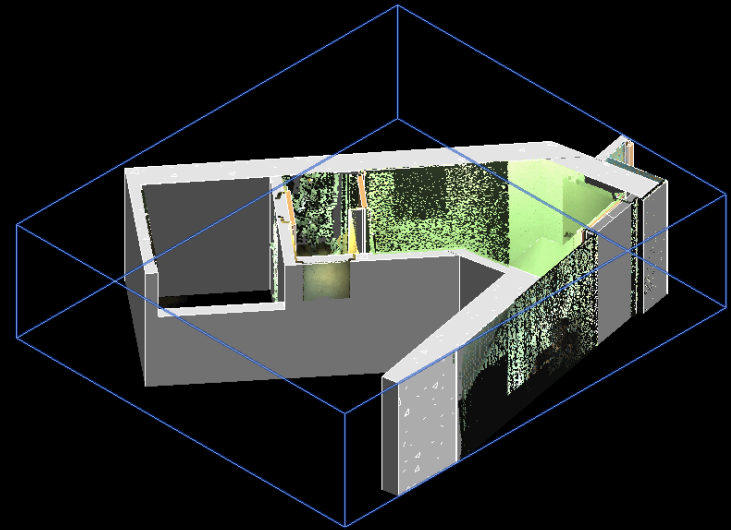
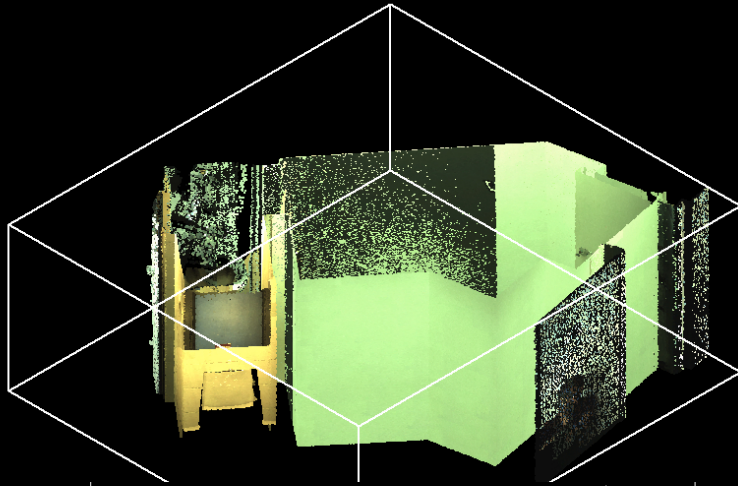
Point Cloud



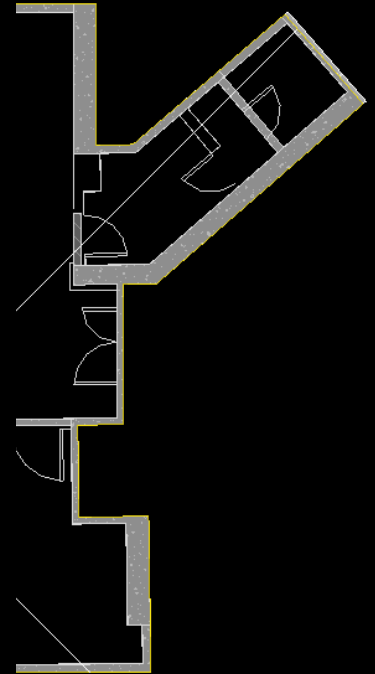
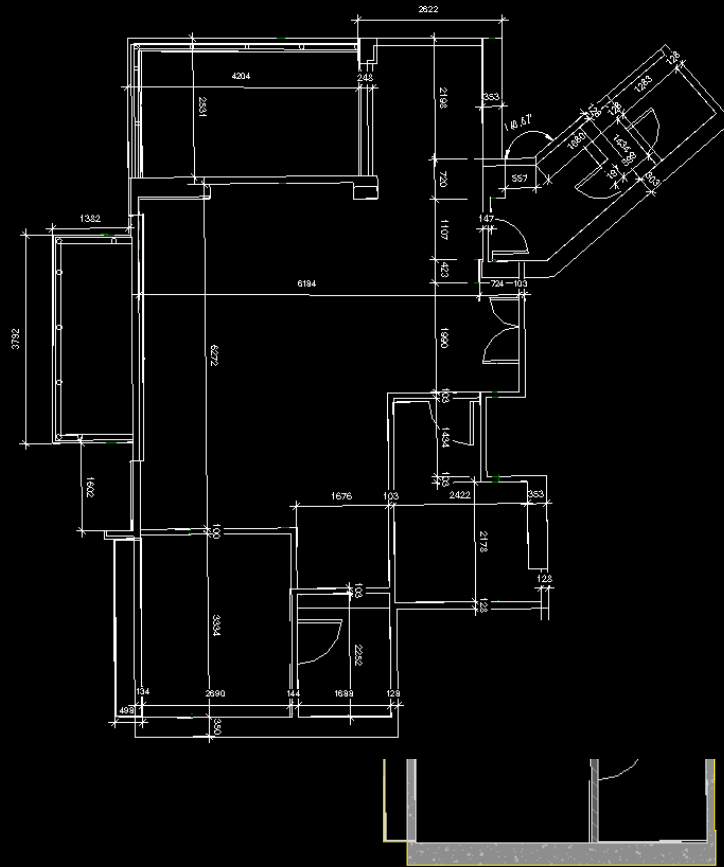
Point Cloud Data



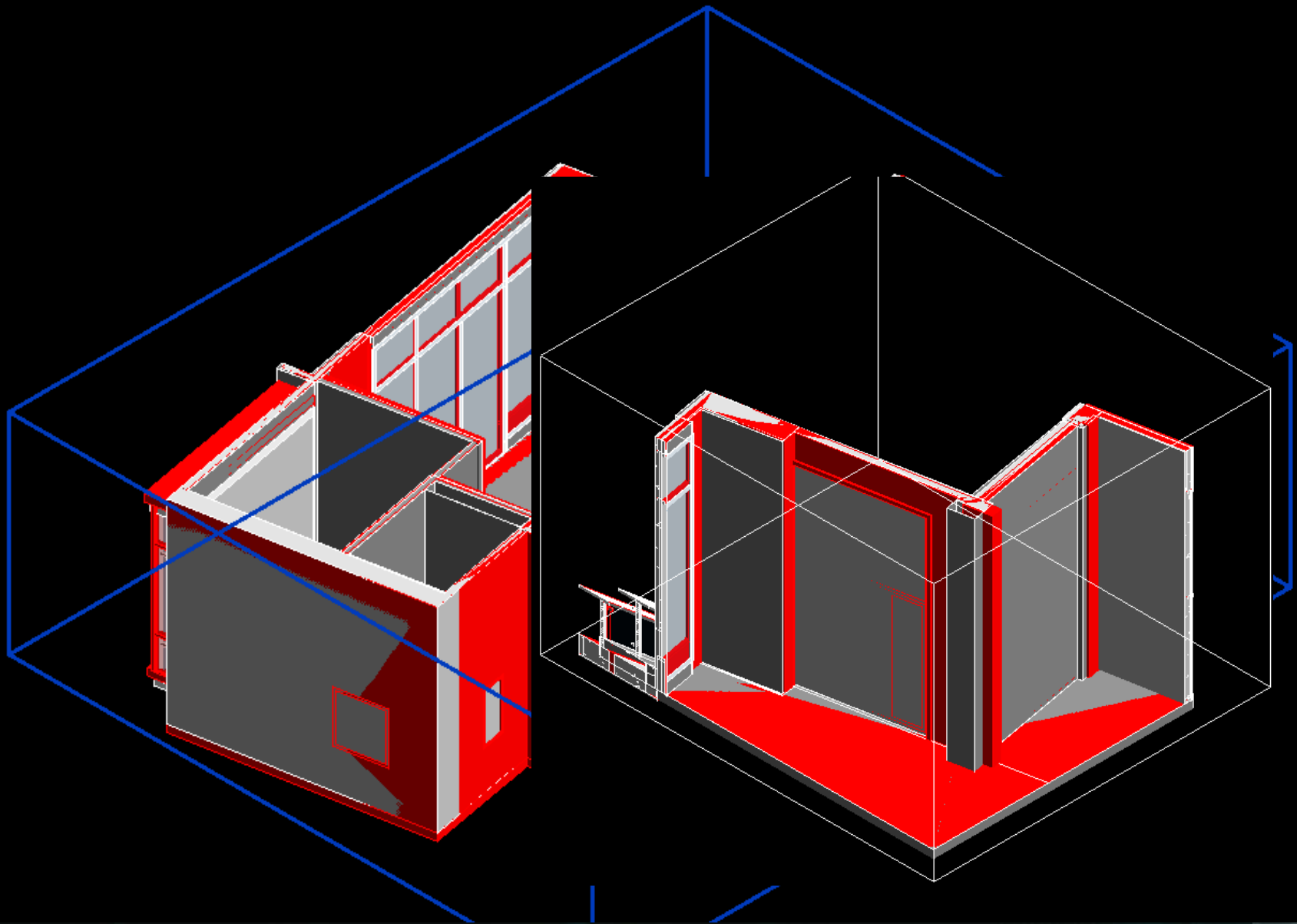
Point Cloud to BIM Model



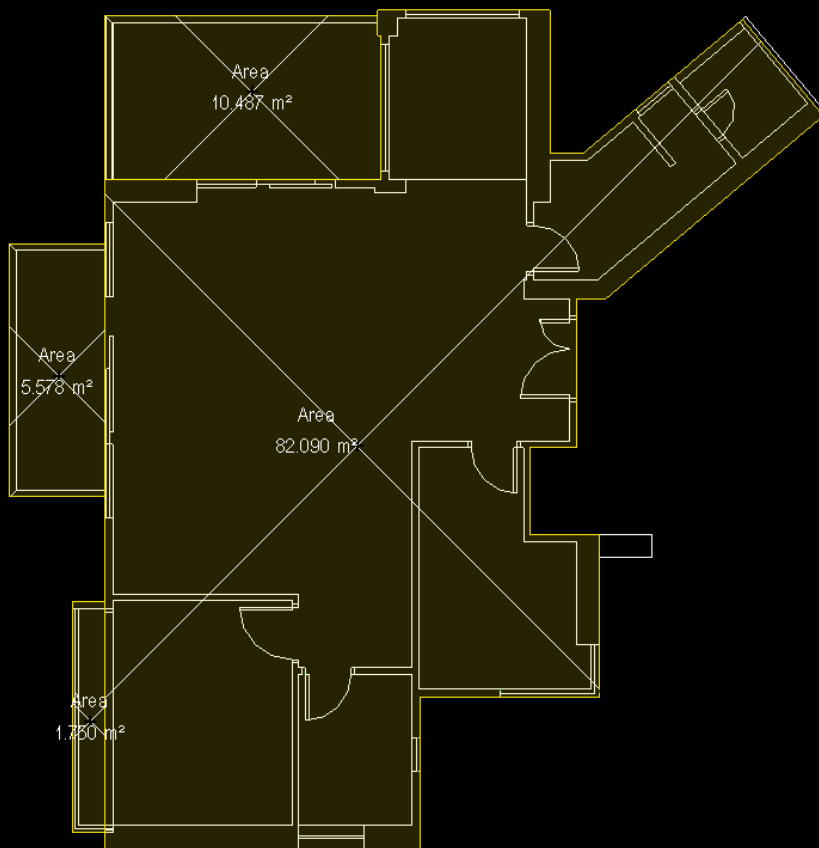
Point Cloud to BIM Model



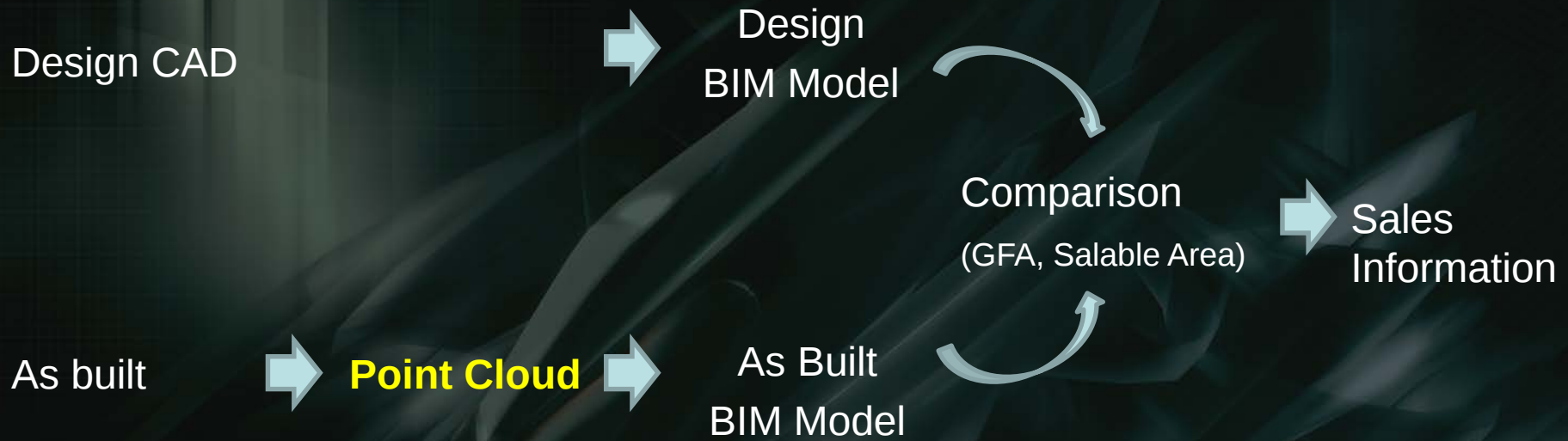
Design / Approved Model + As-built Model







Area Comparison As-built Model > As-built Plan



Difference is -0.9 % (As-Built is less than Approved Information)

Assuming an average unit in HK is 700 sq.ft, and say \$8000/ sq ft

Less 0.9% = $700 \times \$8000 \times 0.9 = \$50,400$

Assuming HK has 45,000 new units/ year

Then $\$50,400 \times 45,000 = \text{HK\$}2.3 \text{ Billion}$ (23億)

Design / Approved Information <> As built Information?

Unknown



Known

As owner – sales information vs actual as-built, legal liability?

As buyer – has ability to tell the actual area, any legal implications?
“rescission of agreement” 踢契 during down times?

As A.P., rethink about the certified area?

As Contractor, any process to arrive better precision?

As legislative body, is there a benchmark for tolerance? 0.4%, 0.5%, 0.6%....?

As Inspection Authority, is the current practice sufficient to safeguard deviation?

As professionals... New opportunities... Point Cloud scanning, BIM Process?

BIM Technology



Change in Practices



THANK YOU!