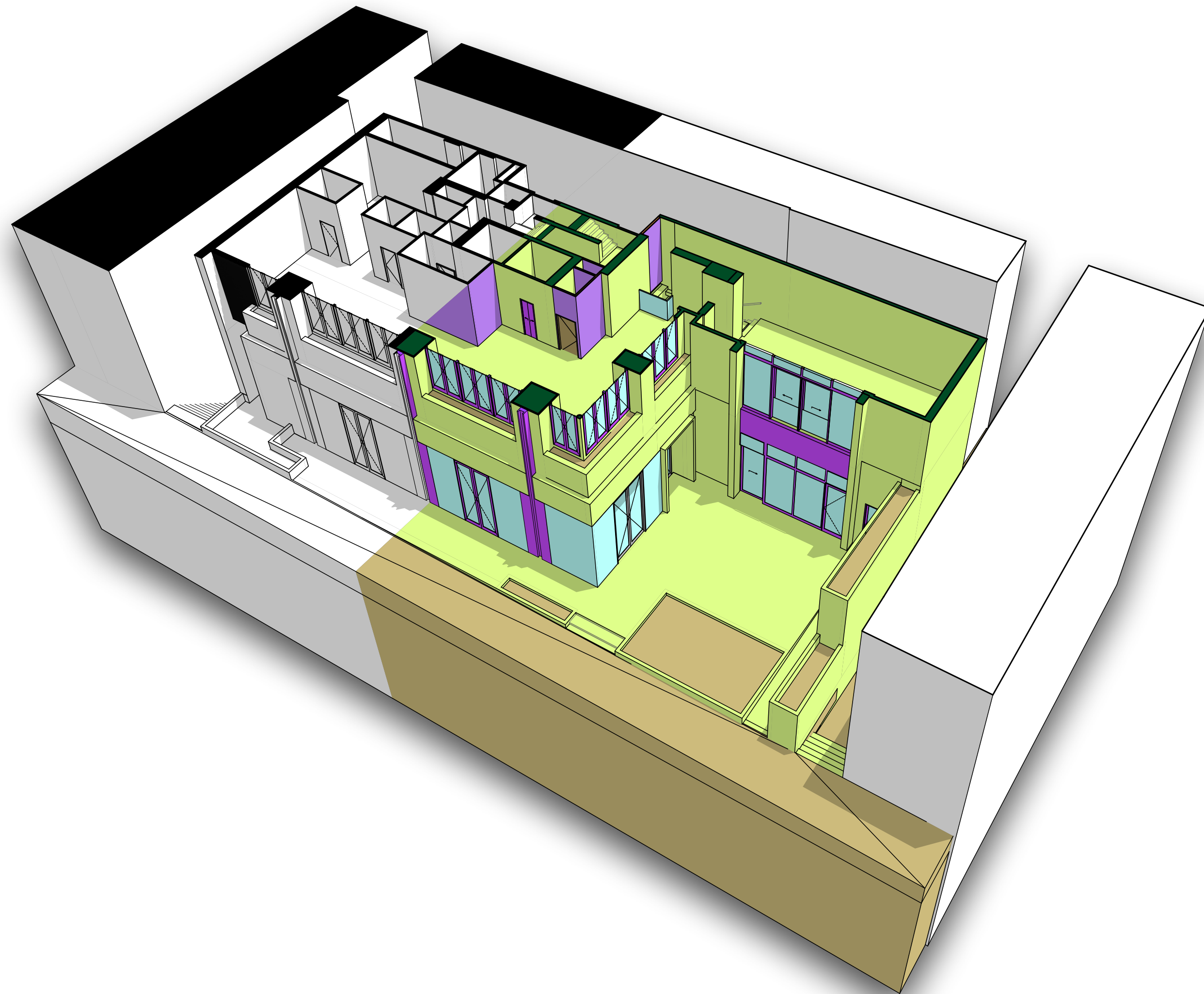


Let BIM do your GBP



presented by:

- Wing Y W Mang
- Dennis Yeung

Contributors:

- Yuk Tsoi
- Jorge Beneitez
- Eugenio Fontan
- Peter Koncz

supporting organisations:

ALLGAIN
architects engineers
& surveyors



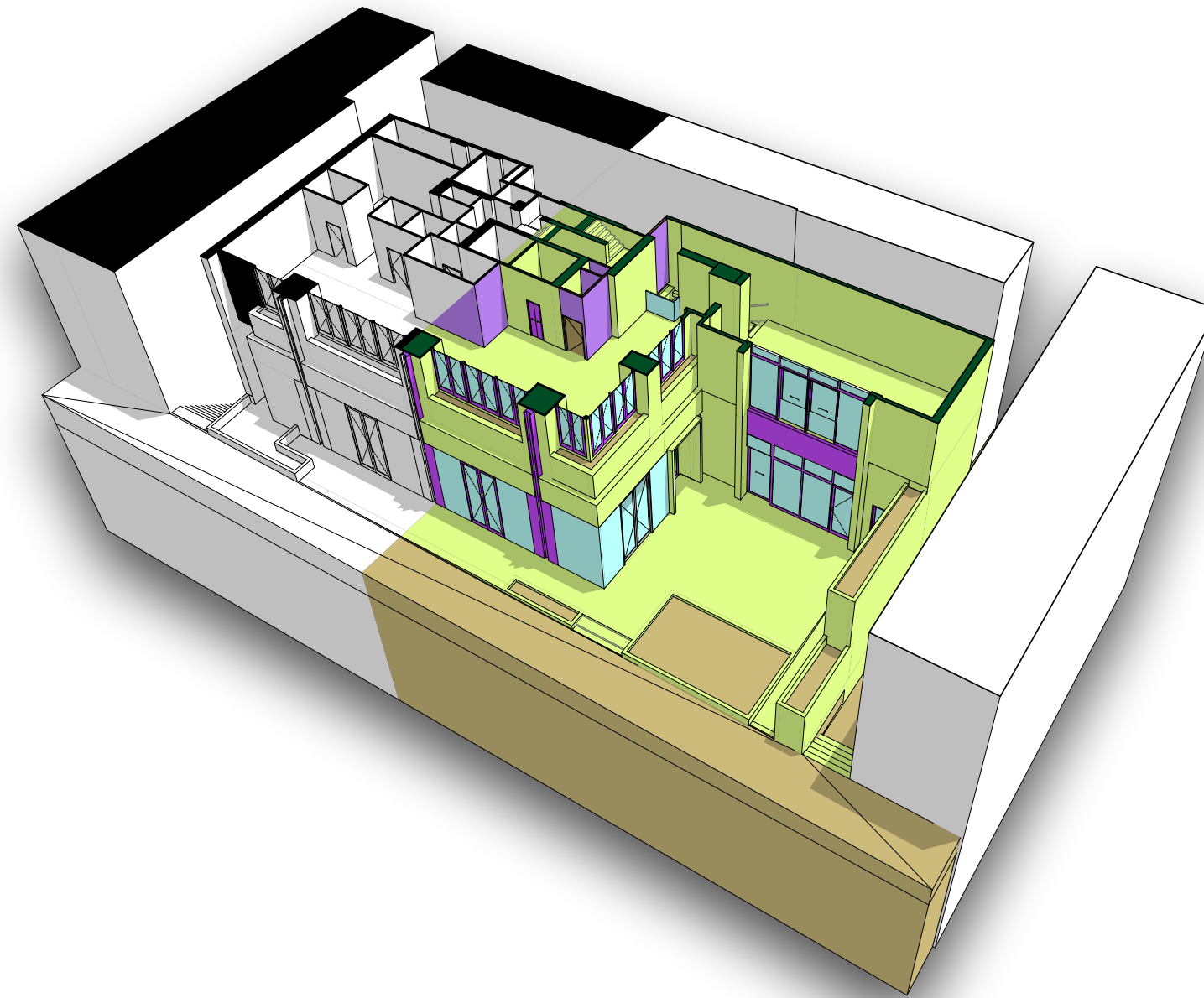
enzyme. GRAPHISOFT®

What is GBP?

General Building Plans
architectural layouts & calculations
submitted by Authorised Persons (AP)
to Buildings Department for statutory approval

**Working
drawings**

GBP



Schedules

Presentation

BIM

Single model

multiple presentation

Live demo

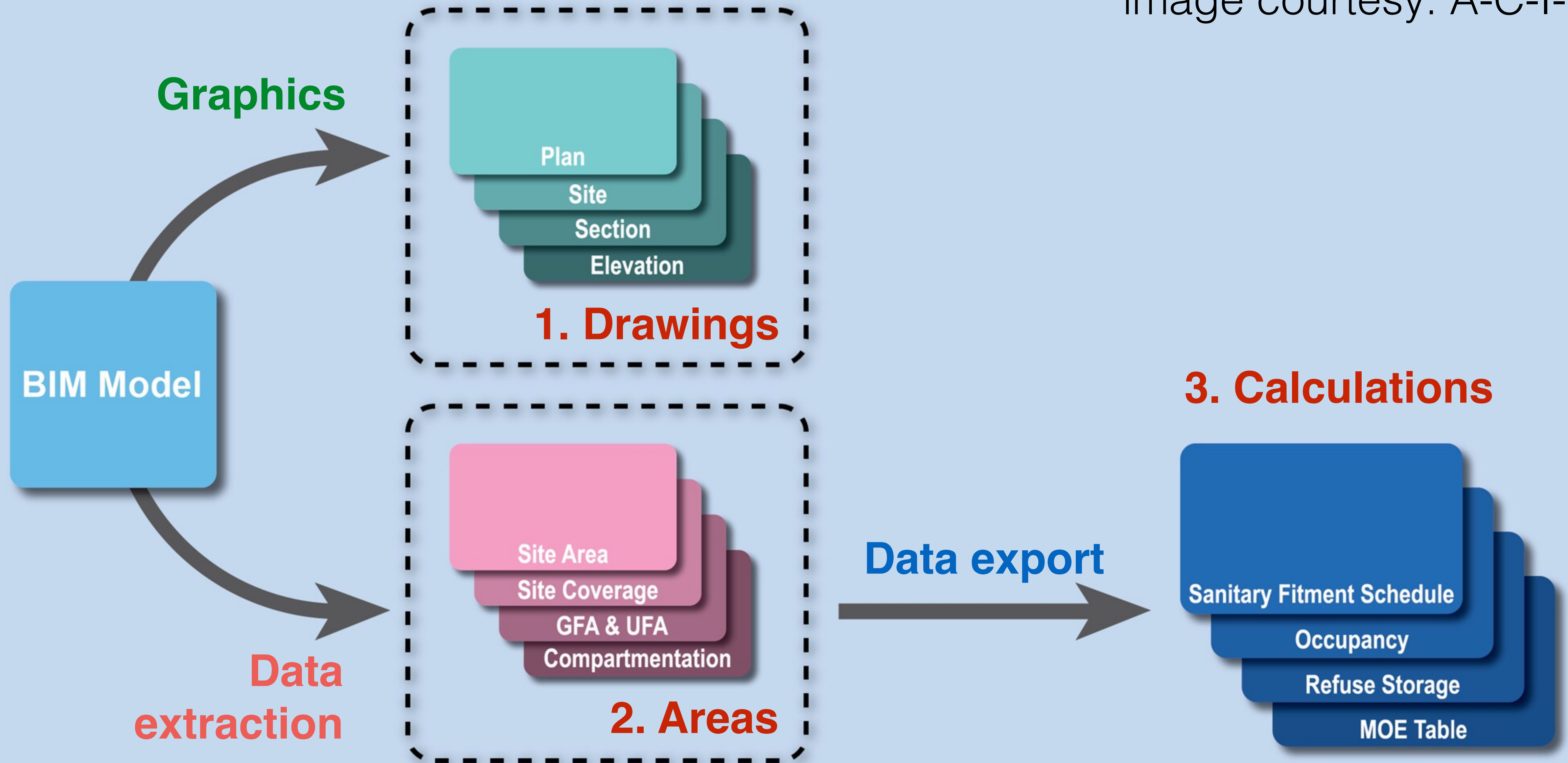
GBP vs working drawings

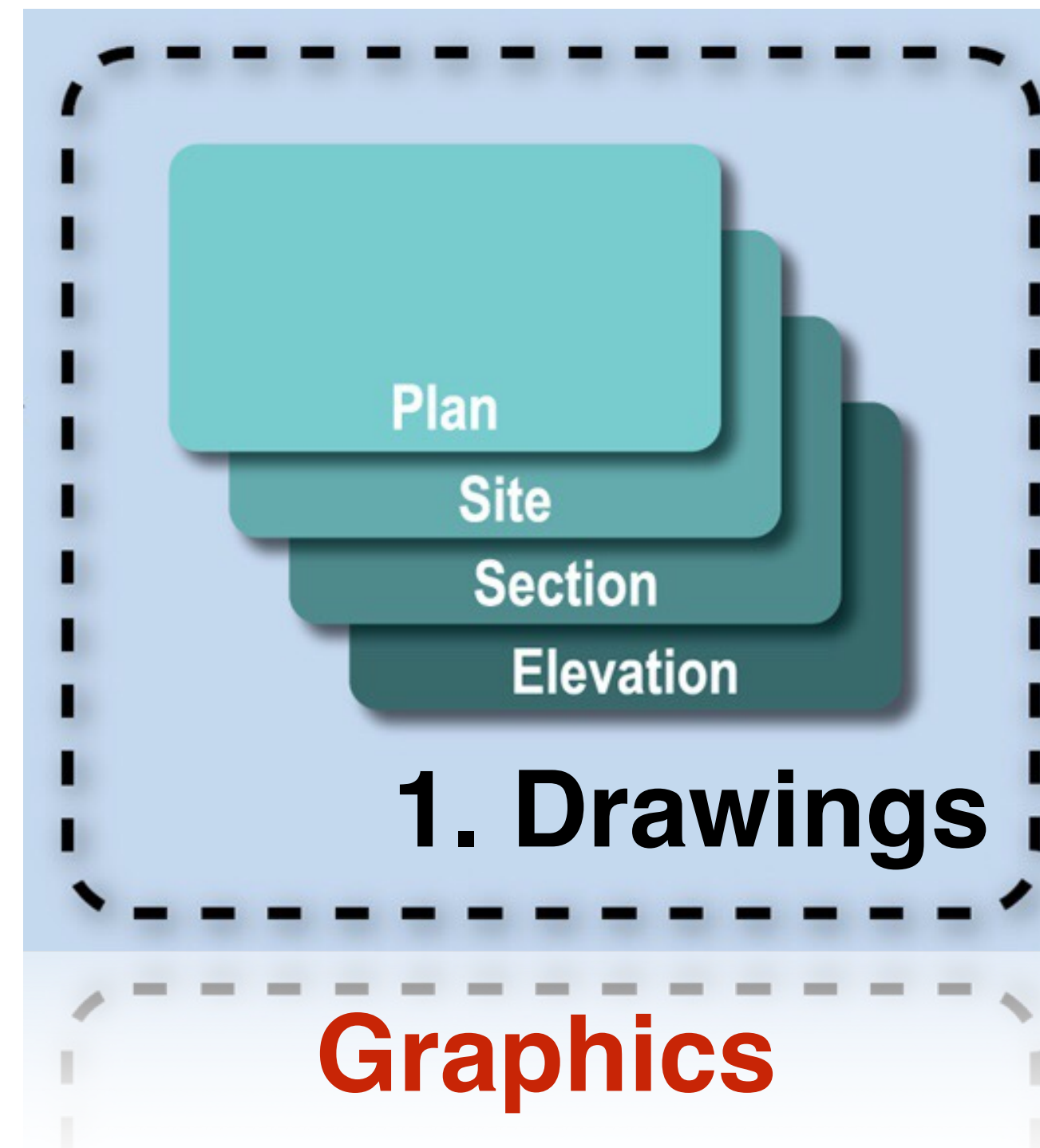
Only show what are regulated by Ordinances

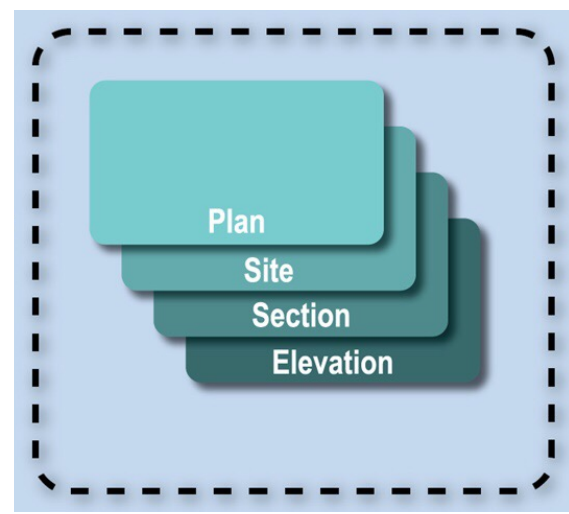
Determined by Authorised Person (AP)

GBP components

image courtesy: A-C-I-D

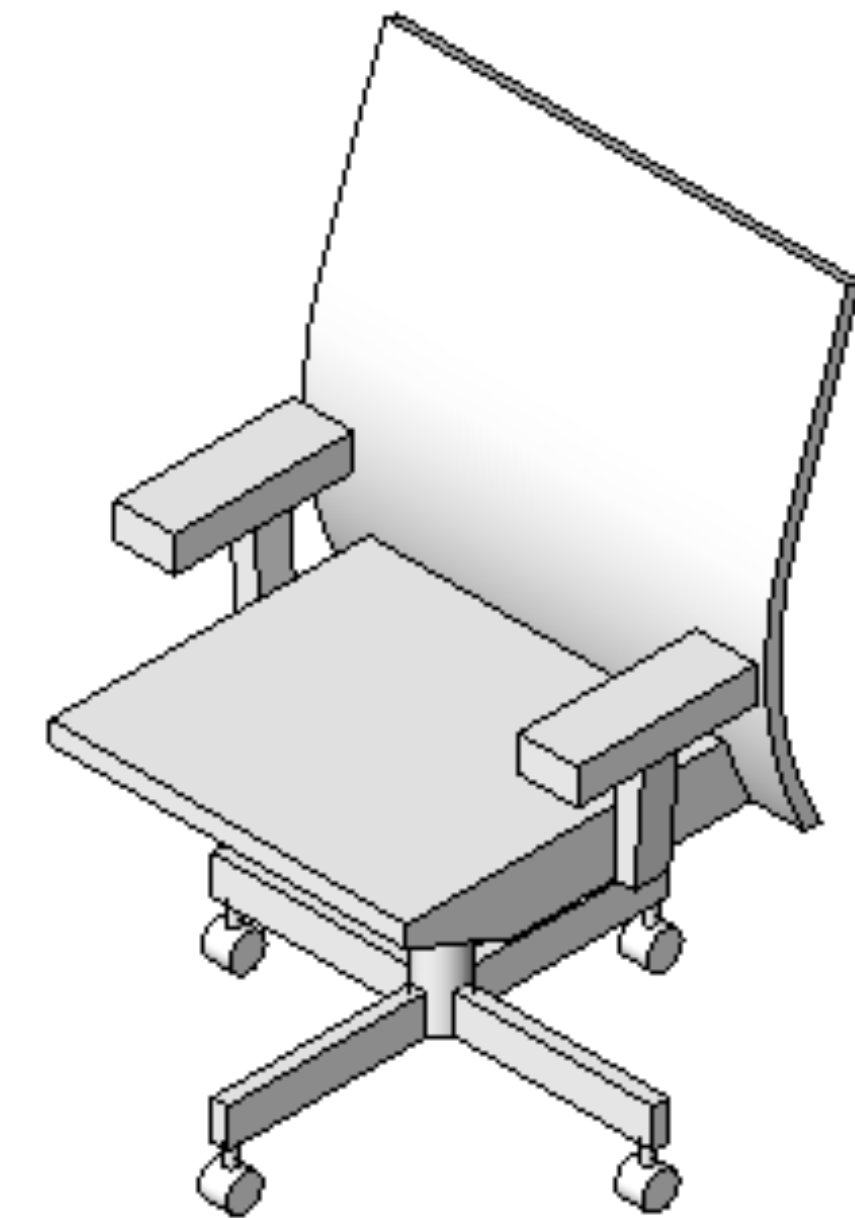
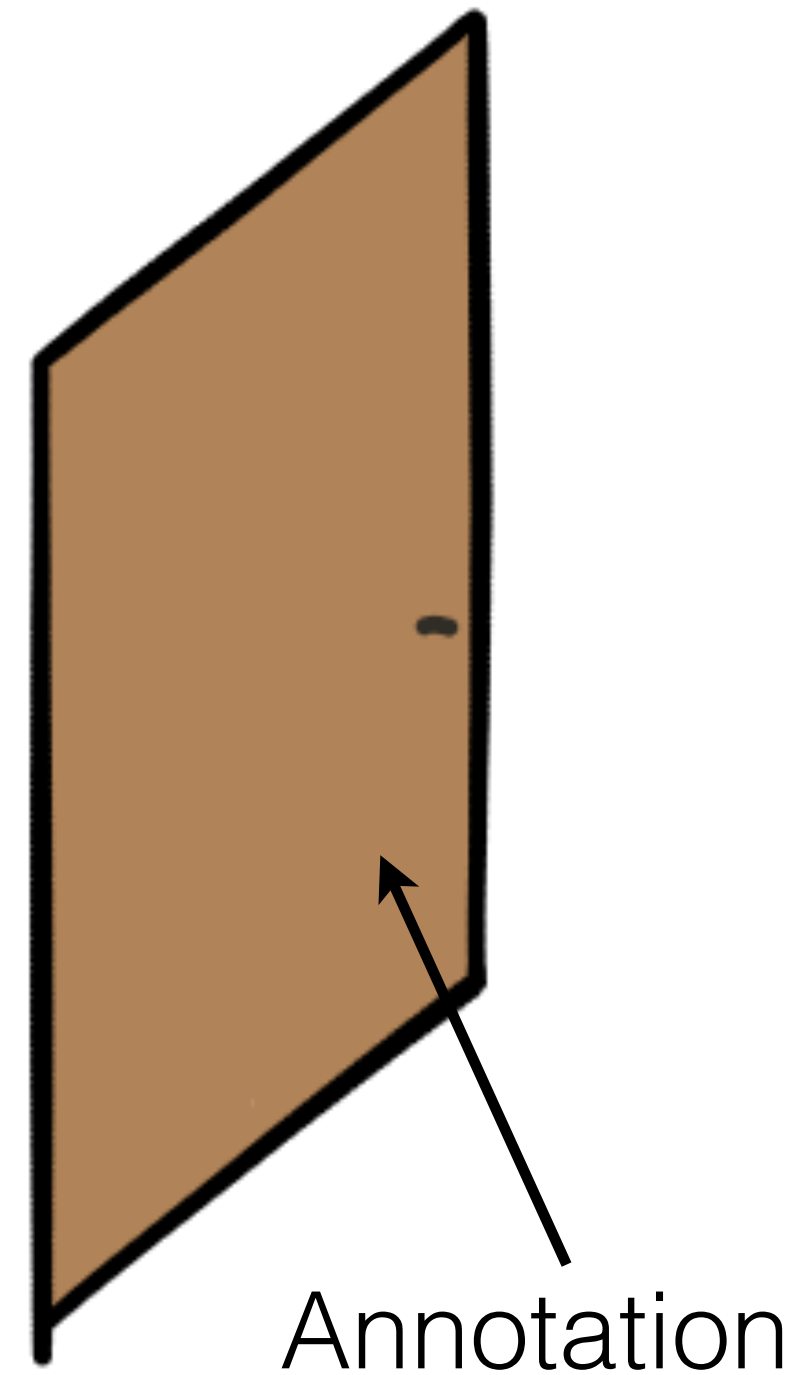
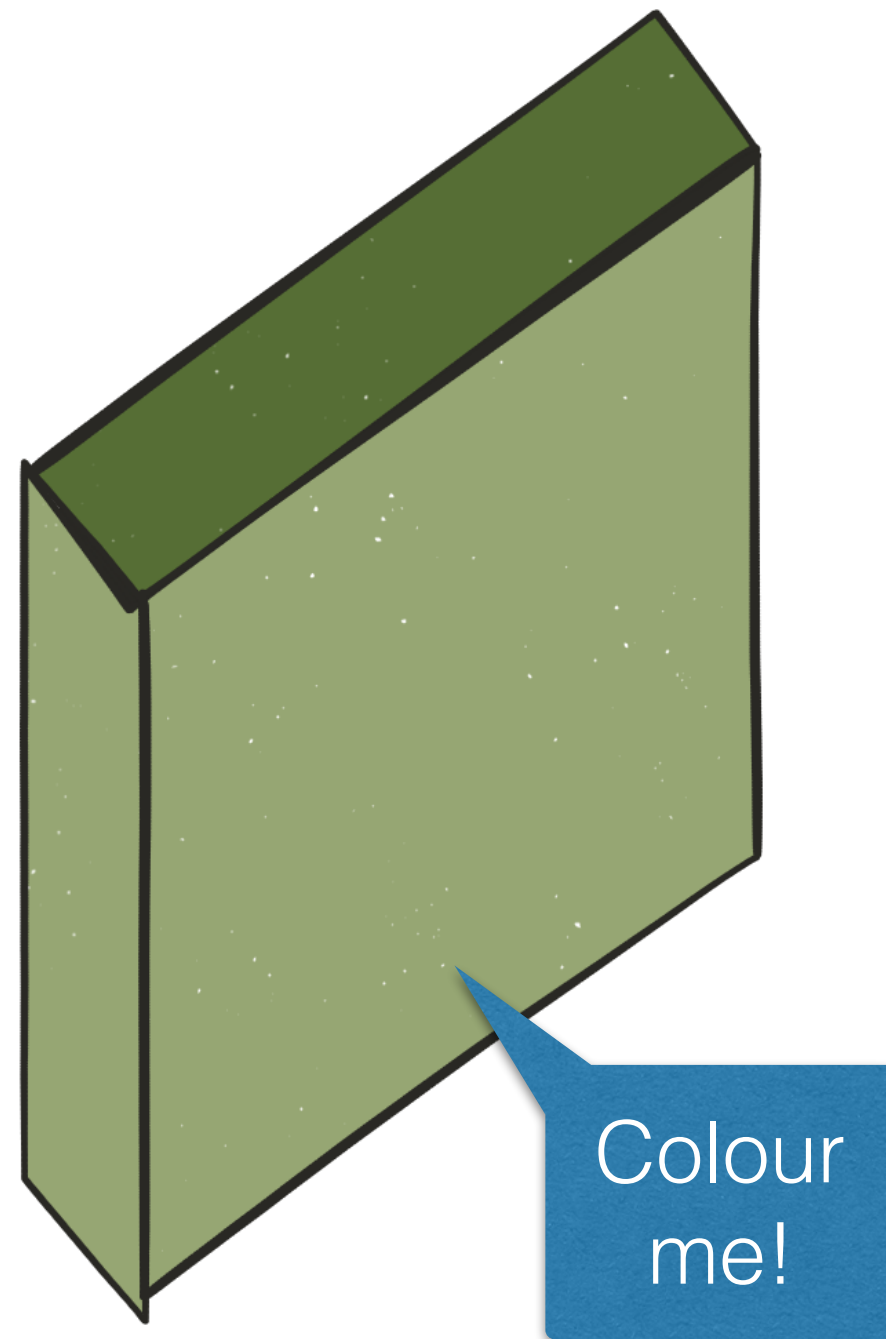




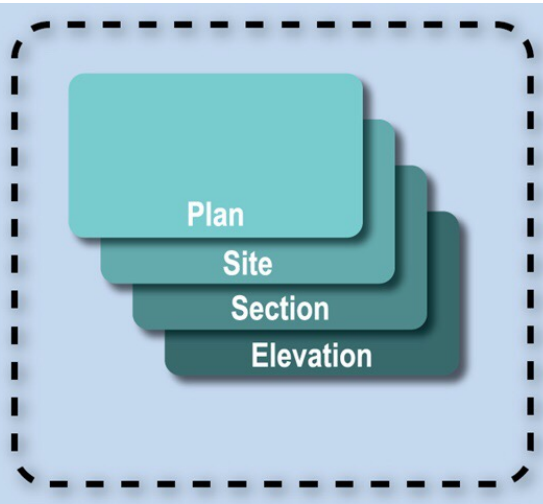


Graphics

GBP vs working drawings



Not for approval







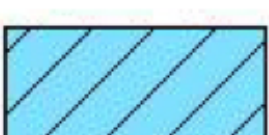




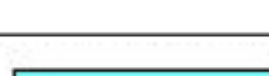
Graphics

Coloring

Differentiate existing & new works

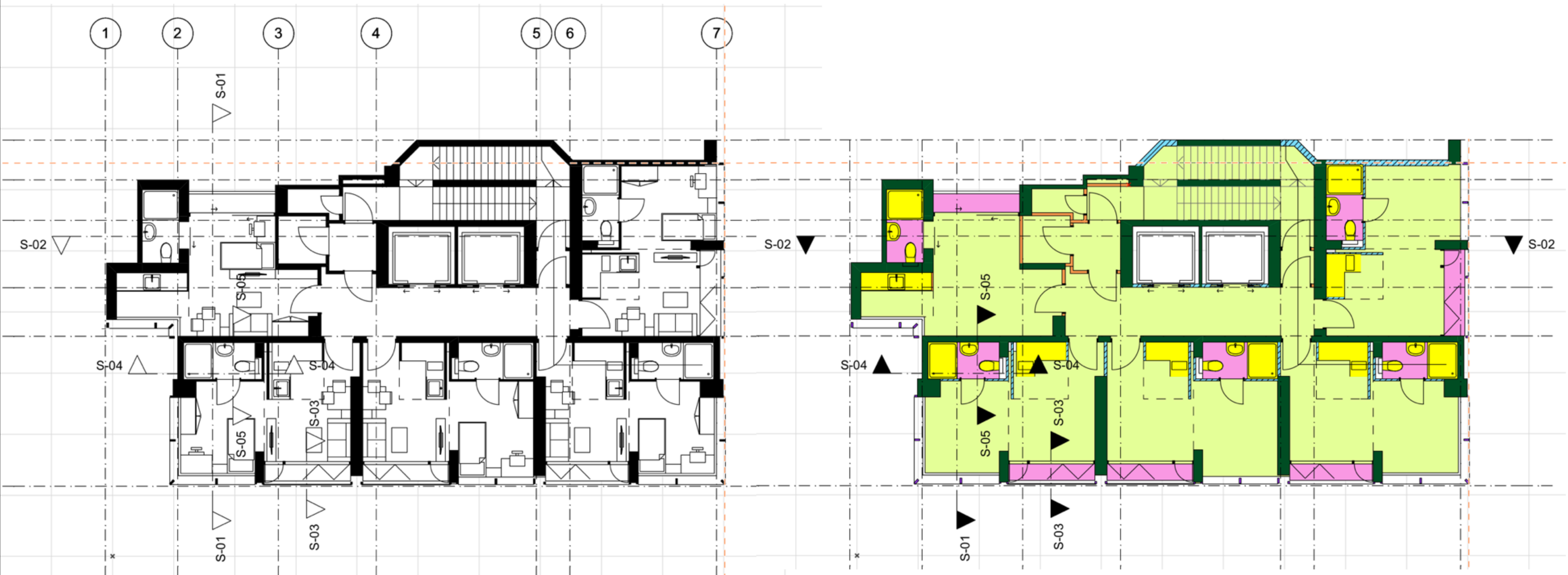
by material

Preferred Colours

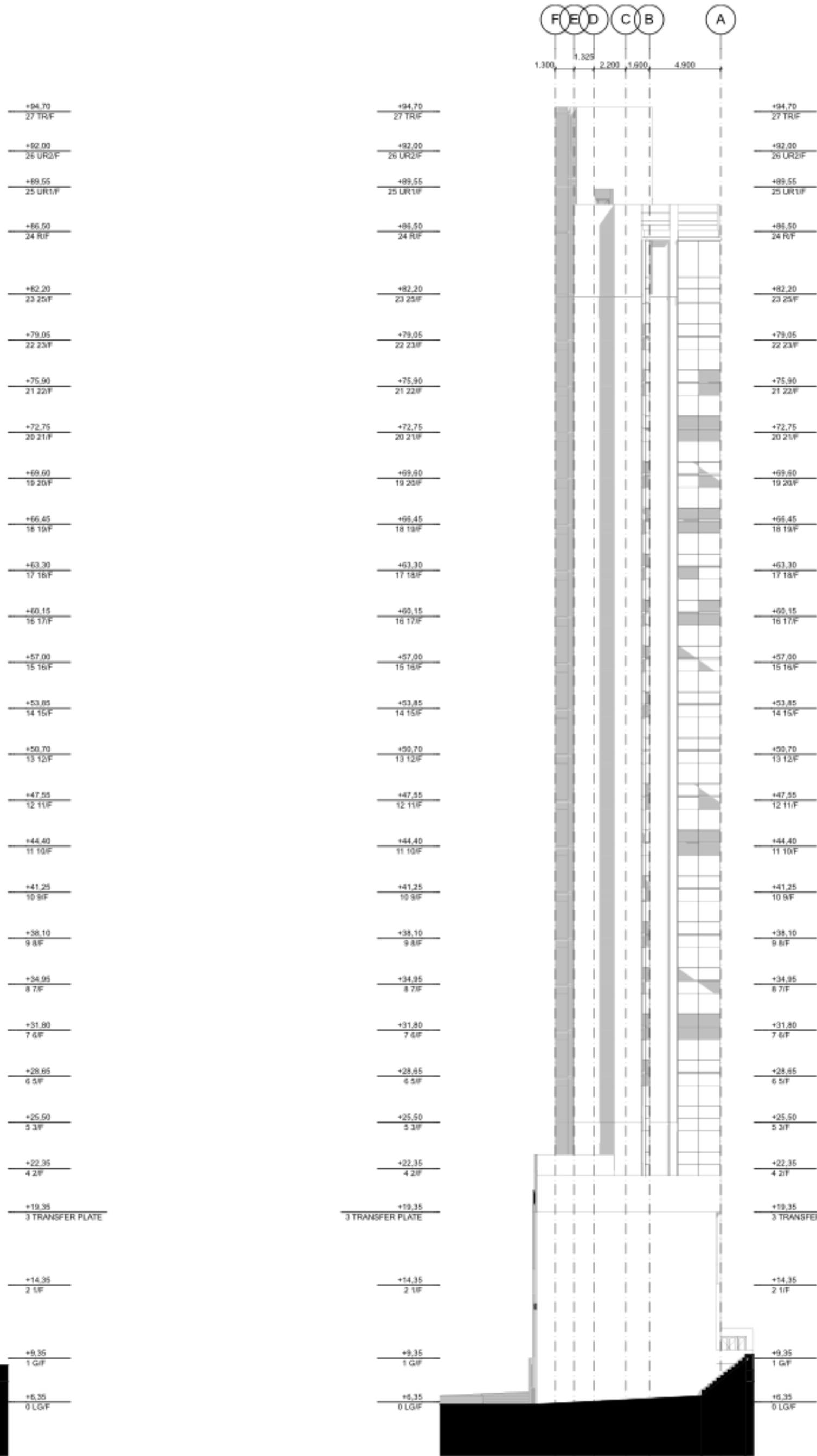
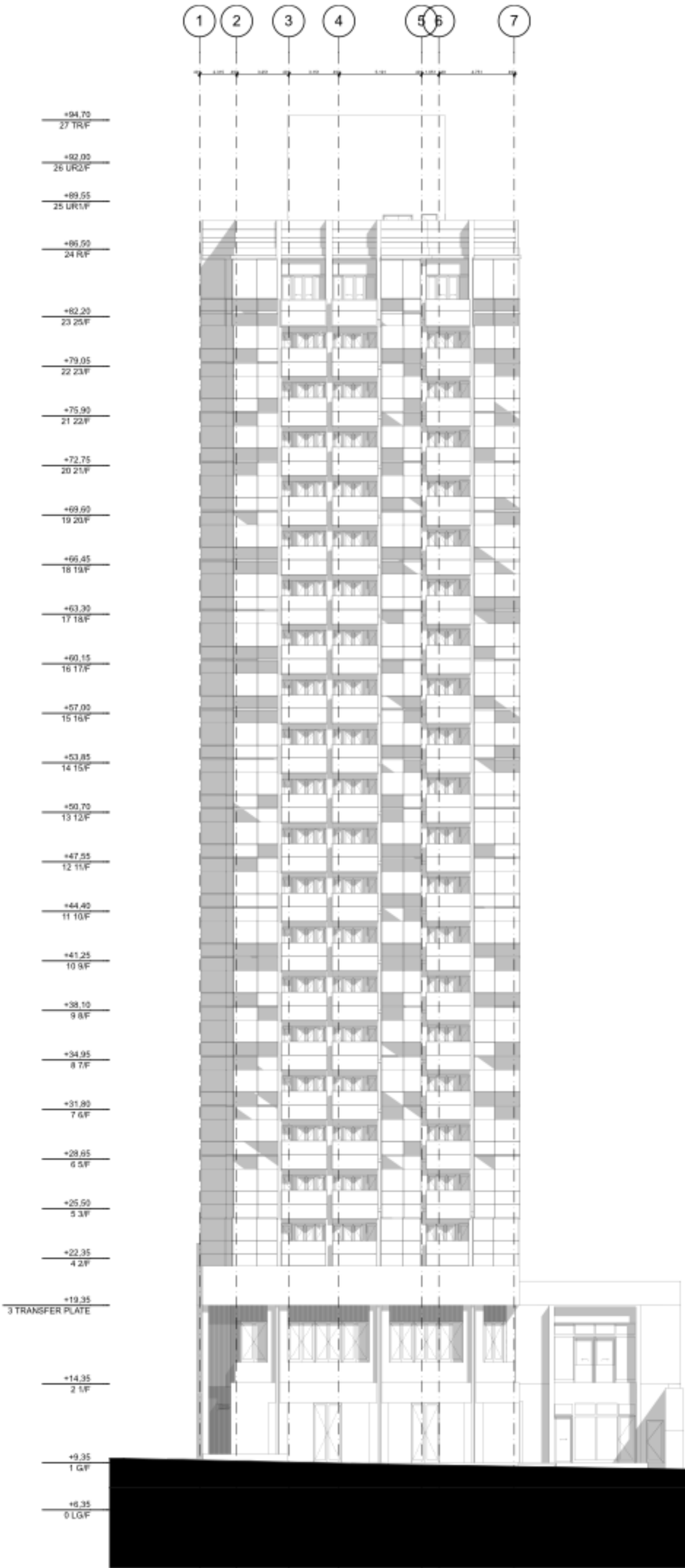
Material / Description	Preferred Colour	RGB Colour System ¹	Equivalent AutoCAD Colour Index ²
Hardcore or Dry Fill	Putty 	204, 178, 102	43
Brick	Orange Red 	255, 63, 0	20
Concrete Slab (Lighter Wash)	Witch Haze 	223, 255, 127	61
Concrete (Plain or Reinforced)	British Racing Green 	0, 76, 38	118
Solid 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 		131

Presentation

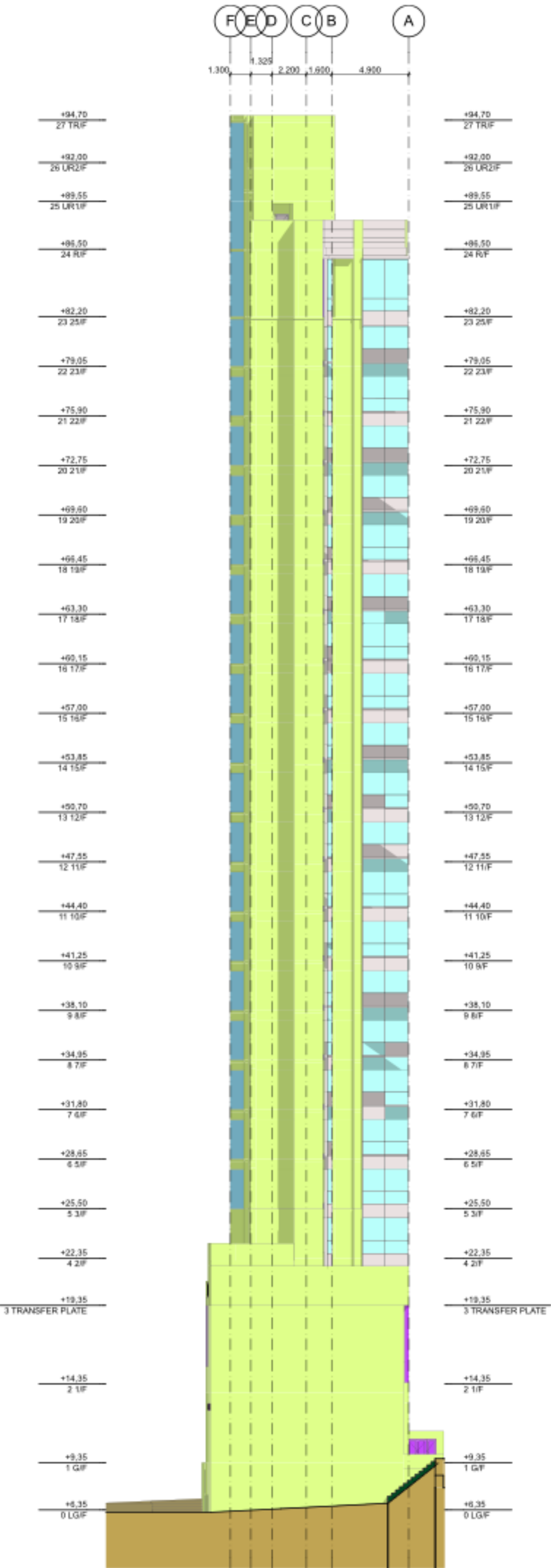
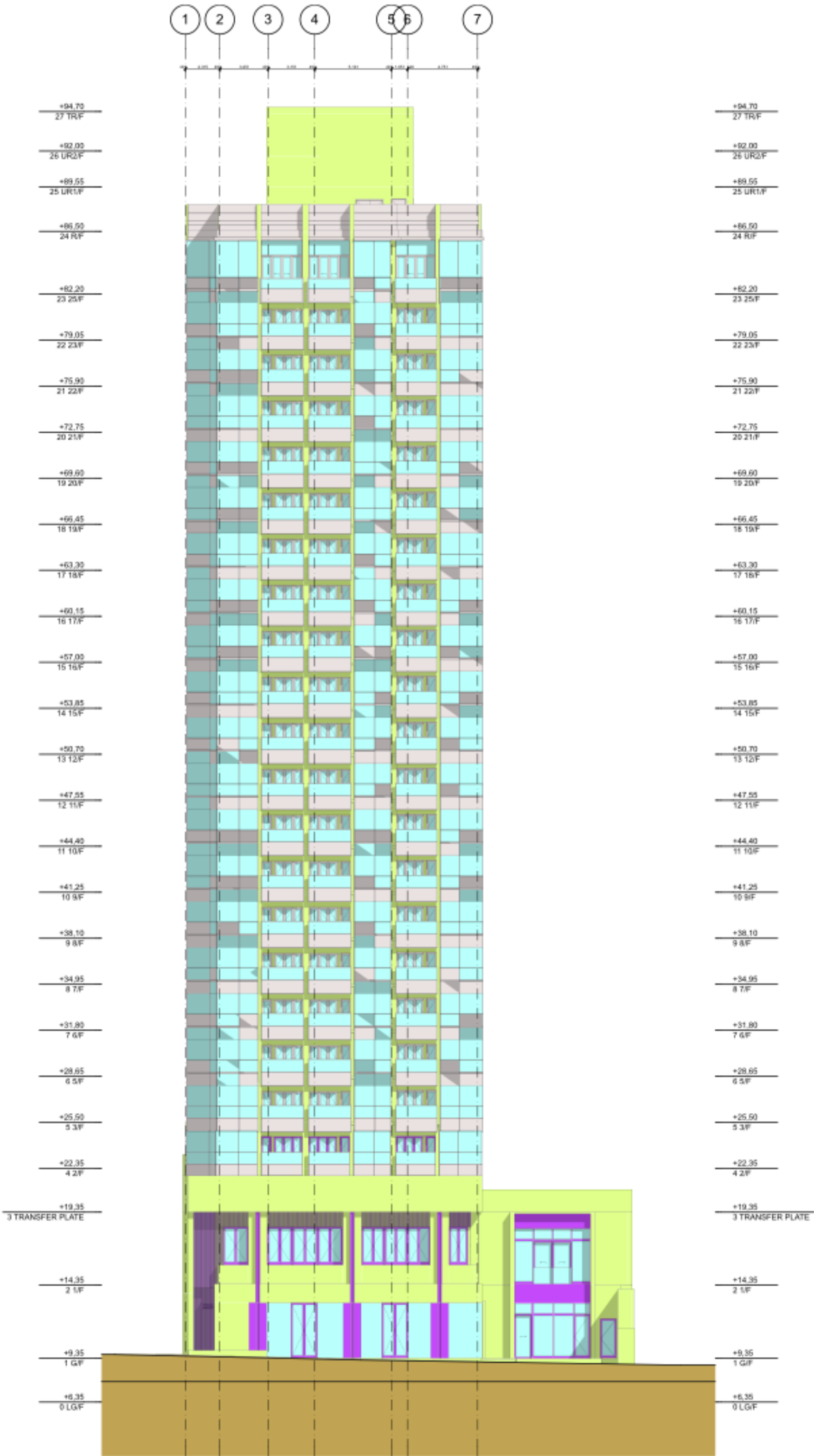
GBP



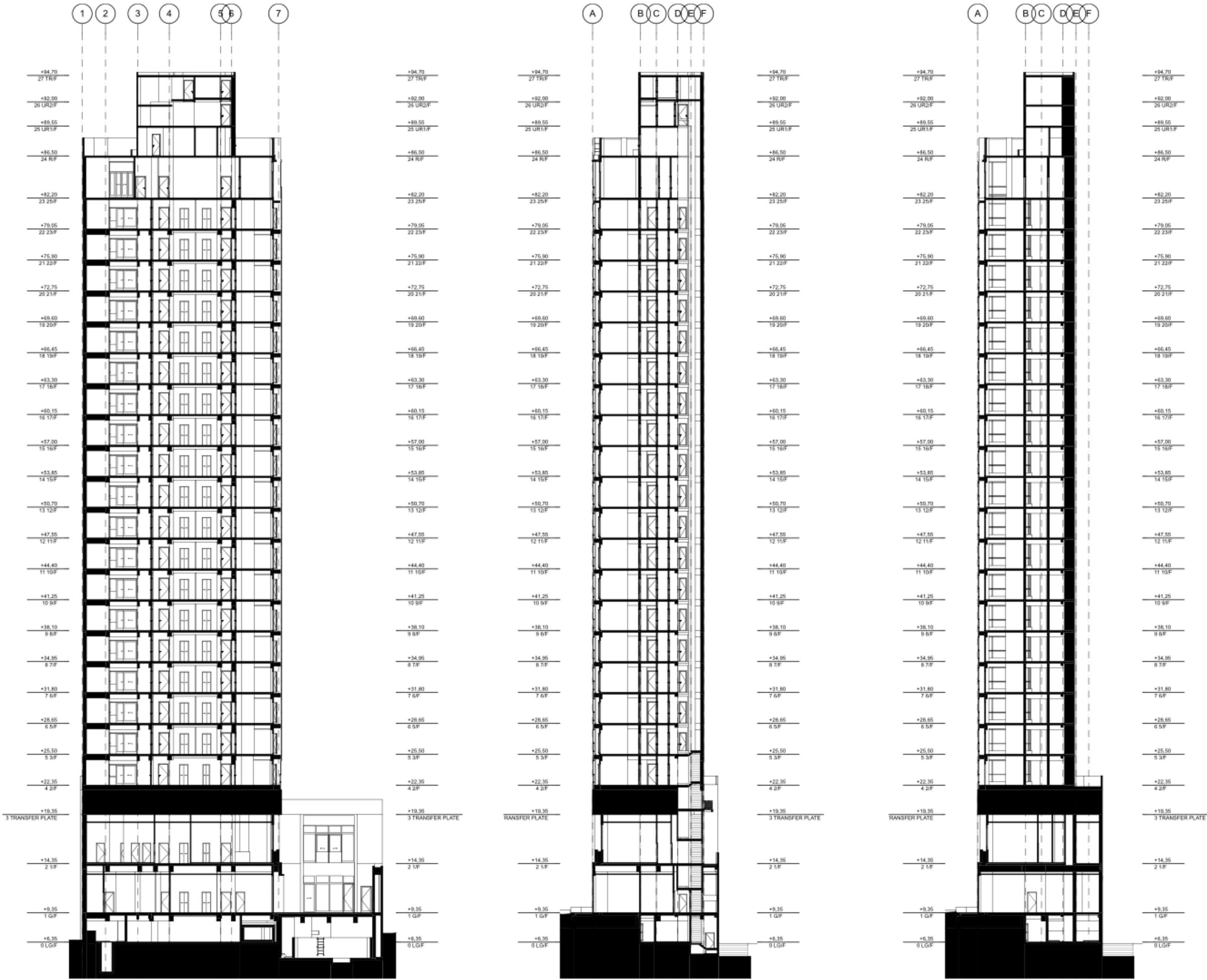
Presentation



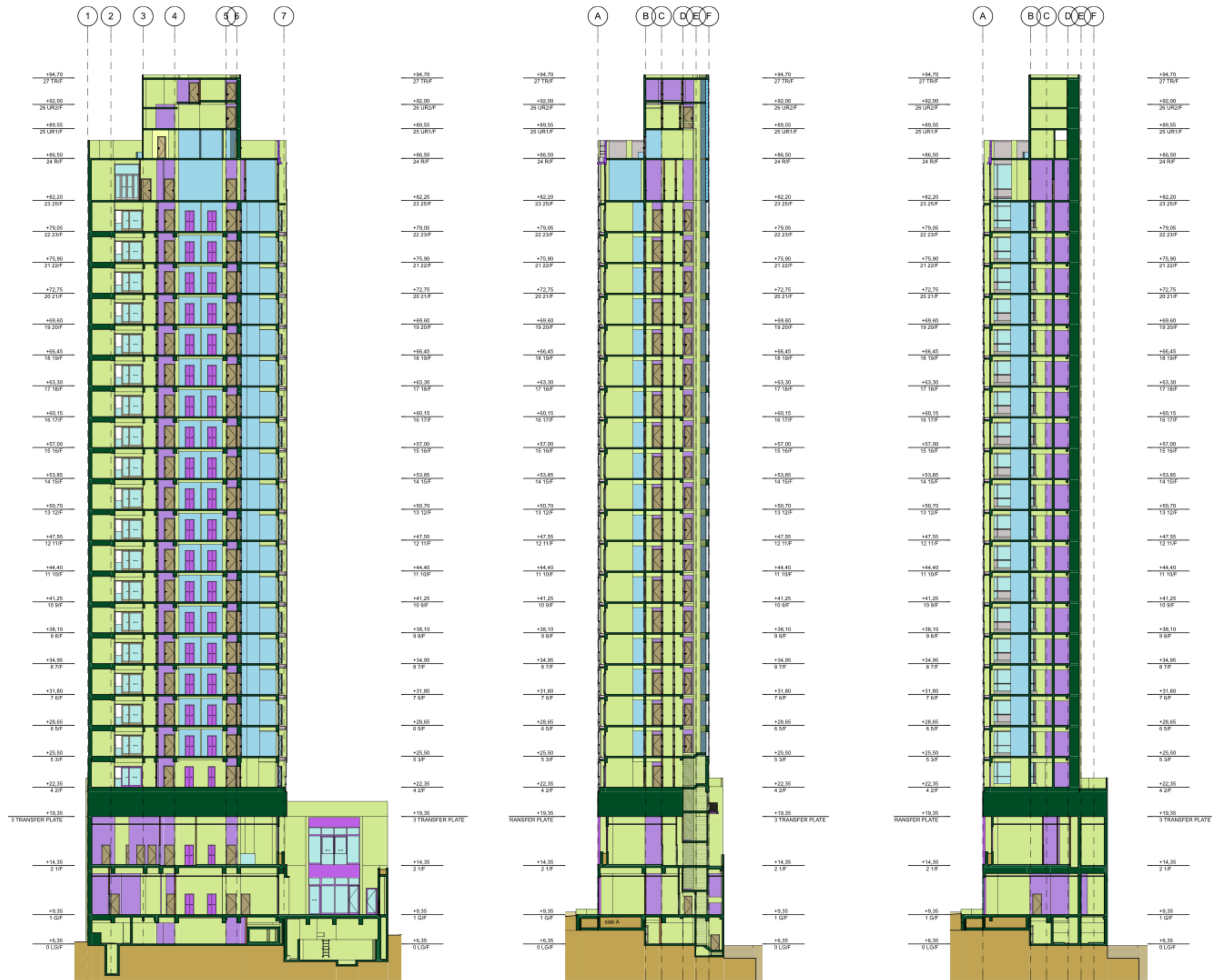
GBP

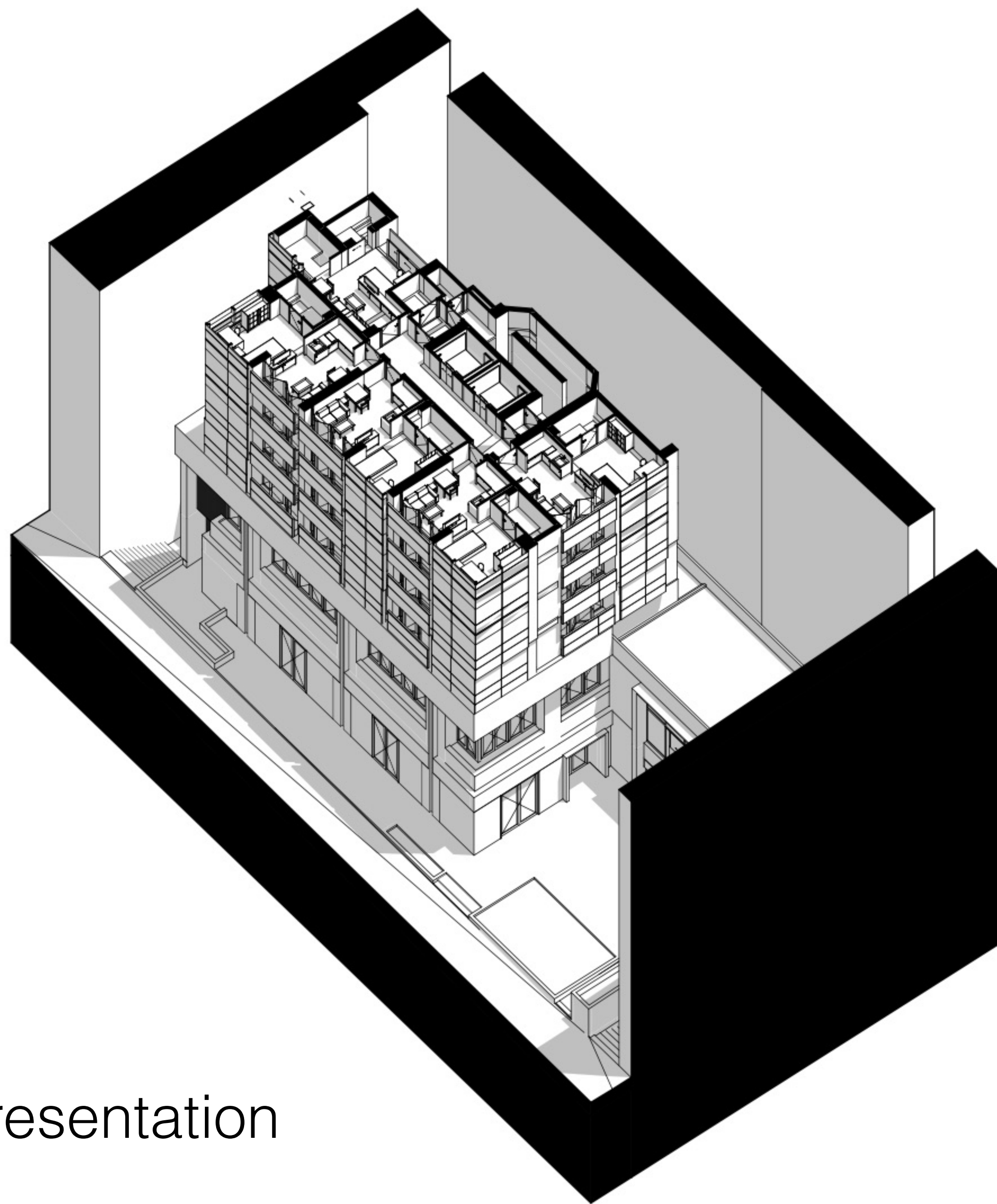


Presentation

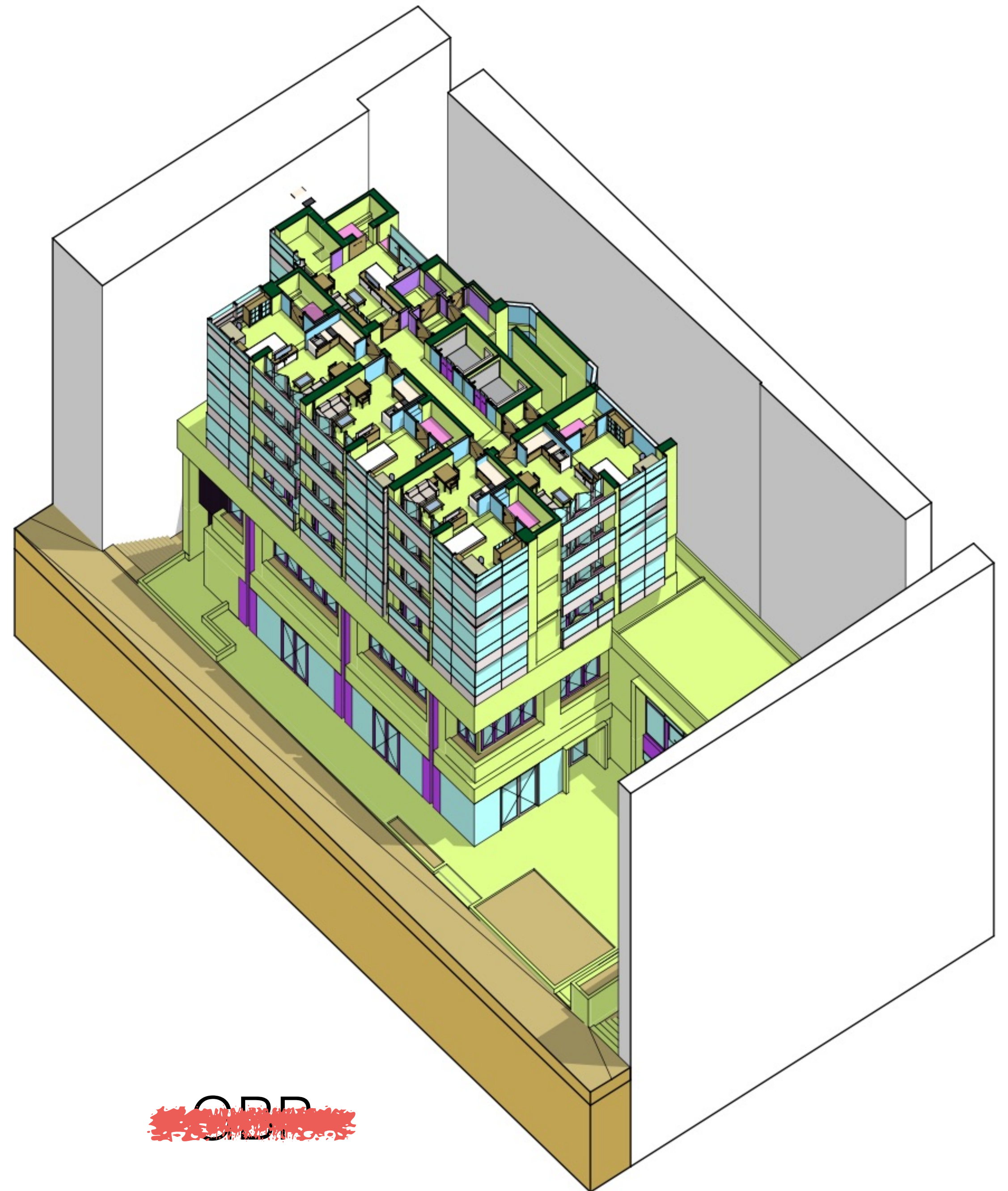


GBP





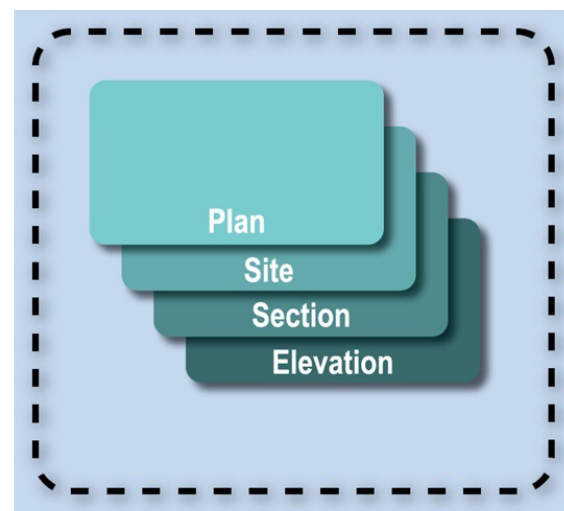
Presentation



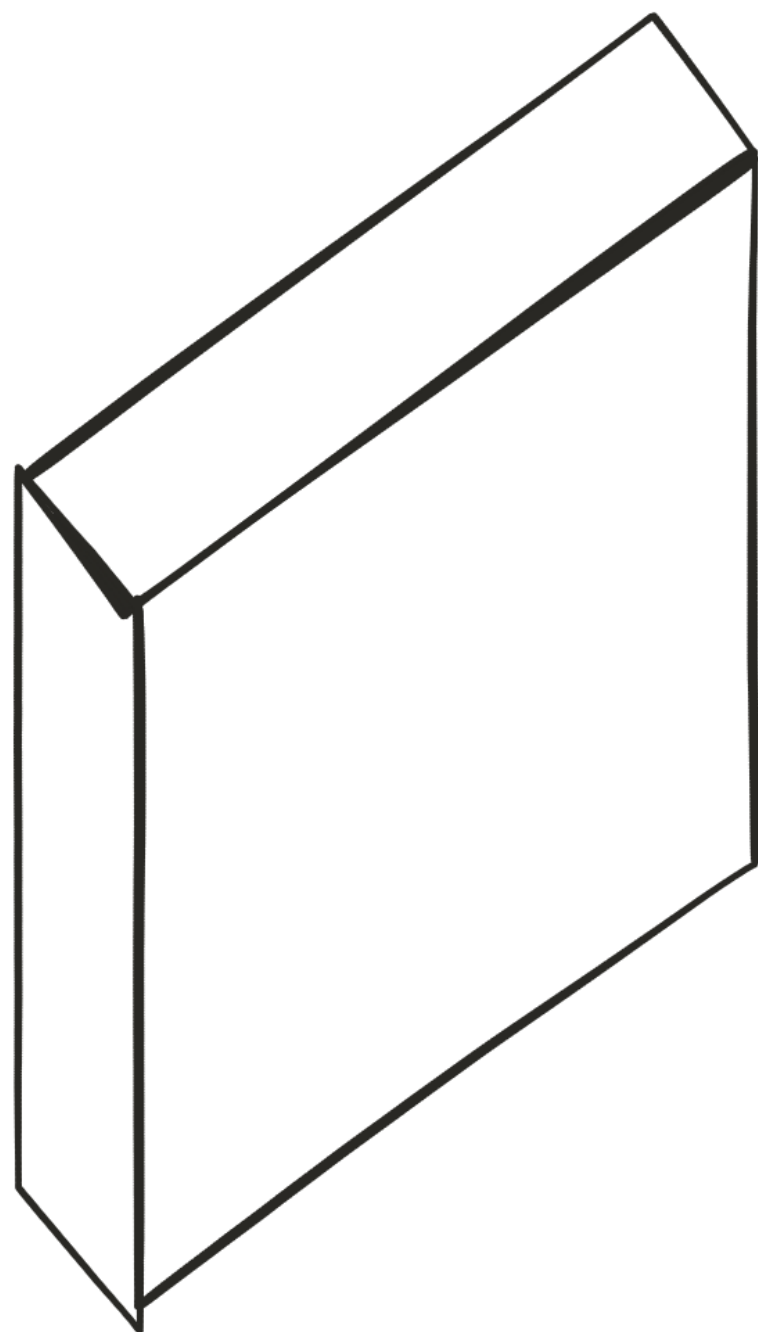
ODP

It's all about setting
RULES

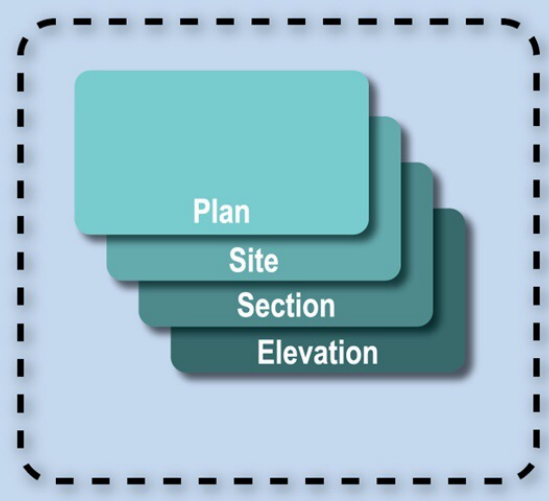
= template



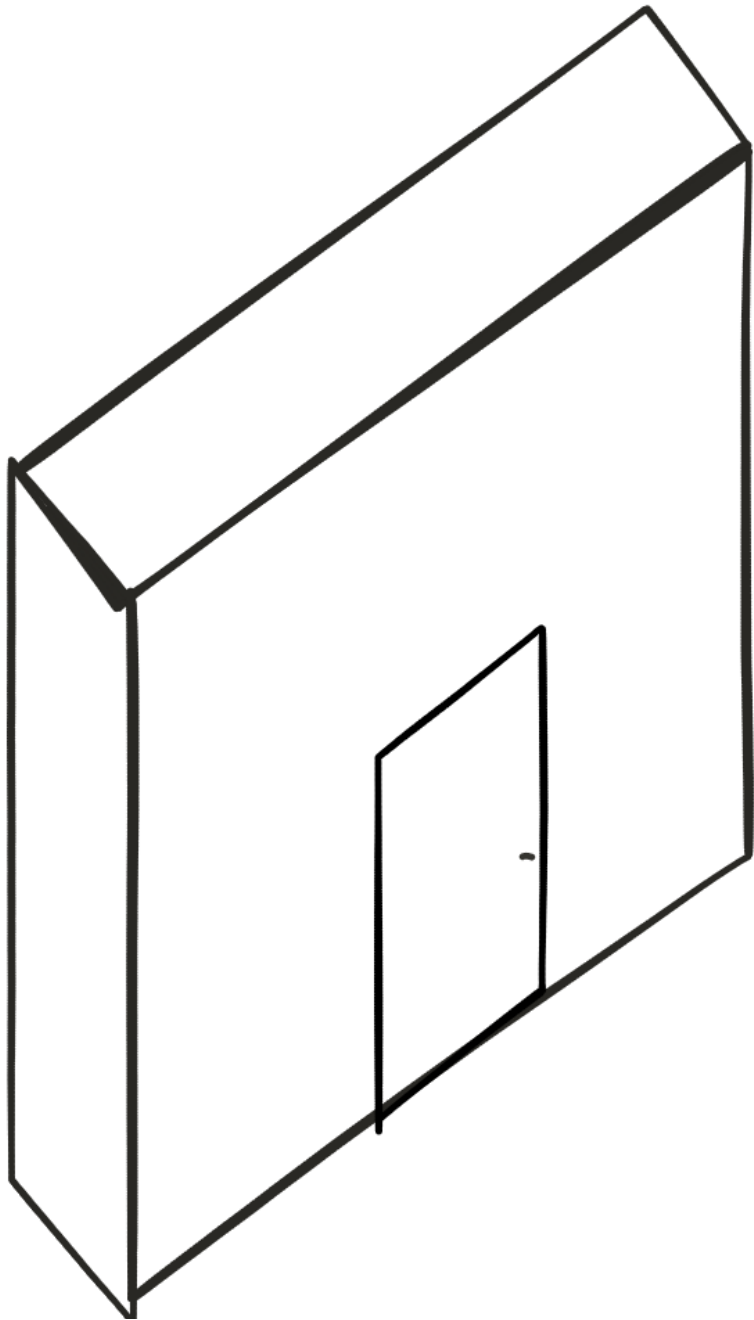
Drawings



Object Based Model



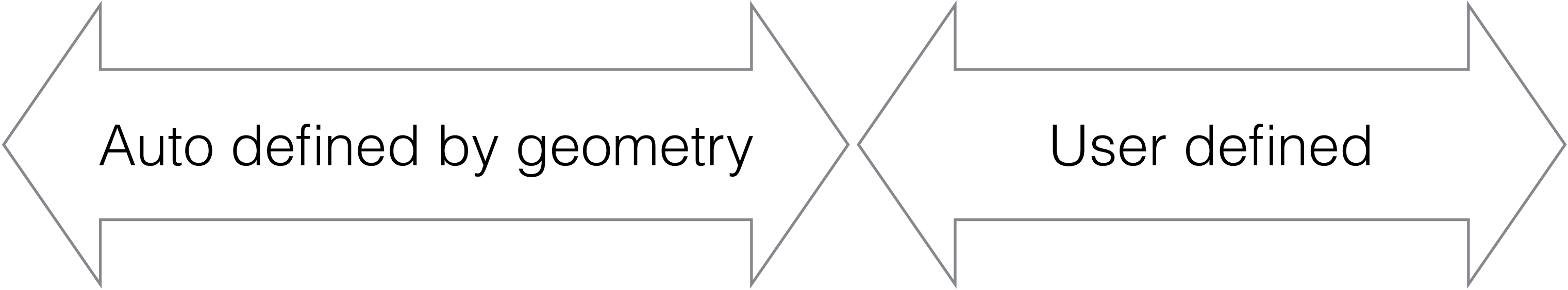
Drawings

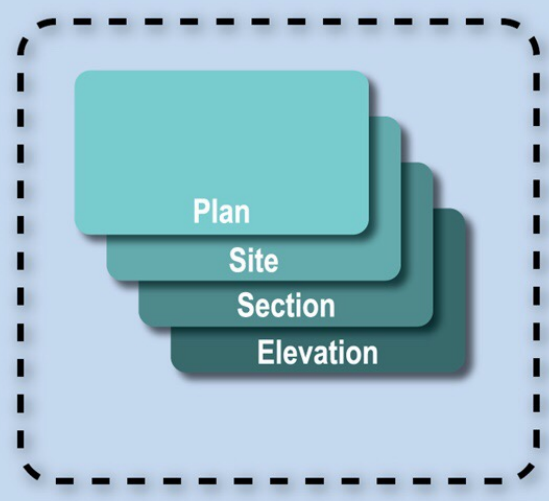


Object Based Model

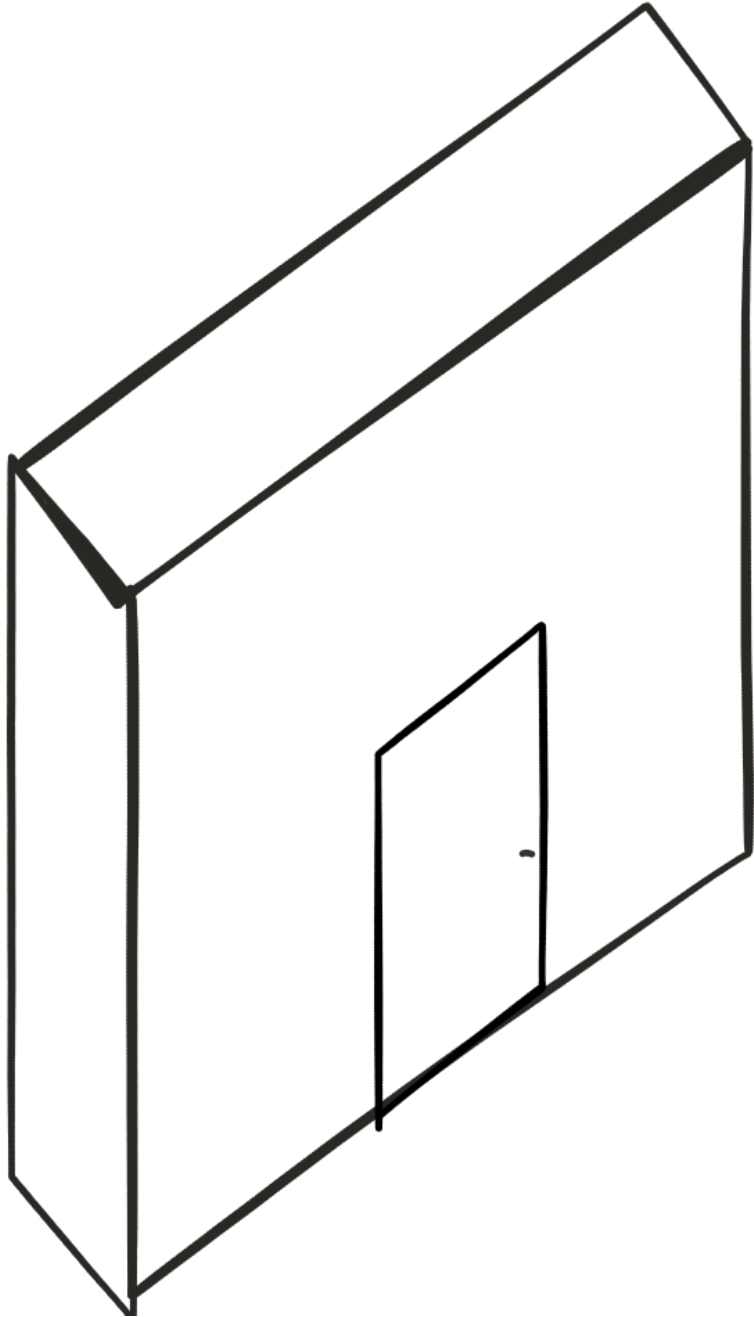
Information about Door B

	Attributes								
	Floor	From room	To room	H	W	No.	Type	FRR	Ironmongery
Door B	3	corridor	Living room	2100	900				





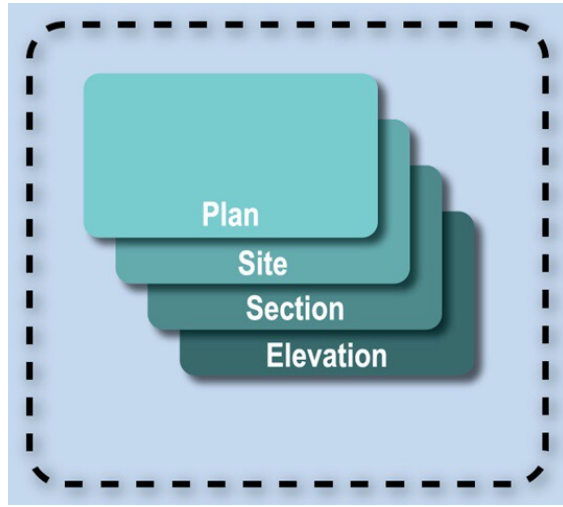
Drawings



Information about Door B

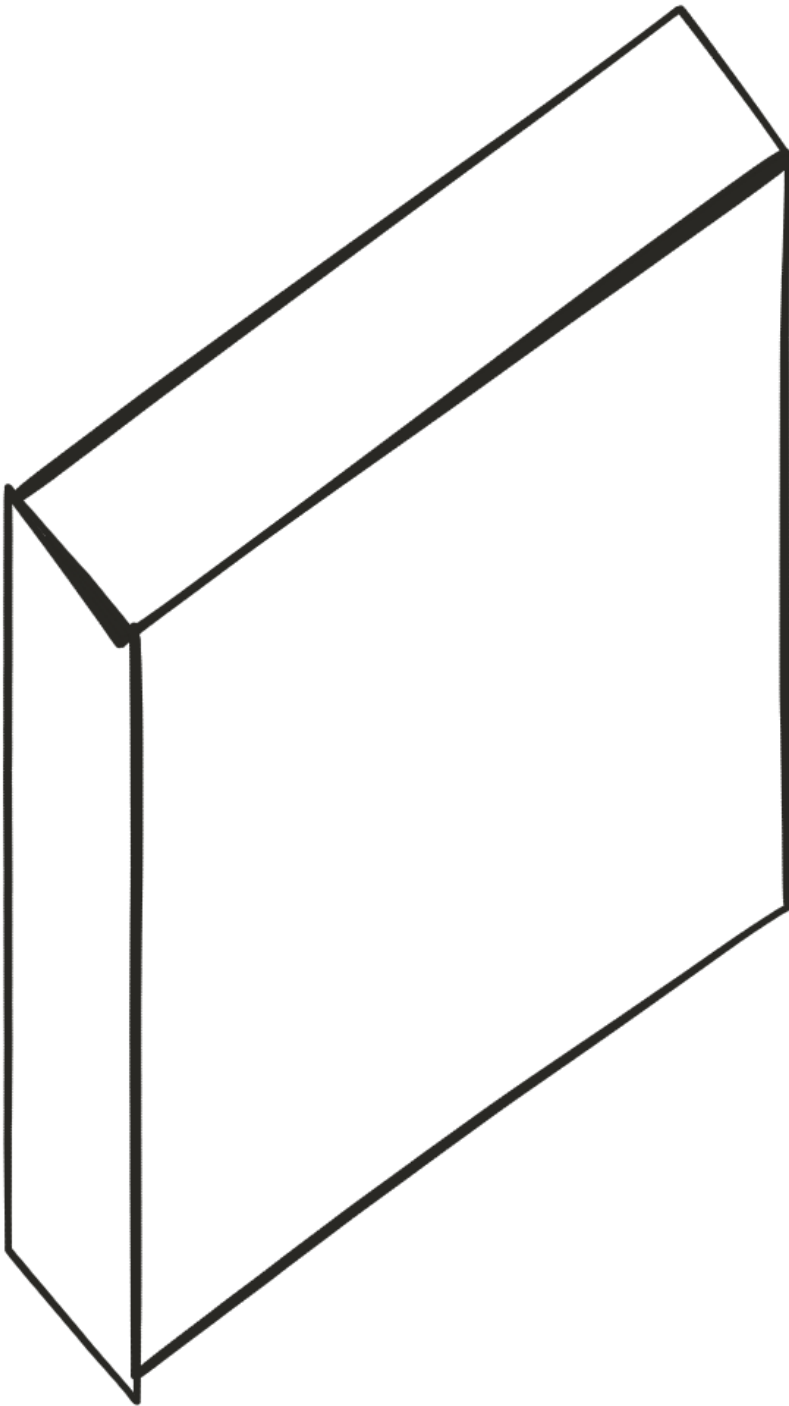
	Attributes								
	Floor	From room	To room	H	W	No.	Type	FRR	Ironmongery
Door B	3	corridor	Living room	2100	900				

Set **rules** for
controlling **graphics**
based on object **attributes**

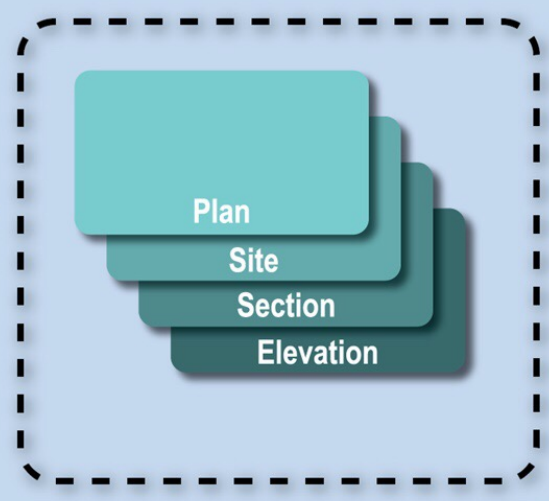


Drawings

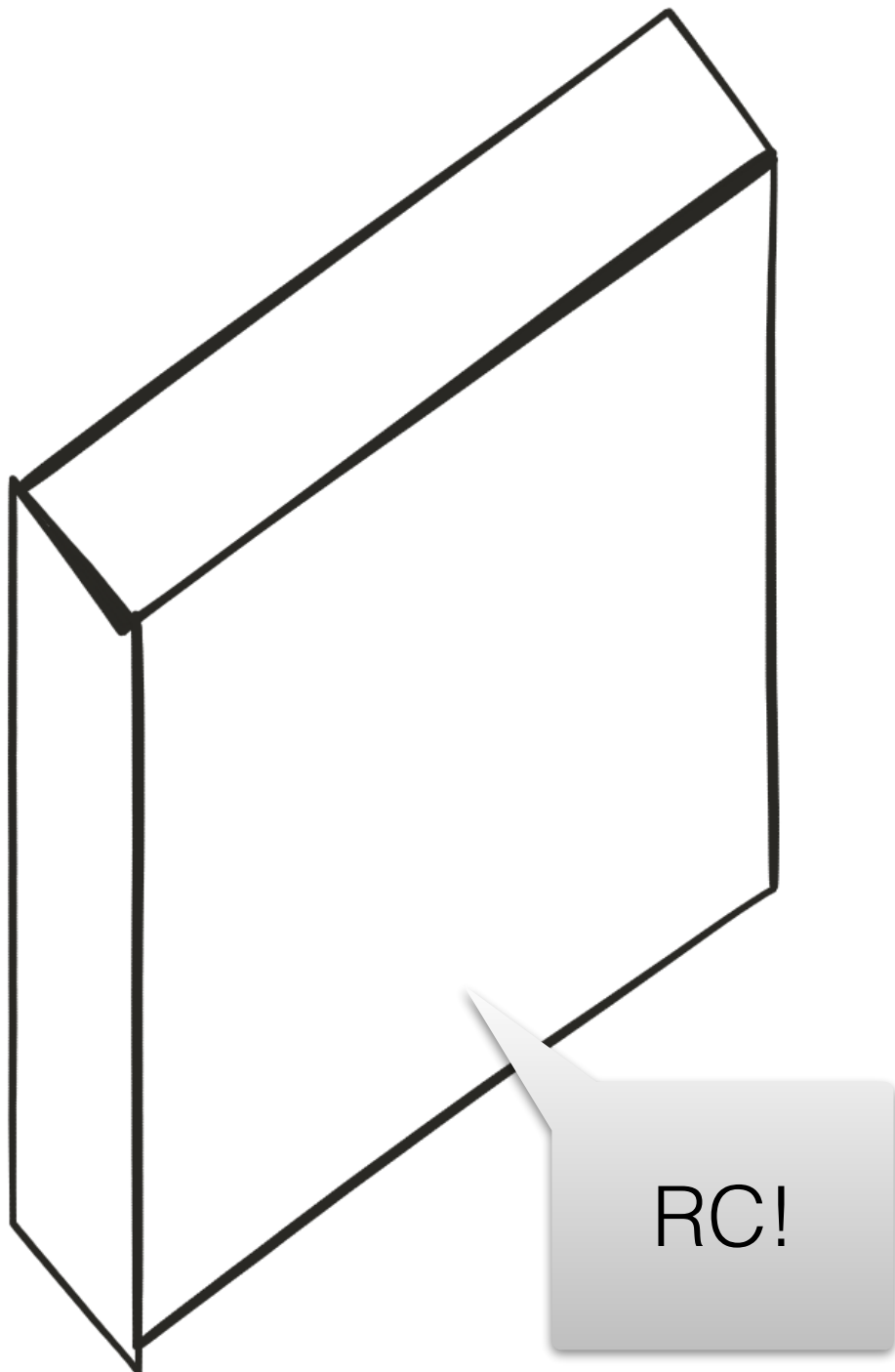
Coloring



Wall A



Drawings



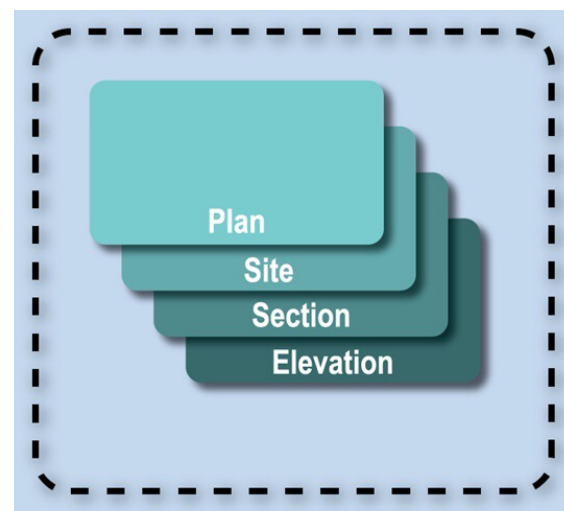
Wall A

Coloring

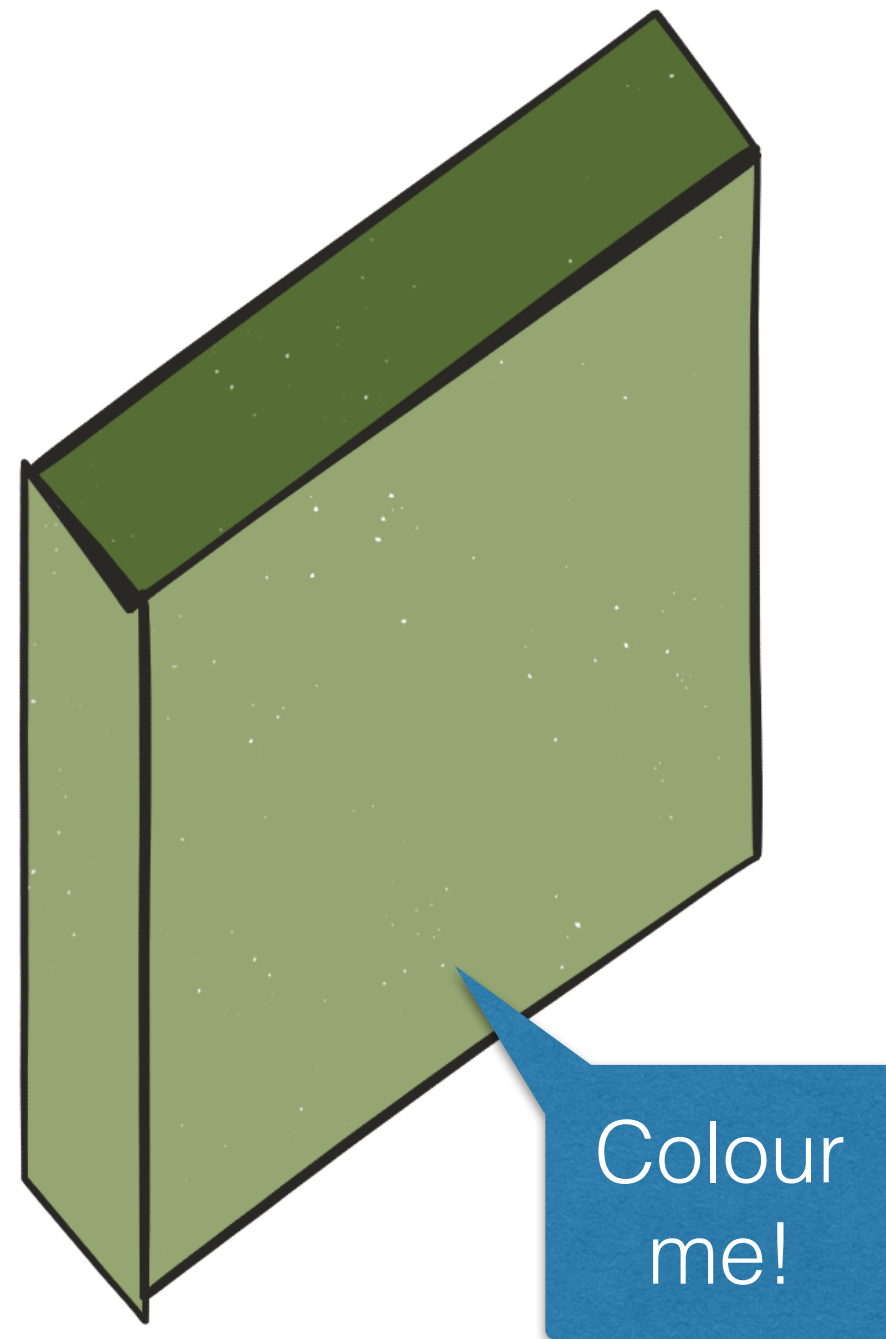
tool: Building Materials

Information about Wall A

	Building Material attribute
Wall A	Reinforced concrete



Drawings

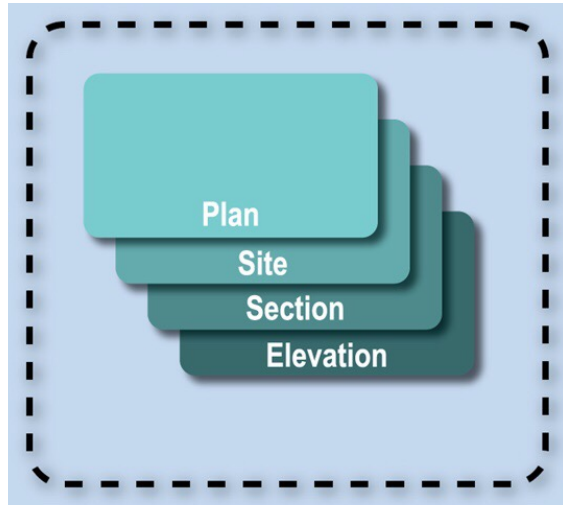


Wall A

Coloring

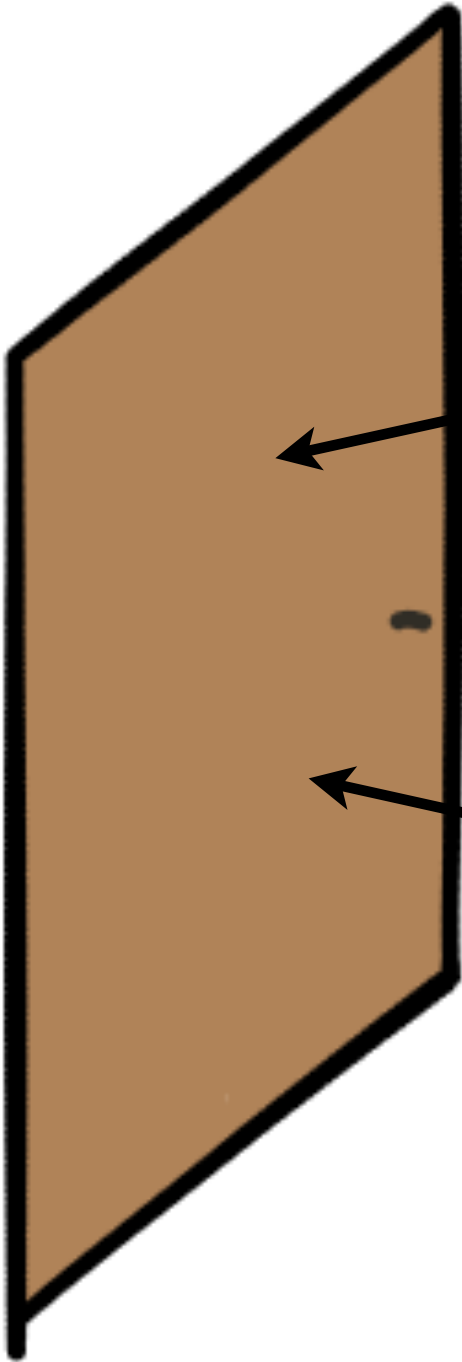
tool: Graphic Override

Colour Wall A
according to its
Building Material



Drawings

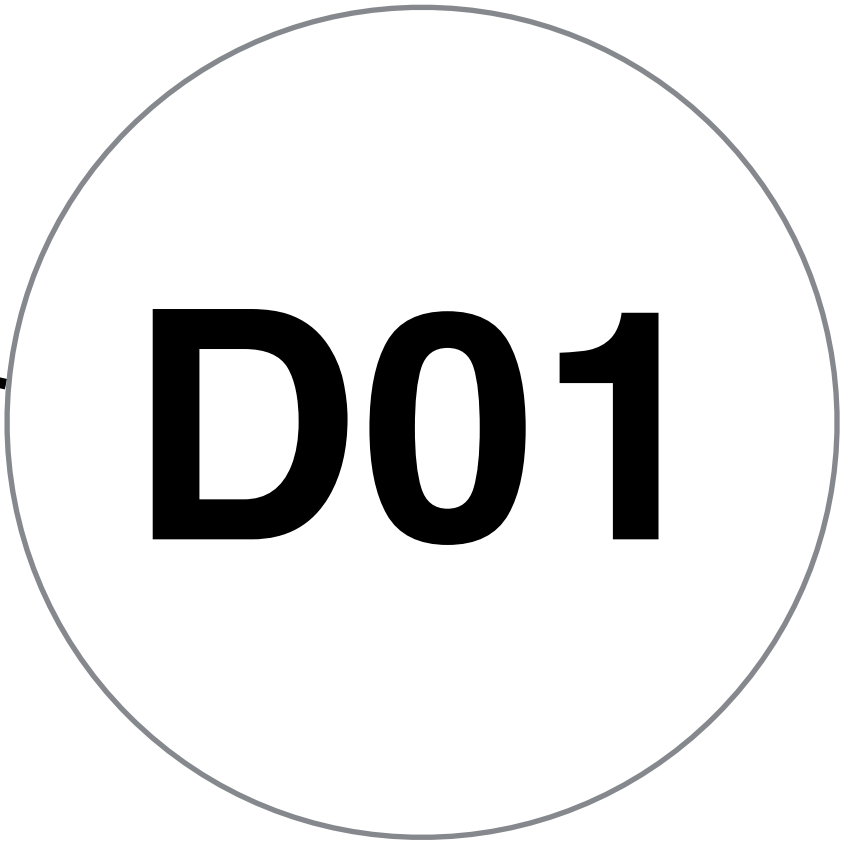
Annotations



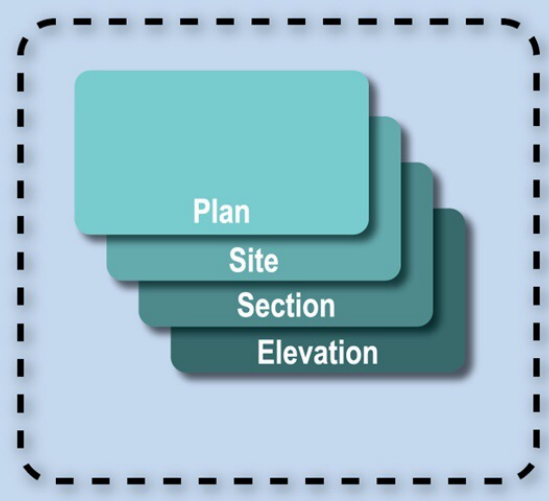
Door B

60	18
D104	

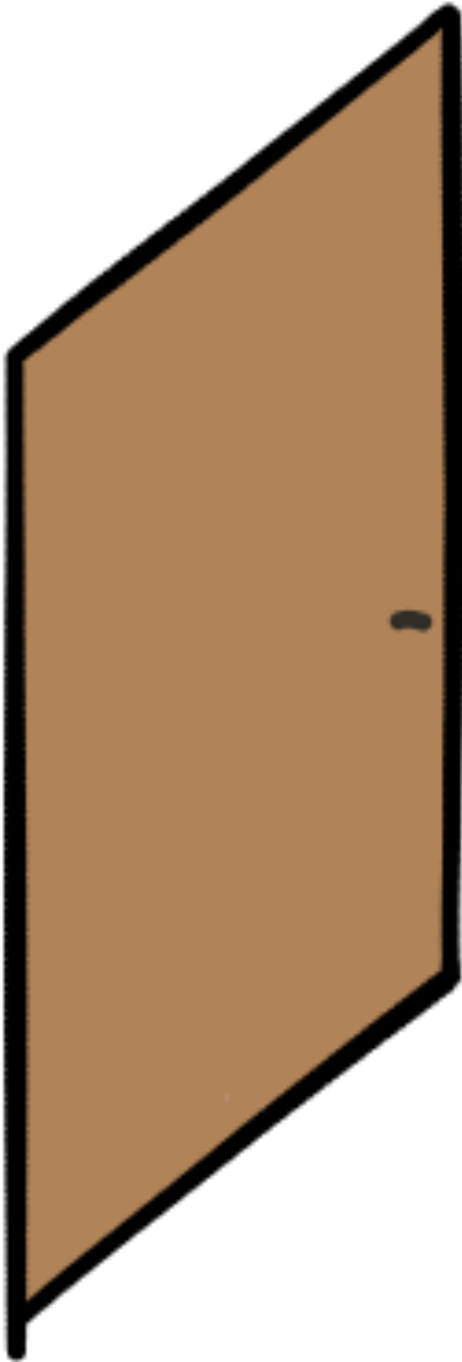
Working
drawings



GBP

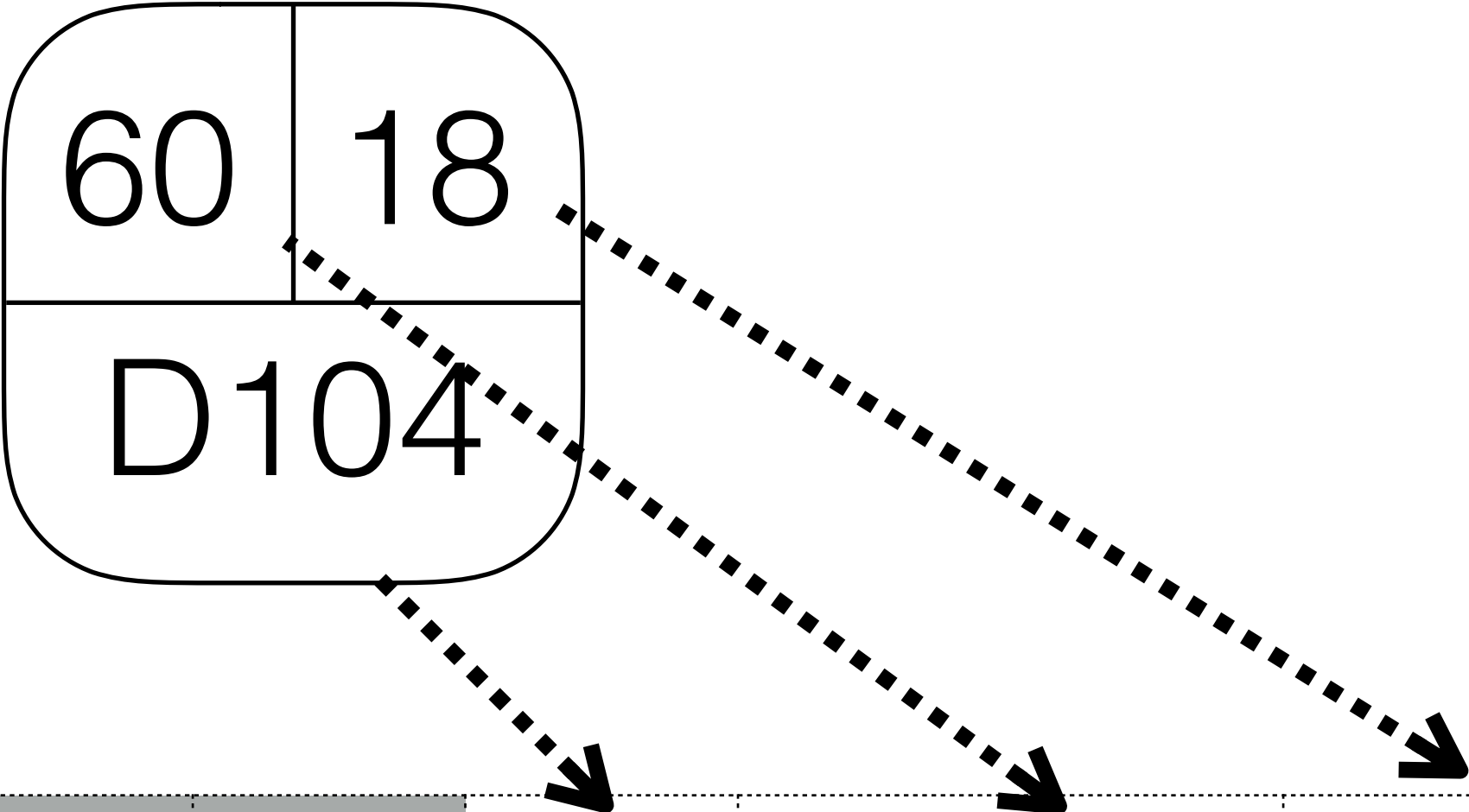


Drawings

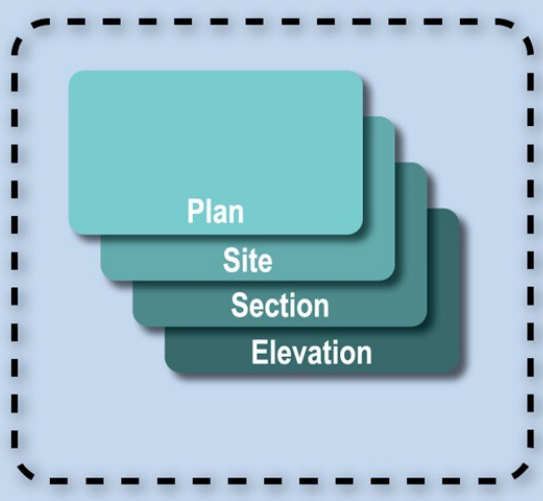


Door B

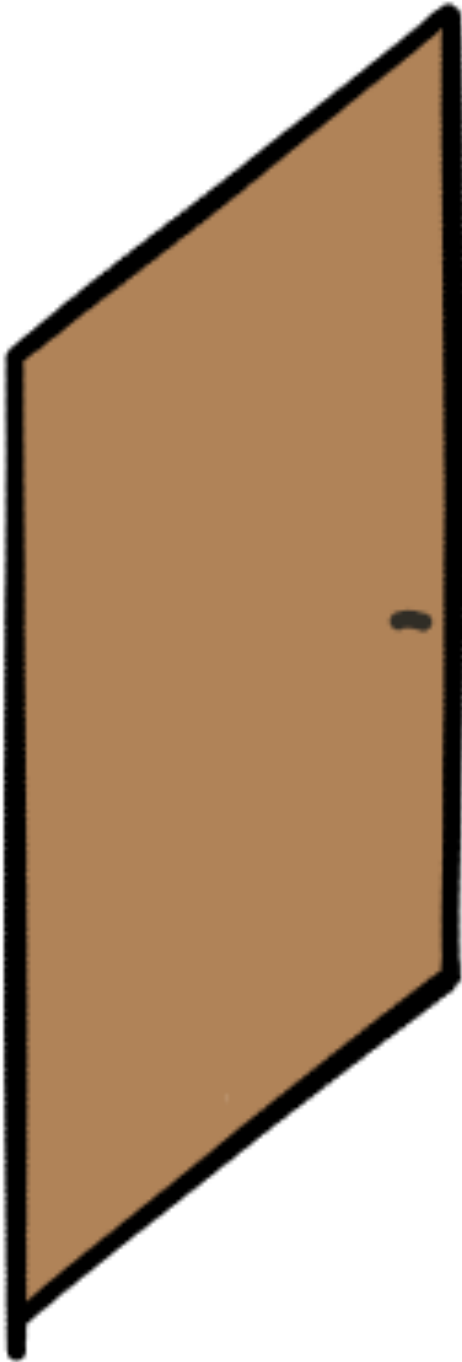
Annotations



	Floor	From room	To room	H	W	No.	Type	FRR	Ironmongery
Door B	3	corridor	Living room	2100	900	D104	SD2	60	18

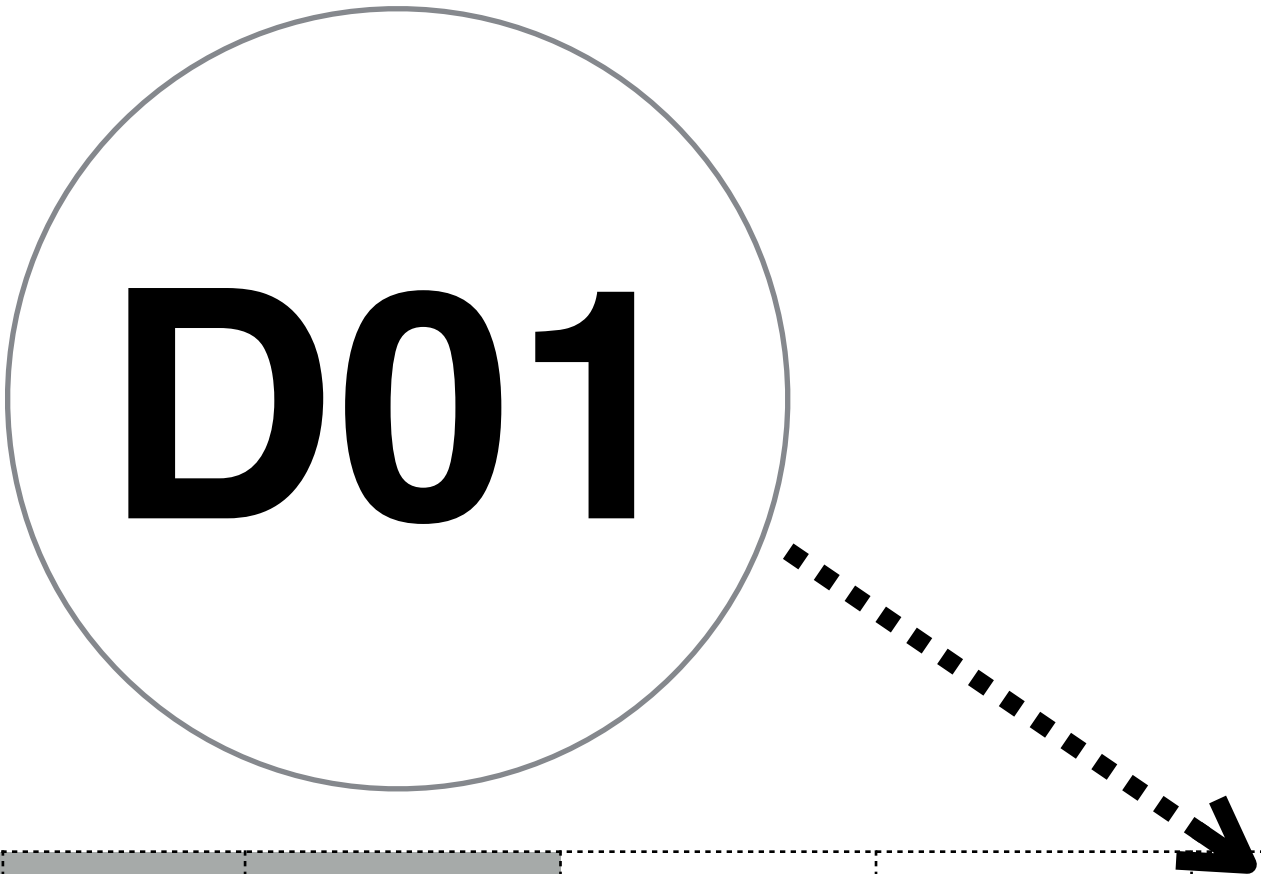


Drawings

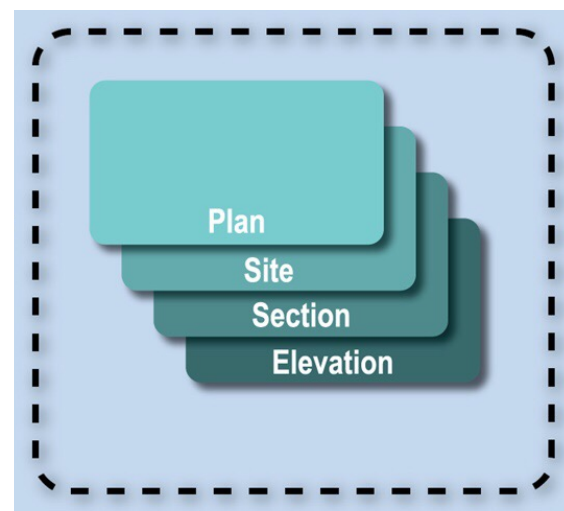


Door B

Annotations



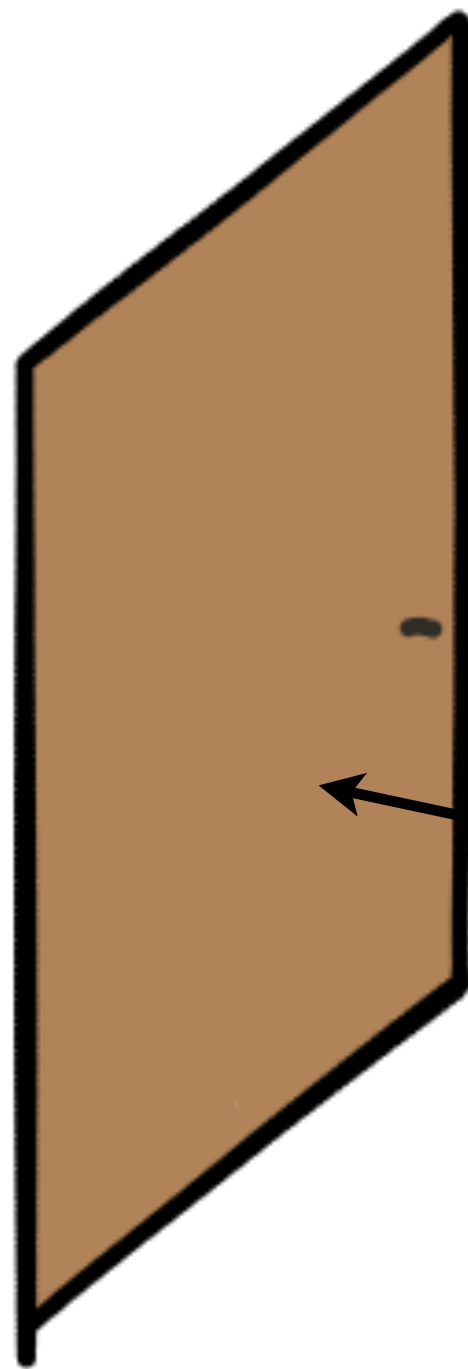
	Floor	From room	To room	H	W	No.	Type	FRR	Ironmongery
Door B	3	corridor	Living room	2100	900	D104	SD2	60	18



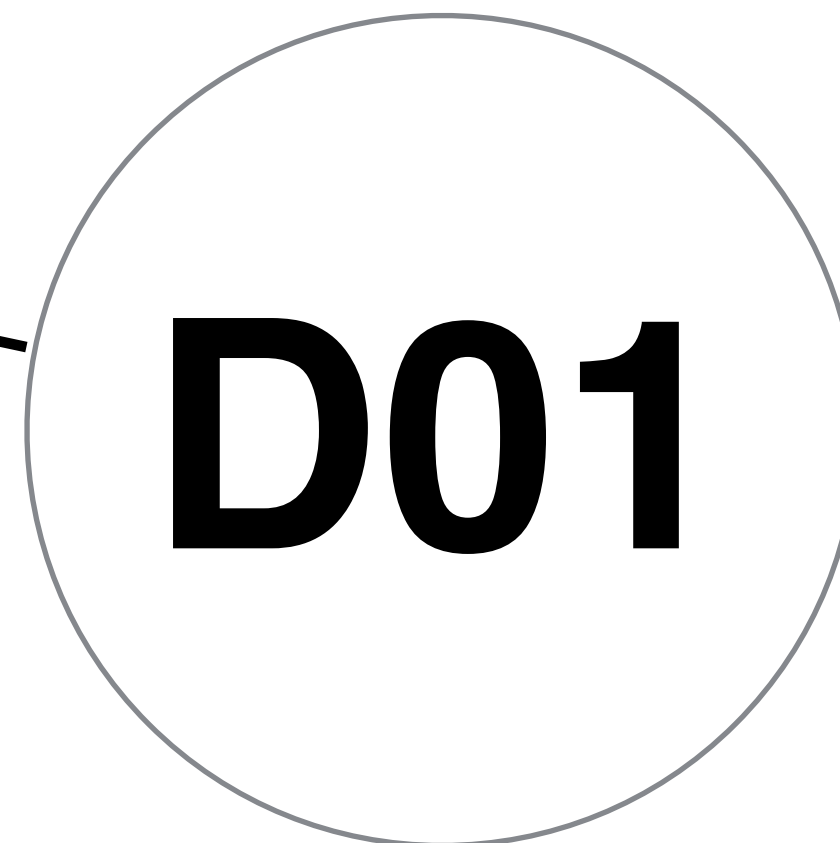
Drawings

Annotations

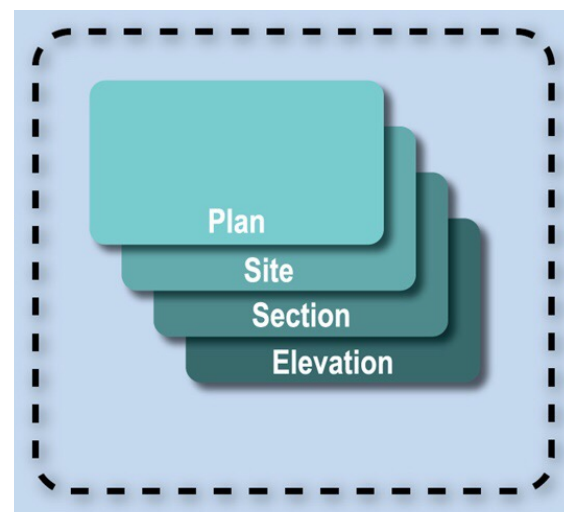
tool: Label & layer combination



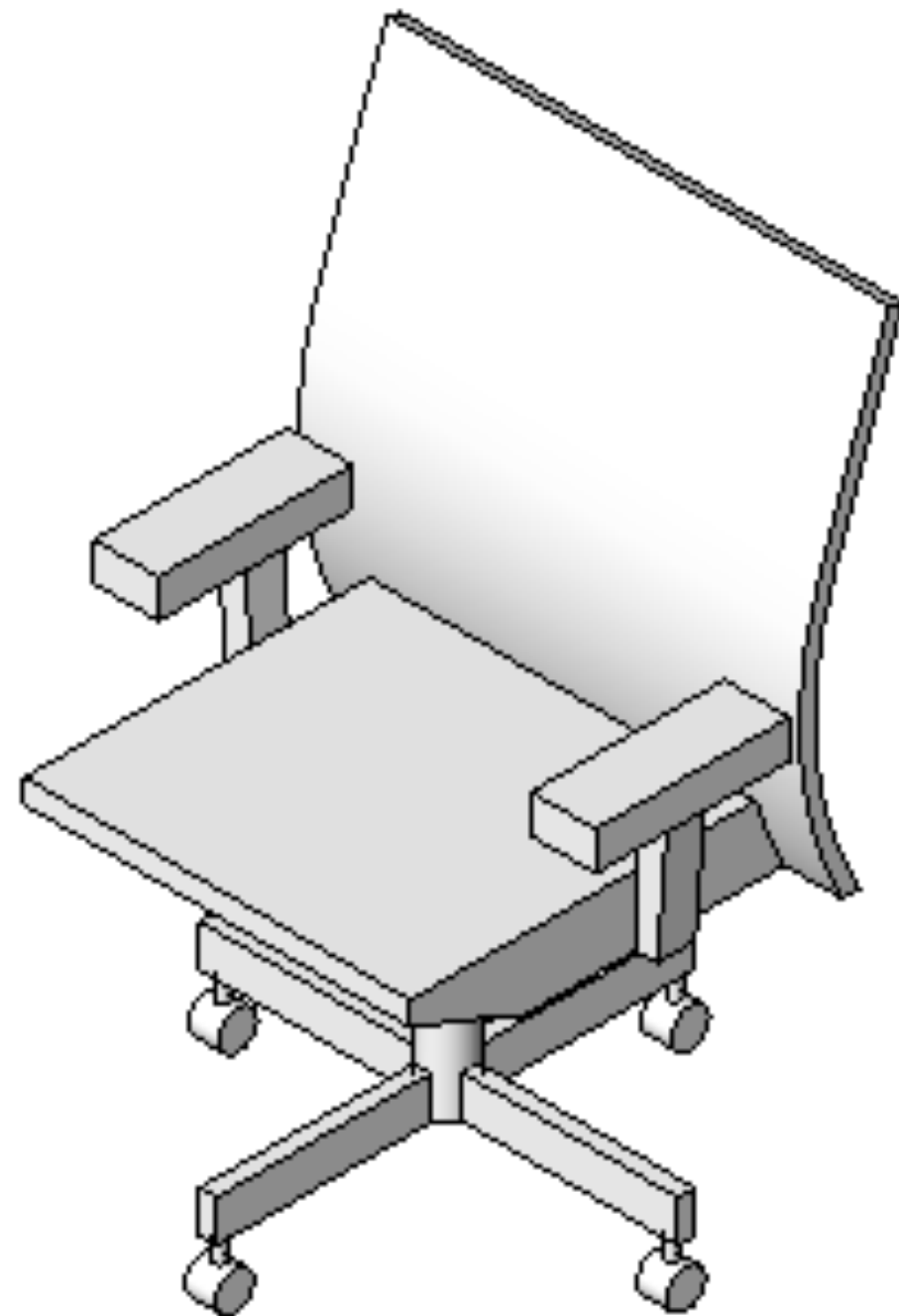
Door B



Put **GBP label** on
this drawing



Drawings

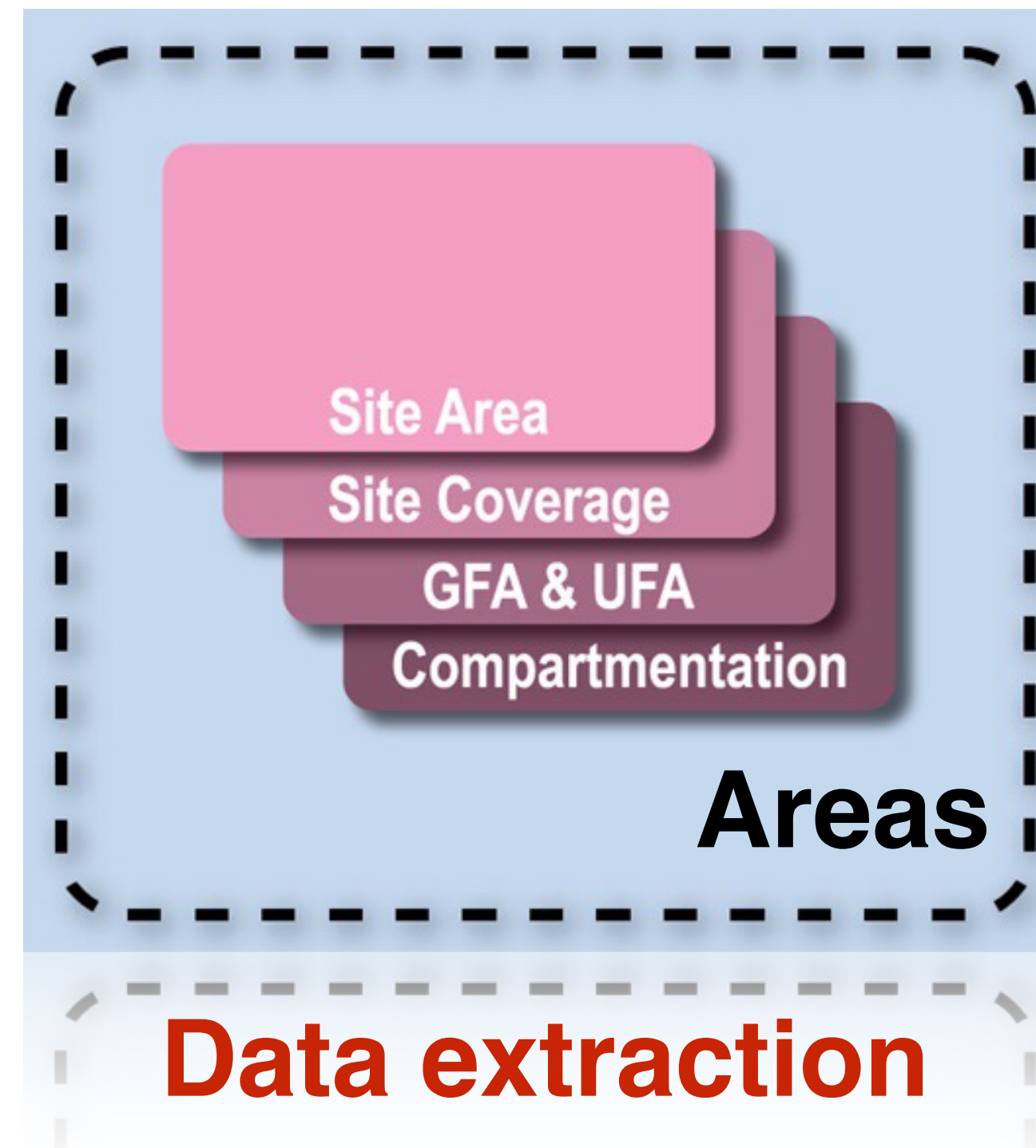


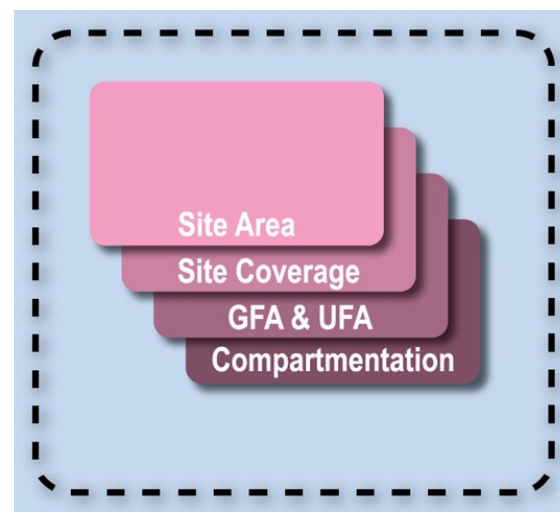
Not for approval

tool: Layer combination

If it is in "**furniture**" layer,

turn off the layer



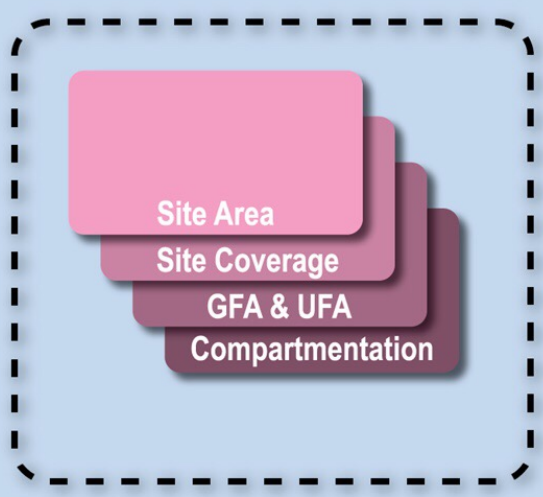


Areas

Area Demarcation

GFA - Gross floor area

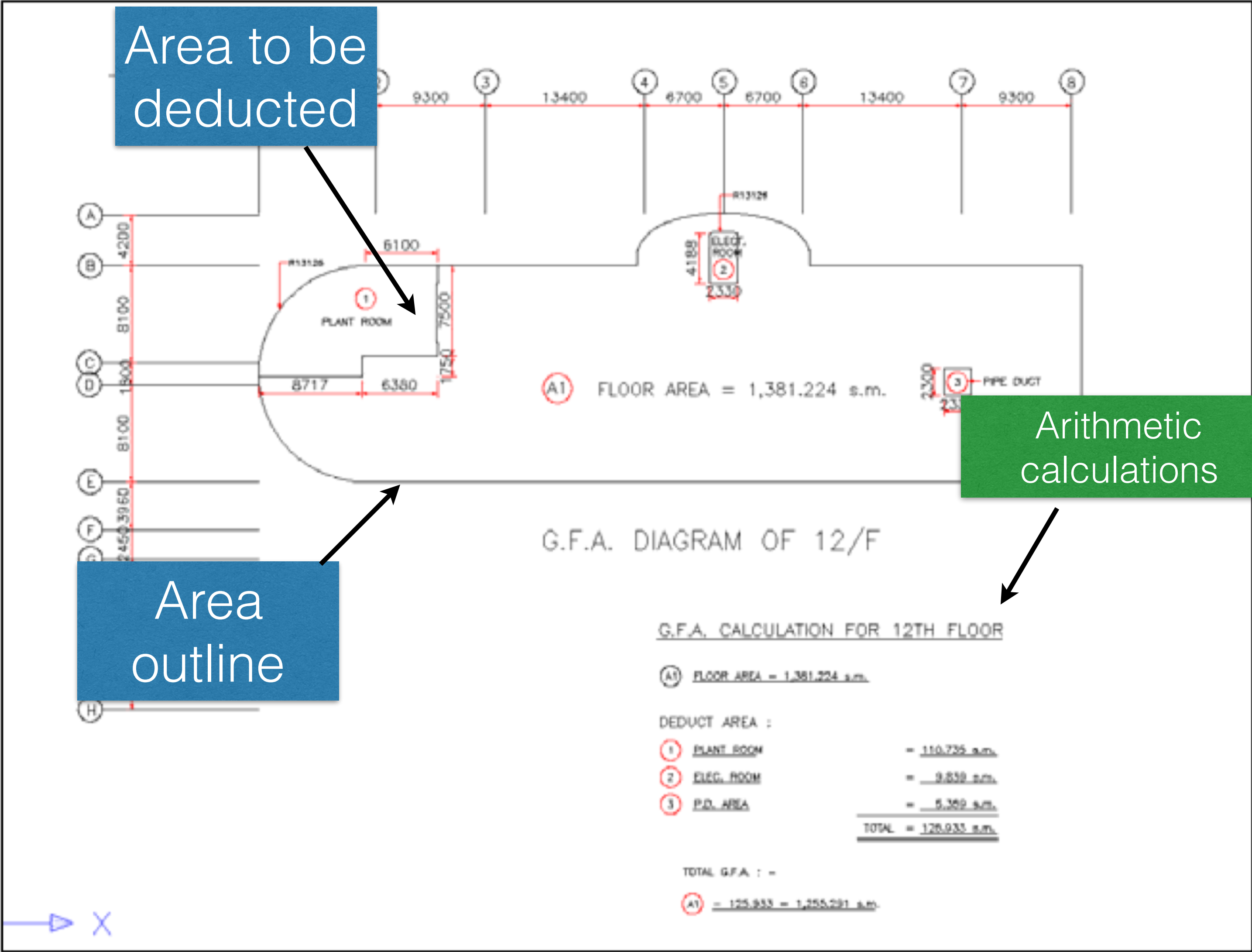
UFA - usable floor area

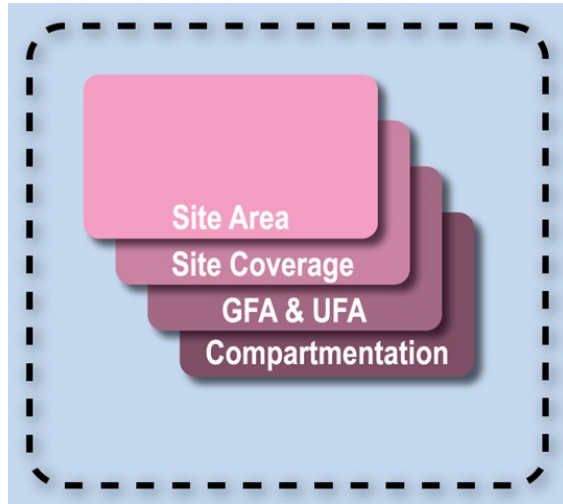


Areas

Sample from BD

Overview of a sample GFA diagram with calculations



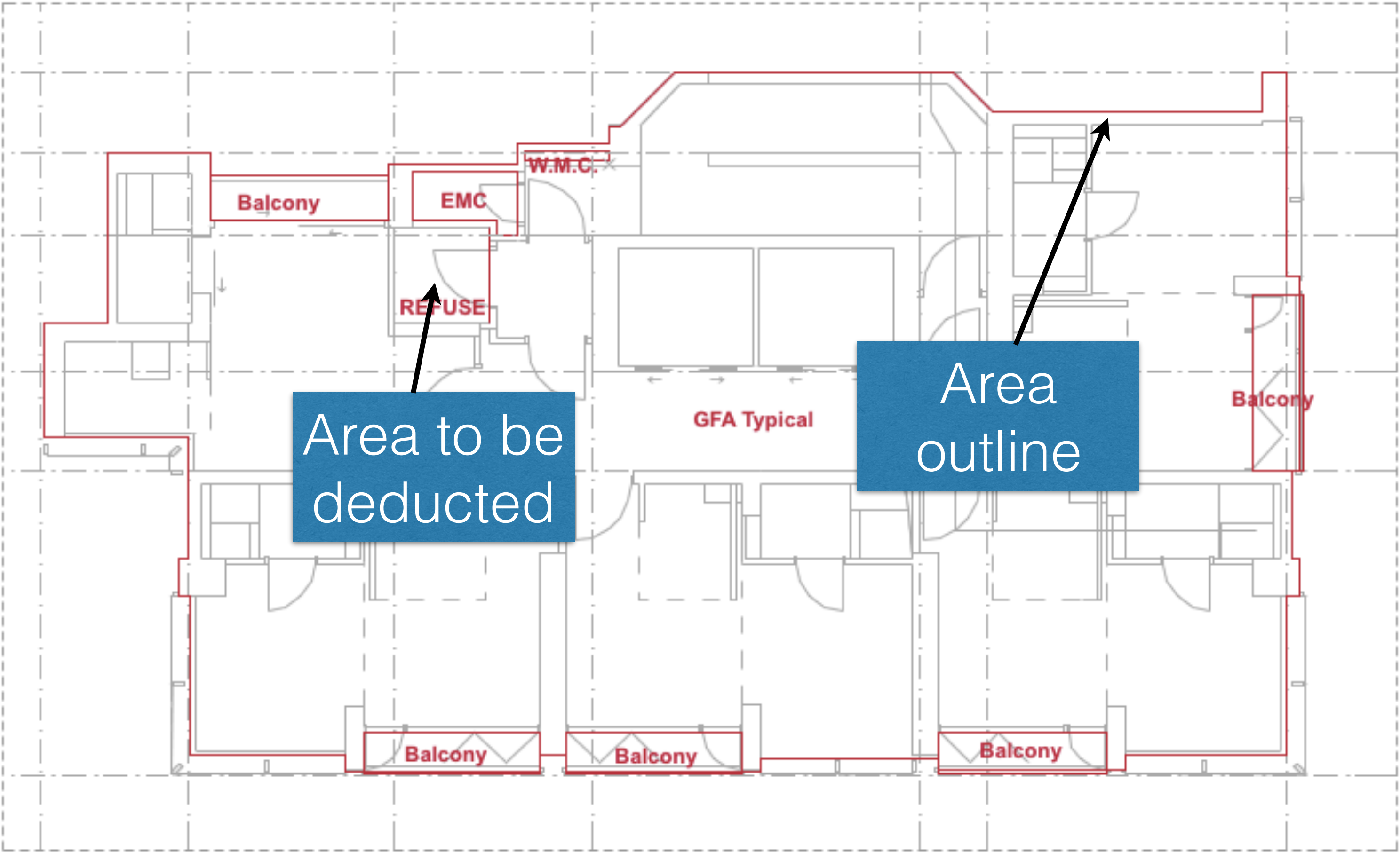


Area extraction

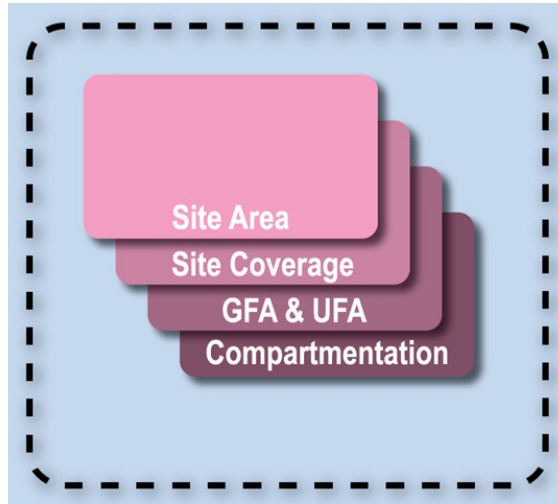
tool: zones & layer combinations

Areas

GFA



Domestic GFA (GROSS FLOOR AREA) breakdown			
Layer (follows BD)	Home Story	Zone Name	Area
ADA08250-D GFA outline	Typical	GFA Typical	189.477
ADA08254-D GFA BD deduction	Typical	EMC	1.424
ADA08254-D GFA BD deduction	Typical	REFUSE	2.403
ADA08254-D GFA BD deduction	Typical	W.M.C.	0.205
ADA082XX-D GFA Balcony	Typical	Balcony	1.806
ADA082XX-D GFA Balcony	Typical	Balcony	1.854
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	2.292

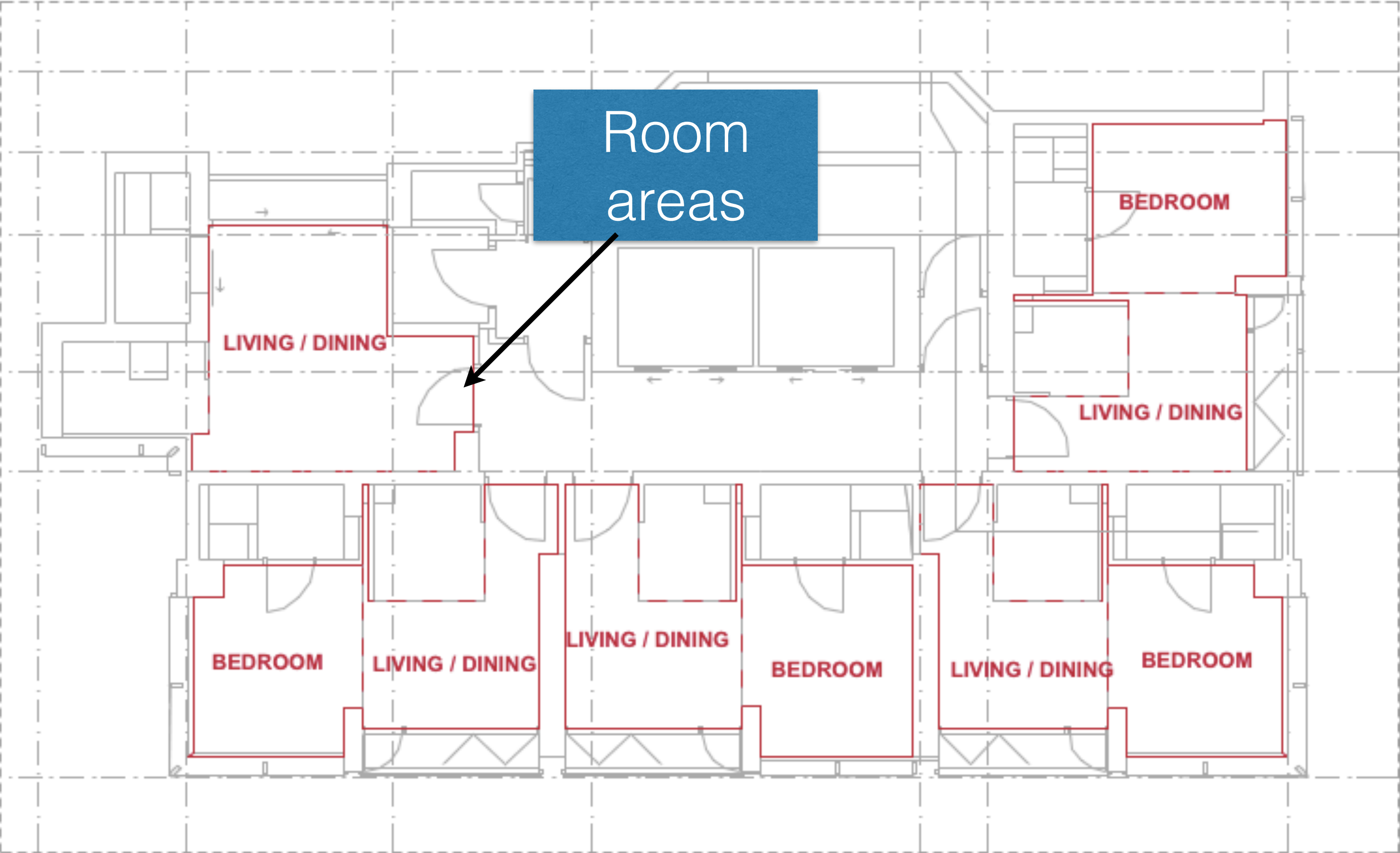


Area extraction

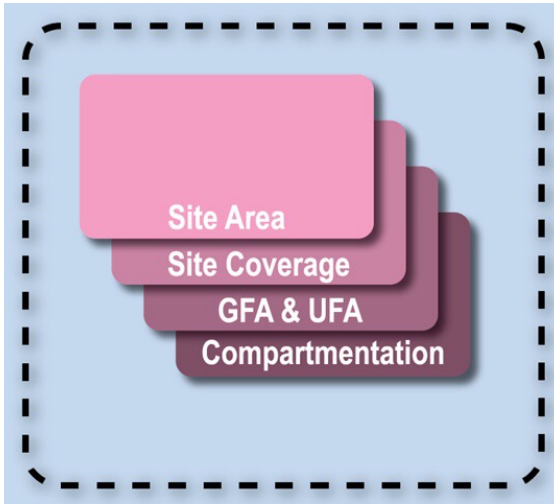
tool: zones & layer combinations

Areas

UFA



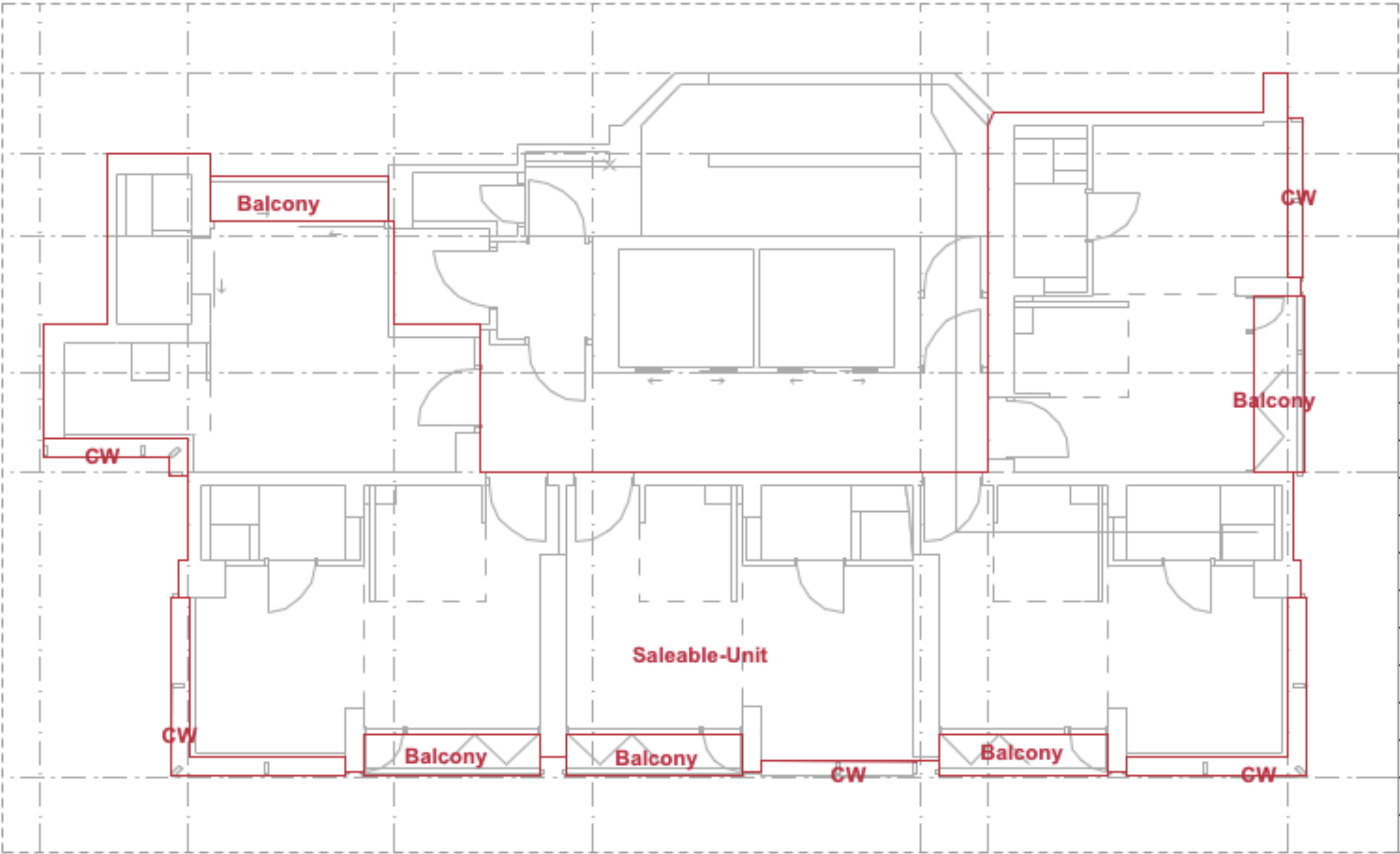
UFA (USABLE FLOOR AREA) breakdown			
Layer (follows BD)	Home Story	Zone Name	Area
ADA08290-UFA outline	Typical	BEDROOM	7.904
ADA08290-UFA outline	Typical	BEDROOM	8.135
ADA08290-UFA outline	Typical	BEDROOM	8.195
ADA08290-UFA outline	Typical	BEDROOM	8.227
ADA08290-UFA outline	Typical	LIVING / DINING	7.663
ADA08290-UFA outline	Typical	LIVING / DINING	7.815
ADA08290-UFA outline	Typical	LIVING / DINING	7.872
ADA08290-UFA outline	Typical	LIVING / DINING	8.135
ADA08290-UFA outline	Typical	LIVING / DINING	14.178



Area calculations

tool: zones & layer combinations

Areas



Efficiency

Saleable Area breakdown			
Layer (follows BD)	Home Story	Zone Name	Area
ADA082XX-D GFA Balcony	Typical	Balcony	1.806
ADA082XX-D GFA Balcony	Typical	Balcony	1.854
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	2.292
Saleable.curtain wall	Typical	CW	0.001
Saleable.curtain wall	Typical	CW	0.646
Saleable.curtain wall	Typical	CW	0.765
Saleable.curtain wall	Typical	CW	1.551
Saleable.curtain wall	Typical	CW	1.571
Saleable.unit	Typical	Saleable-Unit	129.320

Live demo

Sanitary Fitment Schedule

Occupancy

Refuse Storage

MOE Table

Calculations

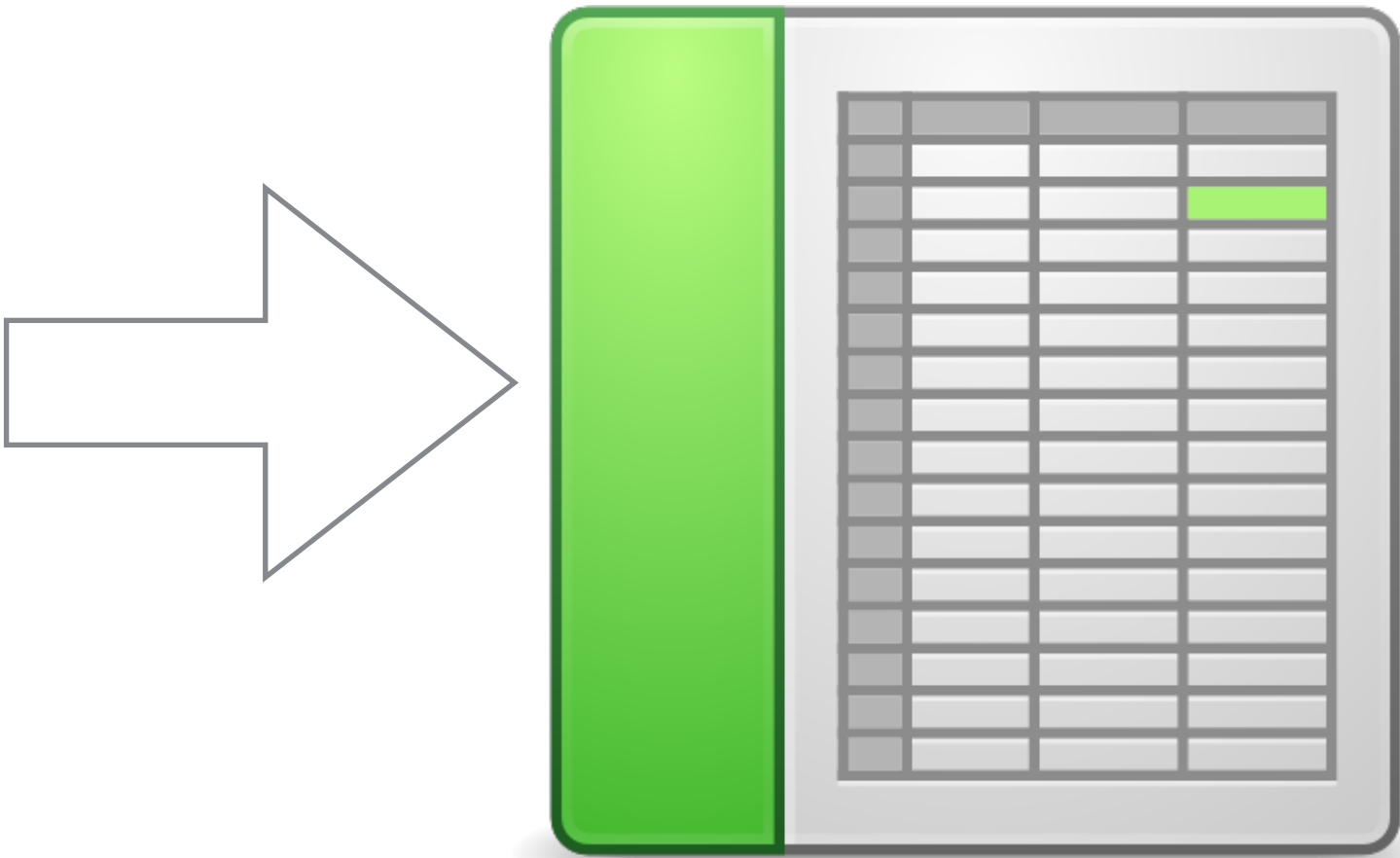
Data export



tool: publish as XLSx

Calculations

Domestic GFA (GROSS FLOOR AREA) breakdown			
Layer (follows BD)	Home Story	Zone Name	Area
ADA08250-D GFA outline	Typical	GFA Typical	189.477
ADA08254-D GFA BD deduction	Typical	EMC	1.424
ADA08254-D GFA BD deduction	Typical	REFUSE	2.403
ADA08254-D GFA BD deduction	Typical	W.M.C.	0.205
ADA082XX-D GFA Balcony	Typical	Balcony	1.806
ADA082XX-D GFA Balcony	Typical	Balcony	1.854
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	1.873
ADA082XX-D GFA Balcony	Typical	Balcony	2.292



Sanitary Fitment Schedule

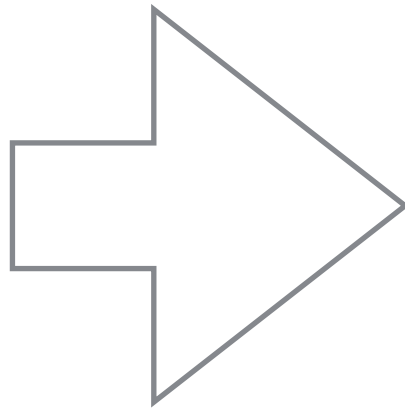
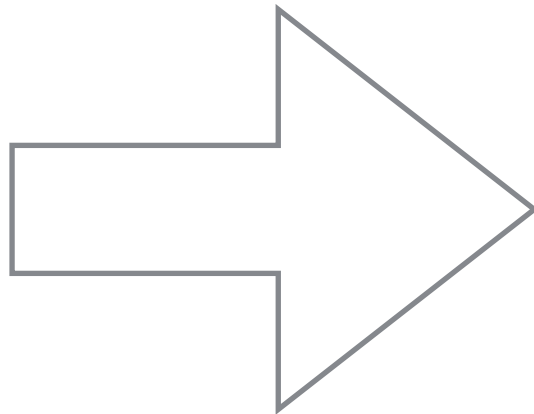
Occupancy

Refuse Storage

MOE Table

Calculations

own	
ame	Area
pical	189.477
	1.424
	2.403
	0.205
	1.806
	1.854
	1.873
	1.873
	2.292



G.F.A. DIAGRAM OF 12/F

G.F.A. CALCULATION FOR 12TH FLOOR

(A1) FLOOR AREA = 1,381,224 s.m.

DEDUCT AREA :

1 PLANT ROOM = 110,735 s.m.

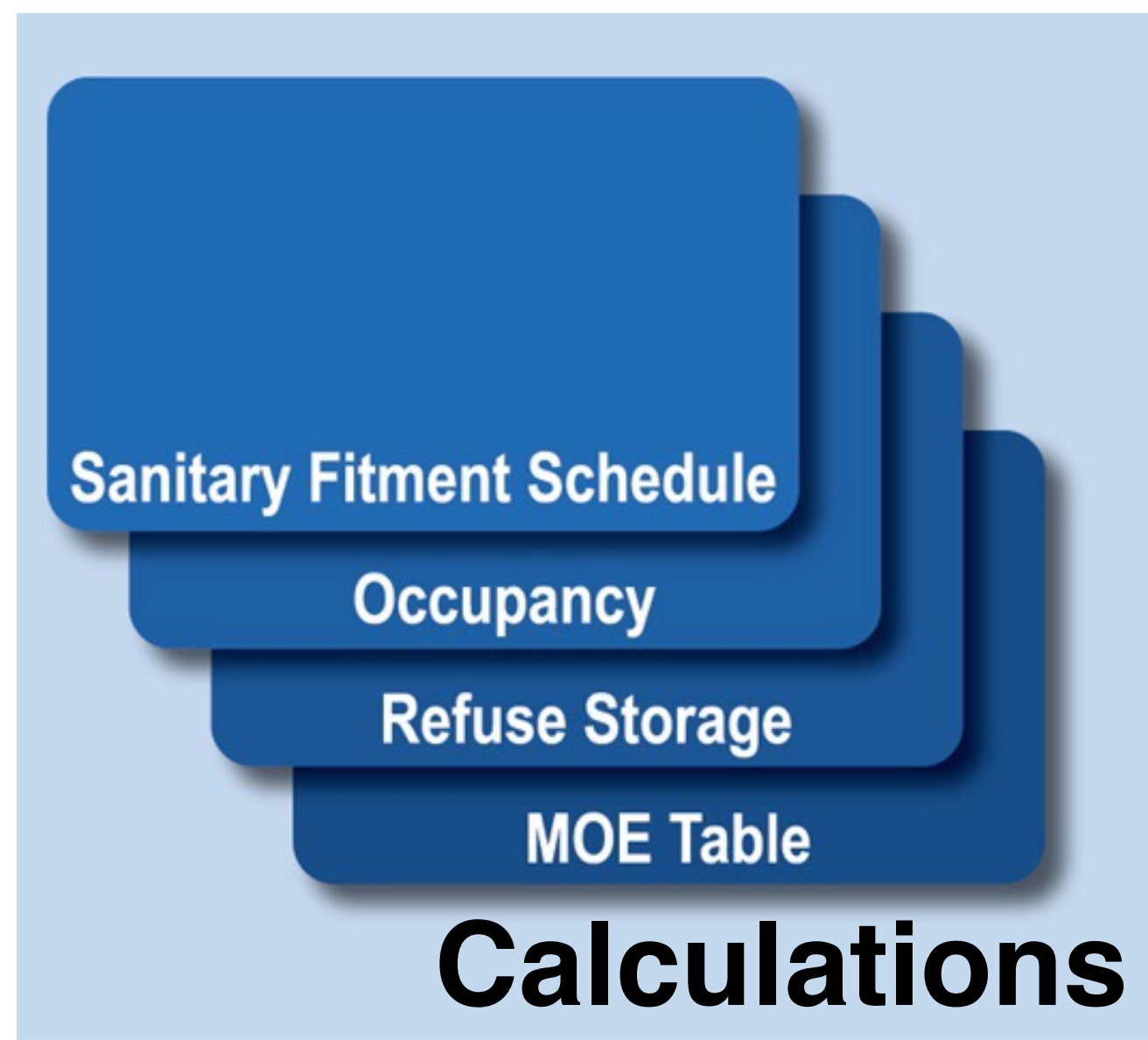
2 ELEC. ROOM = 9,839 s.m.

3 P.D. AREA = 5,369 s.m.

TOTAL = 125,933 s.m.

TOTAL G.F.A. : =

(A1) = 125,933 = 1,255,291 s.m.



Data export

Calculations in spreadsheet:

BIM software cannot do them out of box

No coding needed

Everyone can customize

Everyone can check calculation algorithm

PNAP ADV-34

BIM for BD submission

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

Appendix A
(PNAP ADV-34)

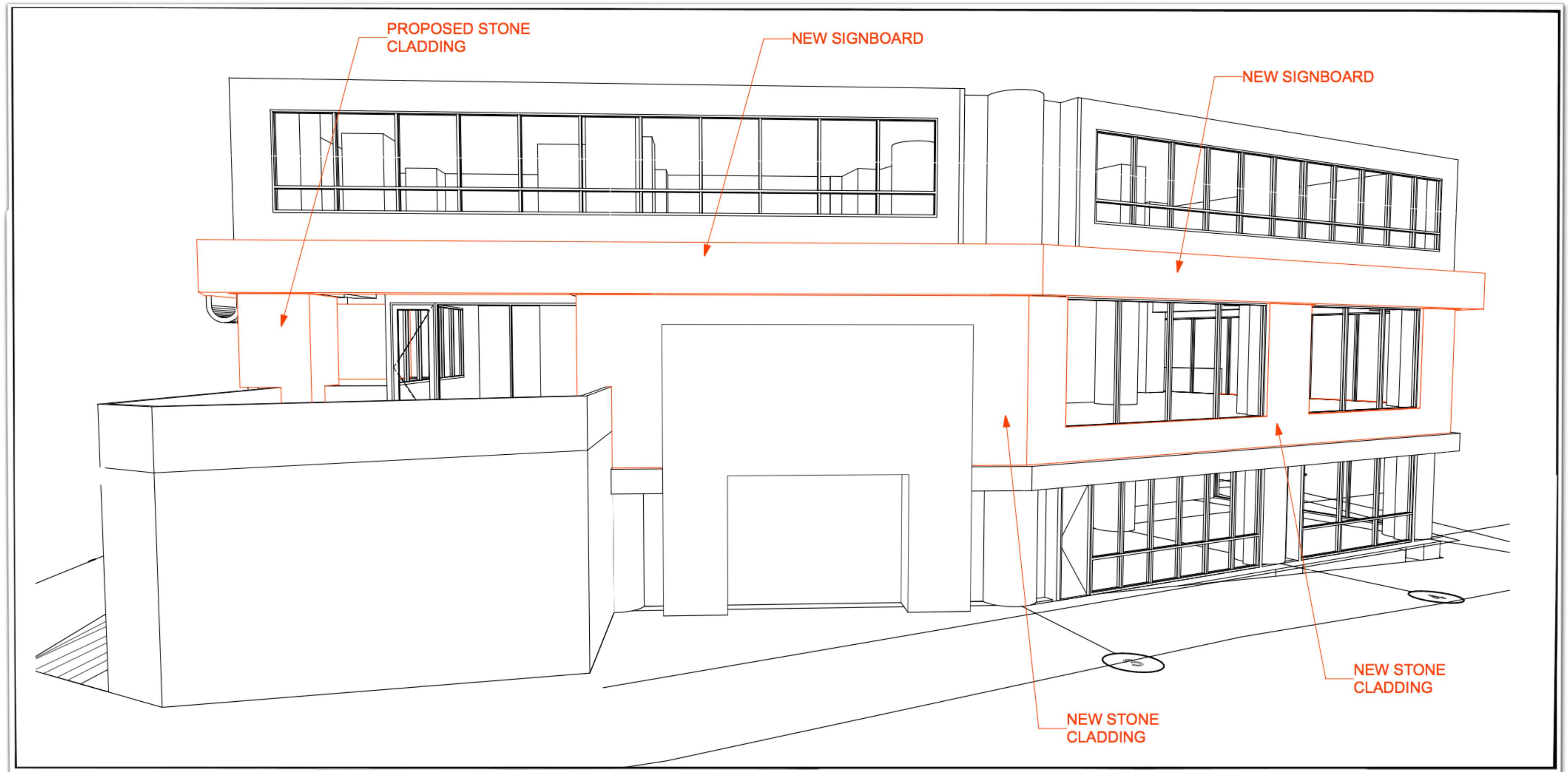
Examples of application of BIM to supplement Plan Submissions

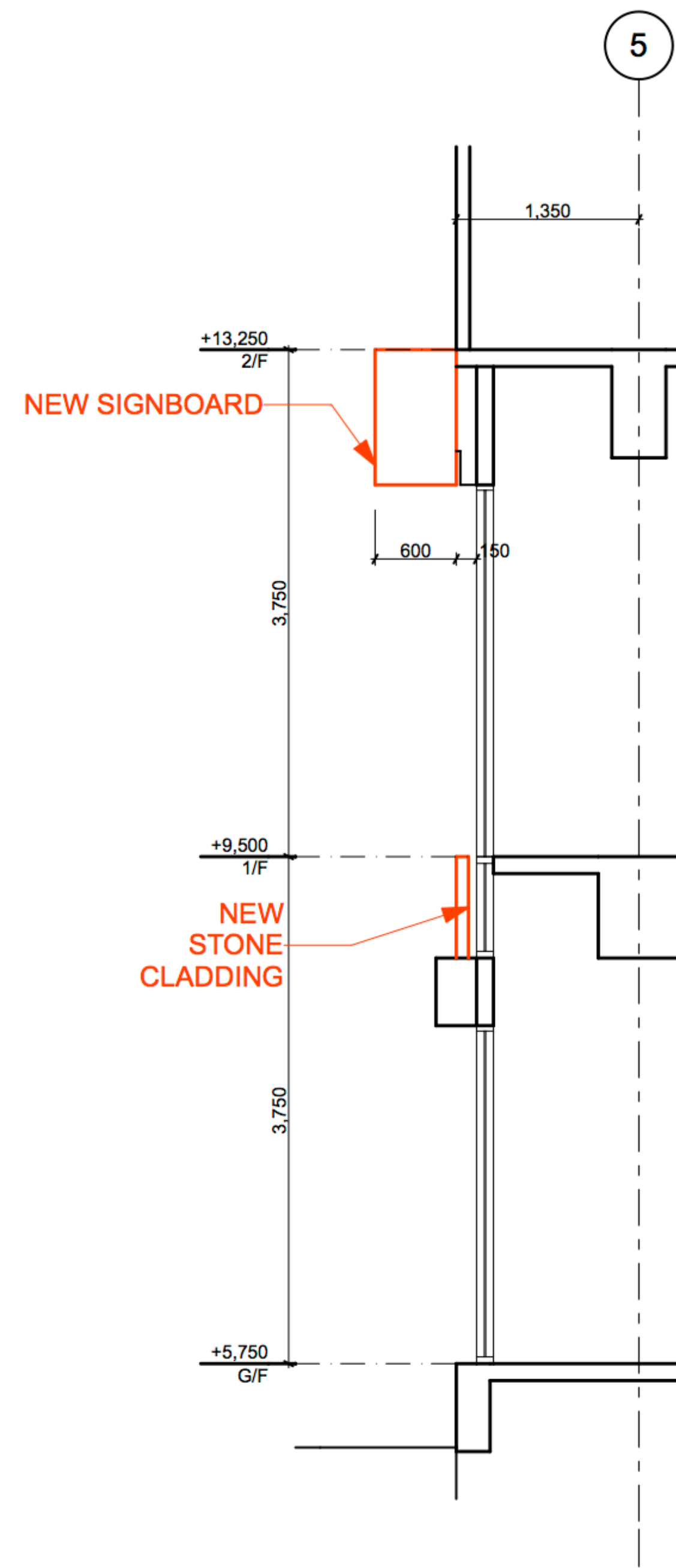
Types of Plan Submission	Examples of Building Information to be illustrated by BIM	
	Building Information Model	Real-time Simulation
General Building Plans	<ul style="list-style-type: none">● innovative building design, irregular/twisted building form;● projecting features on external wall;● relationship 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.	<ul style="list-style-type: none">● sequence and phasing of various stages^{Note 1} of new building development;● sequence and phasing of A&A works.

Projecting feature - signboard & cladding

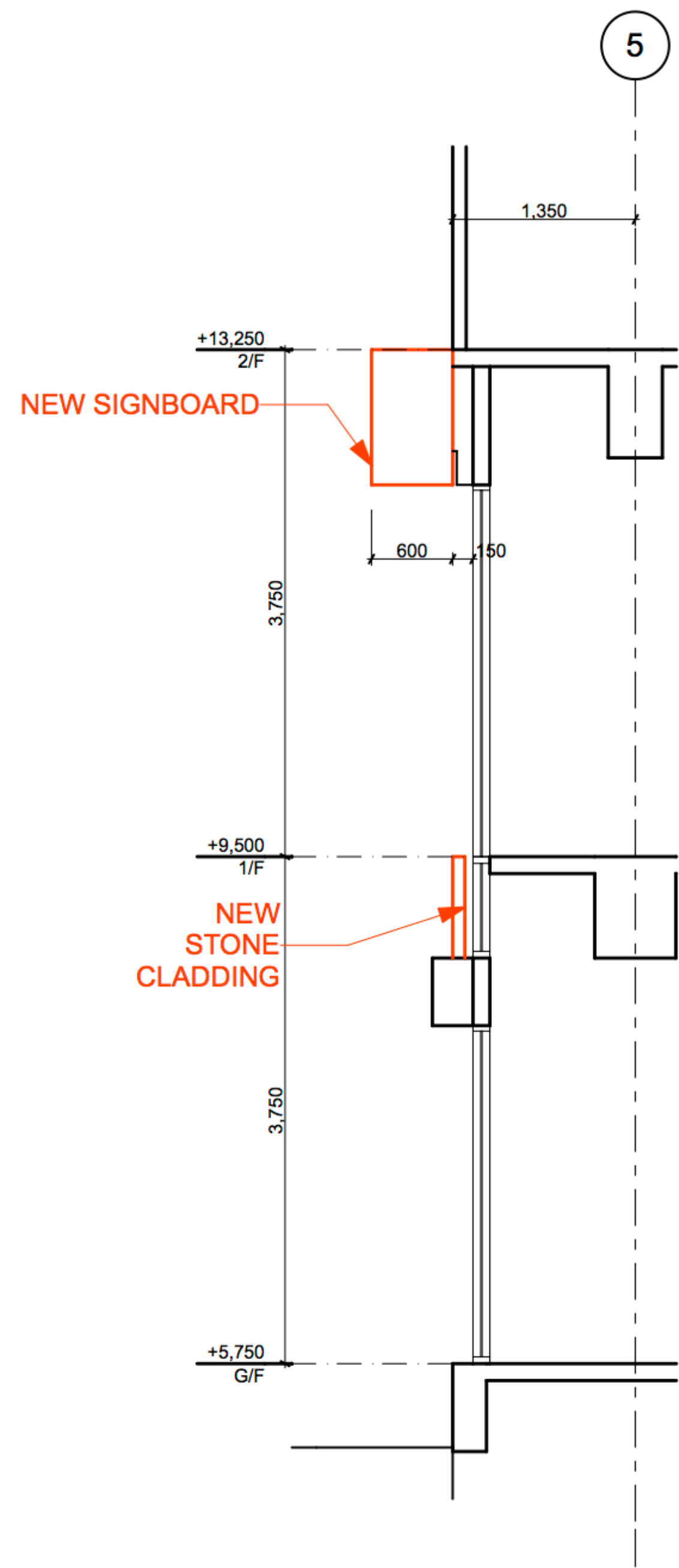
- Appearance
- Projection from GFA envelop
- Relationship with boundary
- Cantilevered slab? Involved?

Projecting feature - signboard

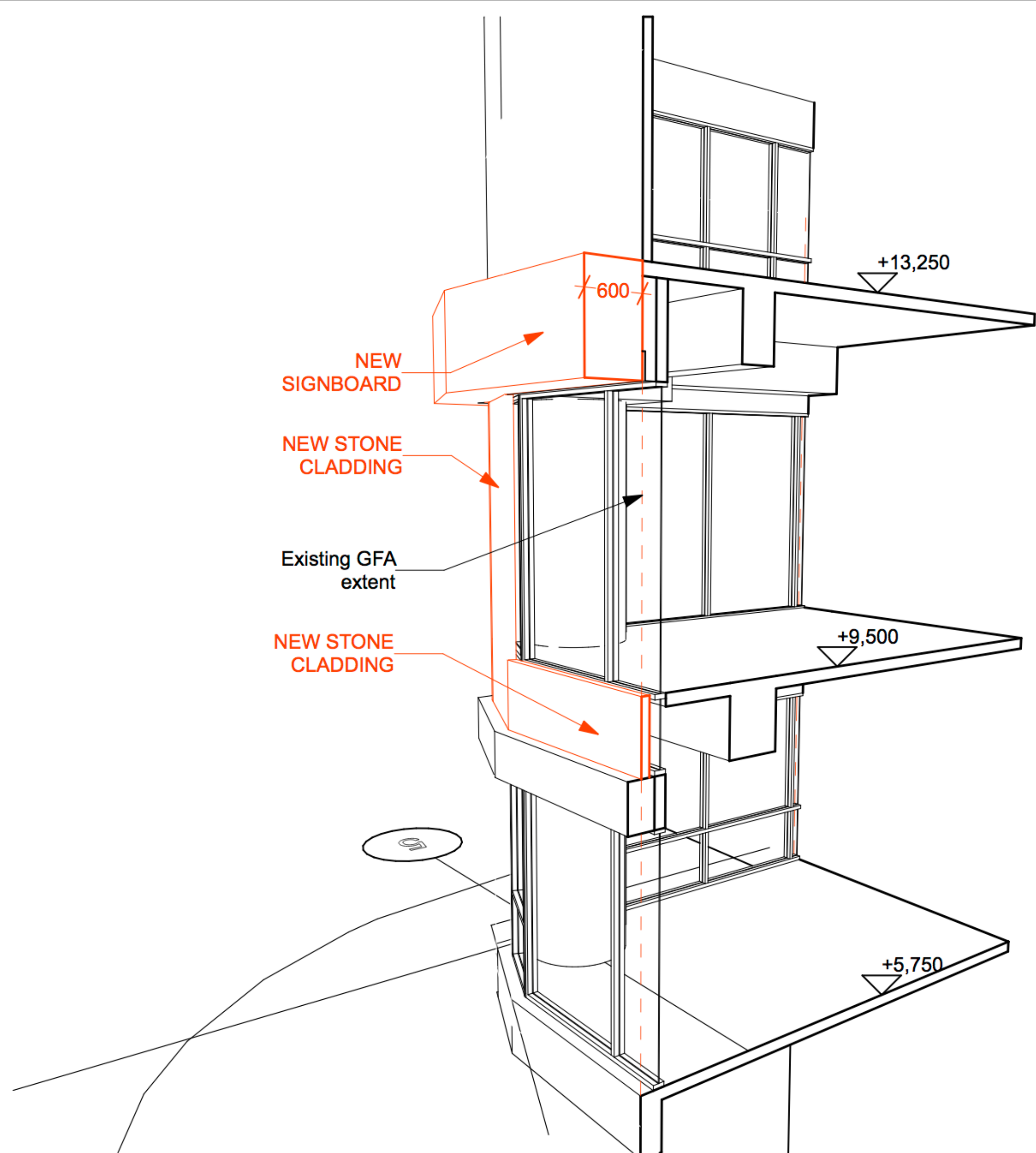




C Building Section 1:50



C Building Section 1:50



3D-S06

3D Section

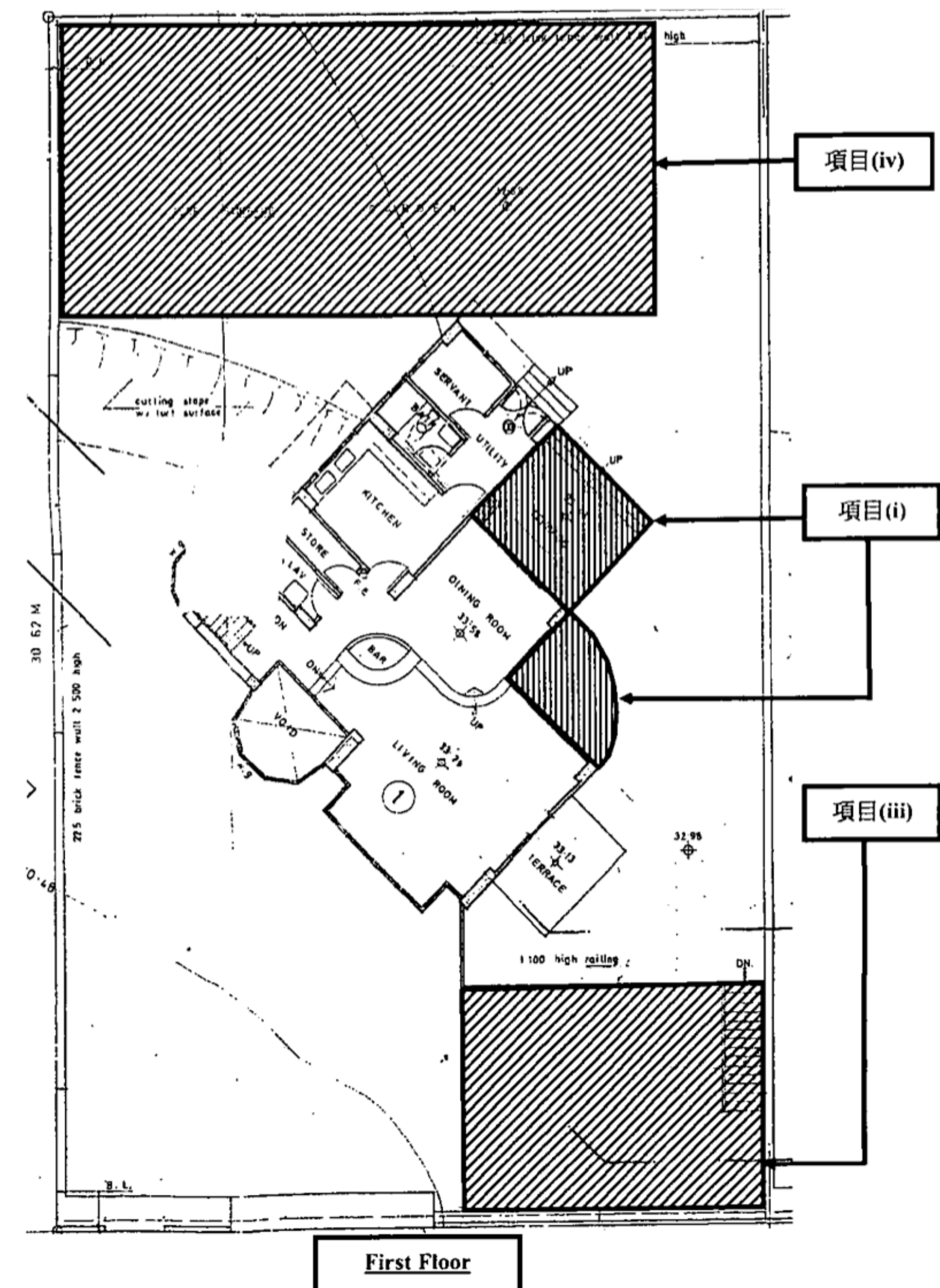
1:150

Sequence


- Demolition & Reinstatement

Removal of Unauthorised Building Works

BD Order

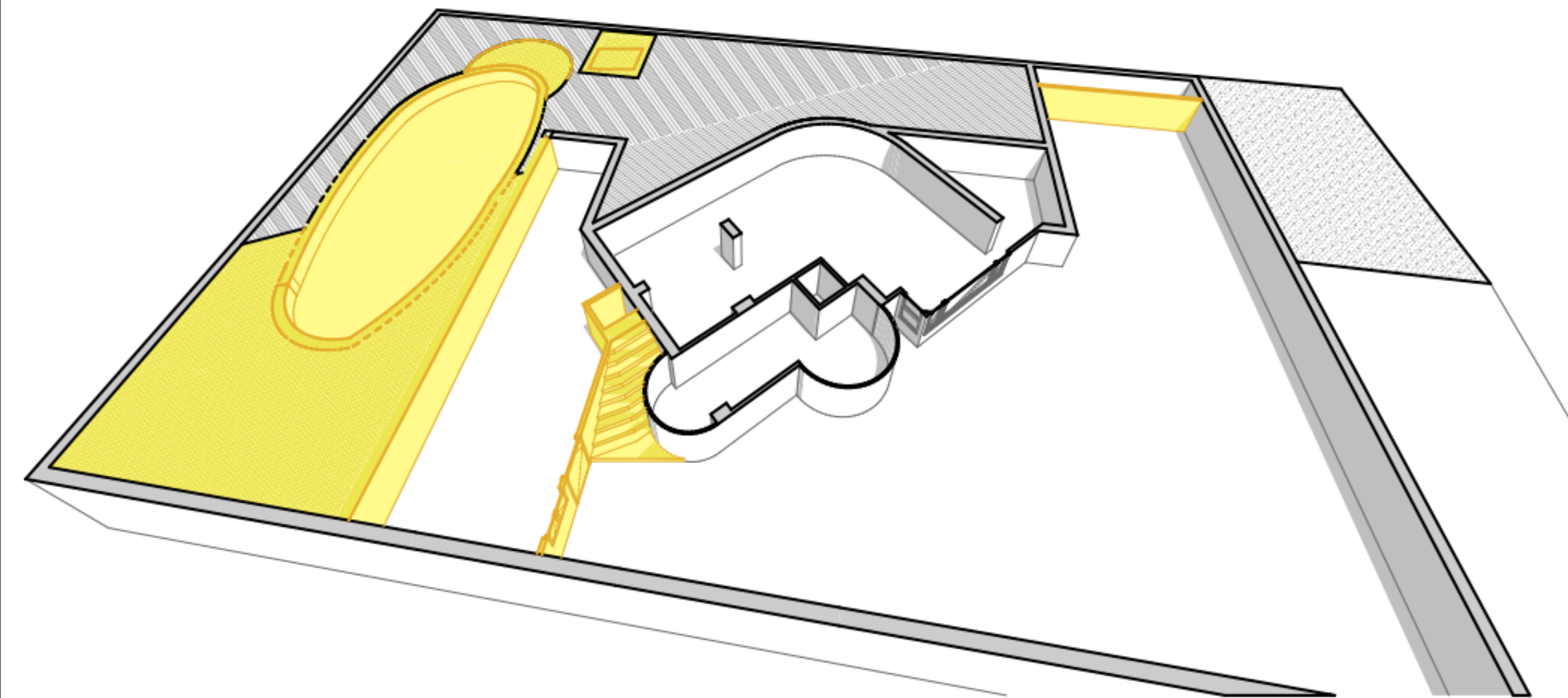


- 項目 (i) - 在樓宇側面 1 字樓、2 字樓及天台的外牆附建兩組伸建物。
(Projecting structures attached to the external wall at the side on 1/F, 2/F and Roof.)
- 項目 (iii) - 在樓宇前面地下的花園加建一個搭建物。
(A structure on and over the garden on ground floor at the front of the premises.)
- 項目 (iv) - 改建在樓宇後面的批准泳池。
(Alteration of the approved swimming pool at the rear of the premises.)

 The location of the said building work, for the purpose of identification only.
本命令提及建築工程的大概位置，以資識別。

Existing

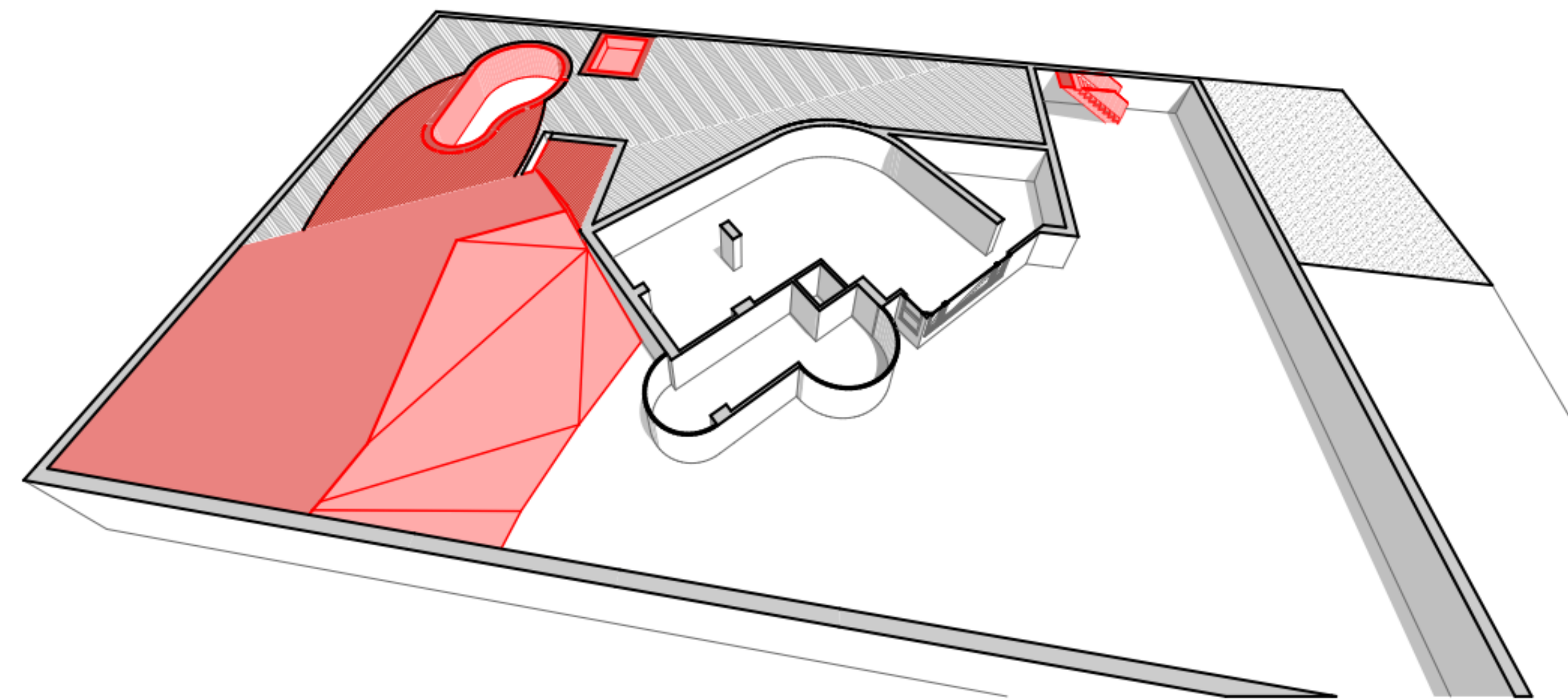
Yellow = UBW



G/F

Original

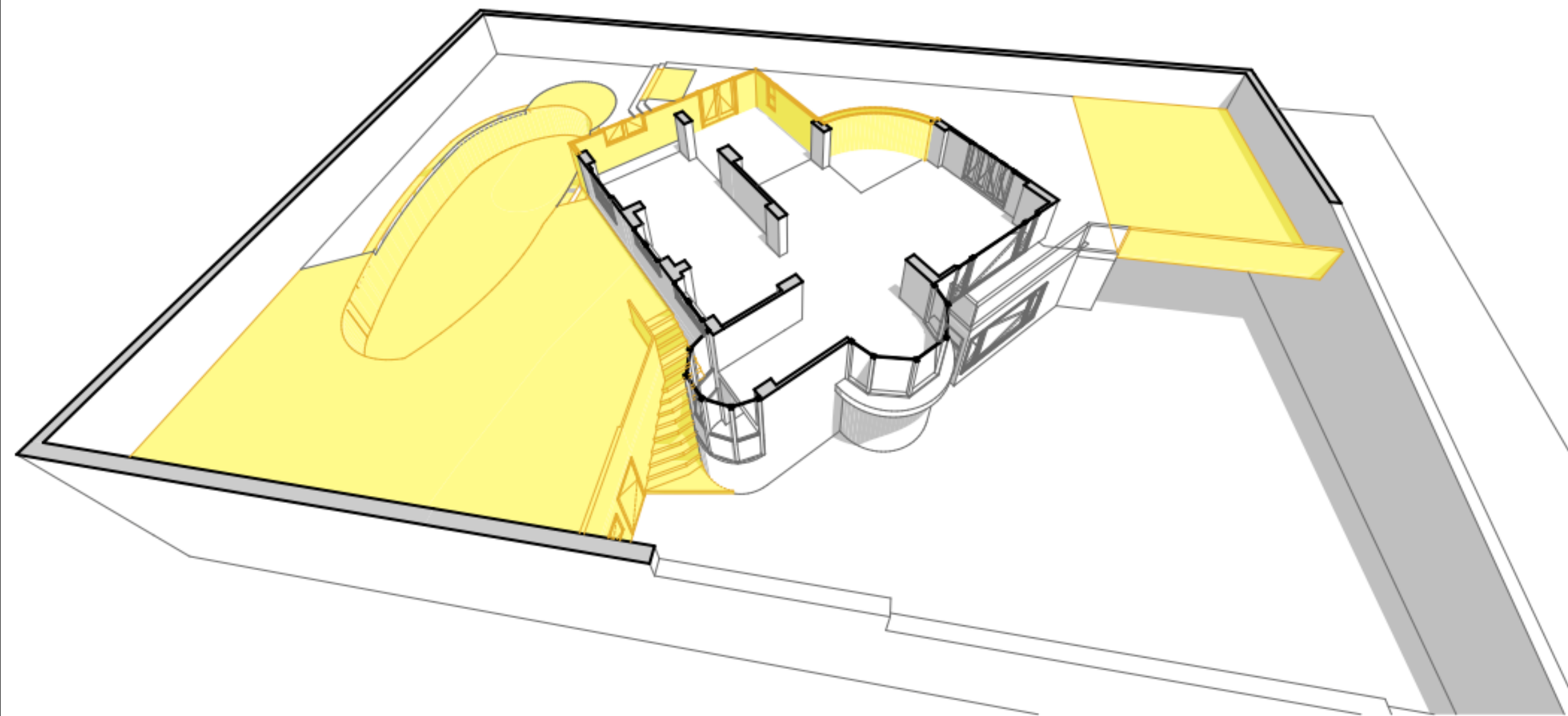
Red = to reinstate



G/F

Existing

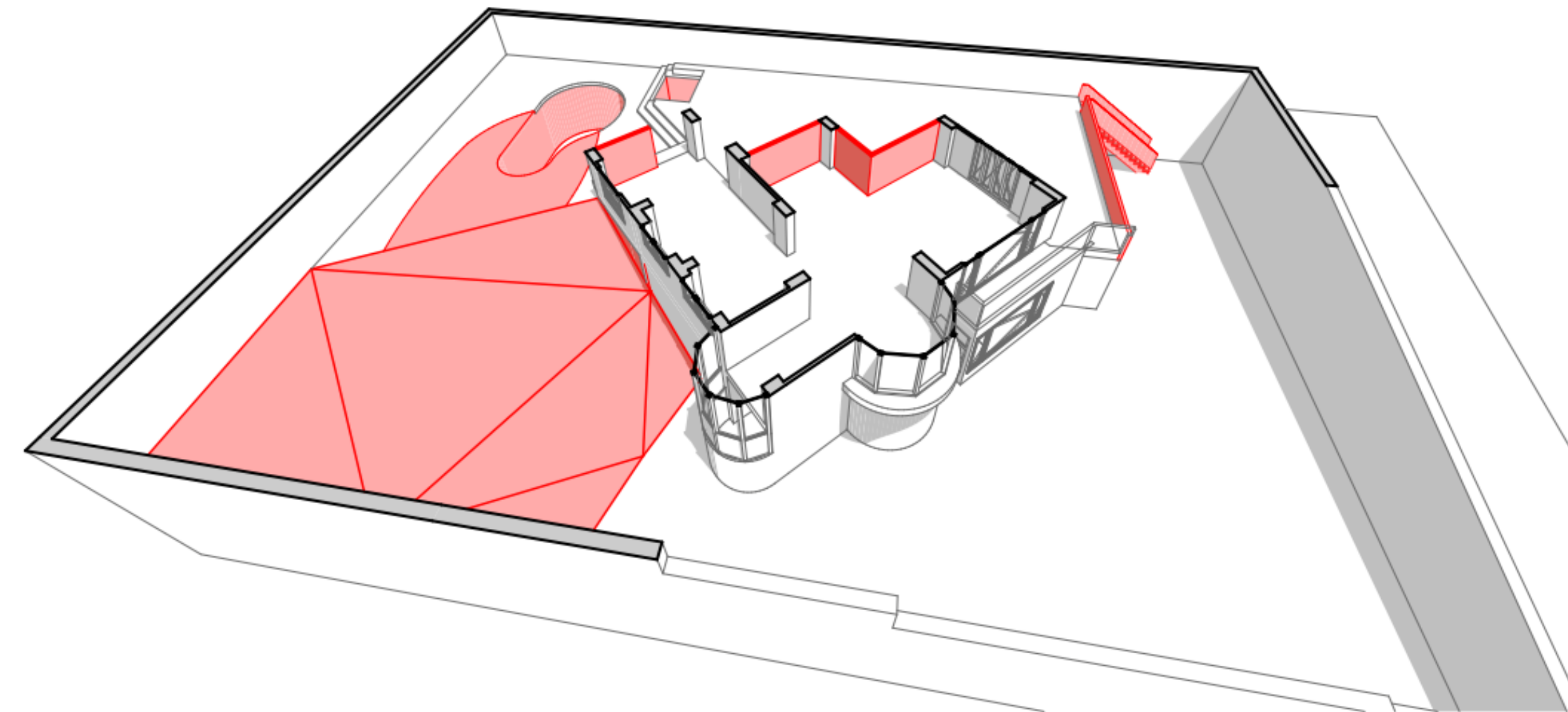
Yellow = UBW



1/F

Original

Red = to reinstate



1/F

Existing

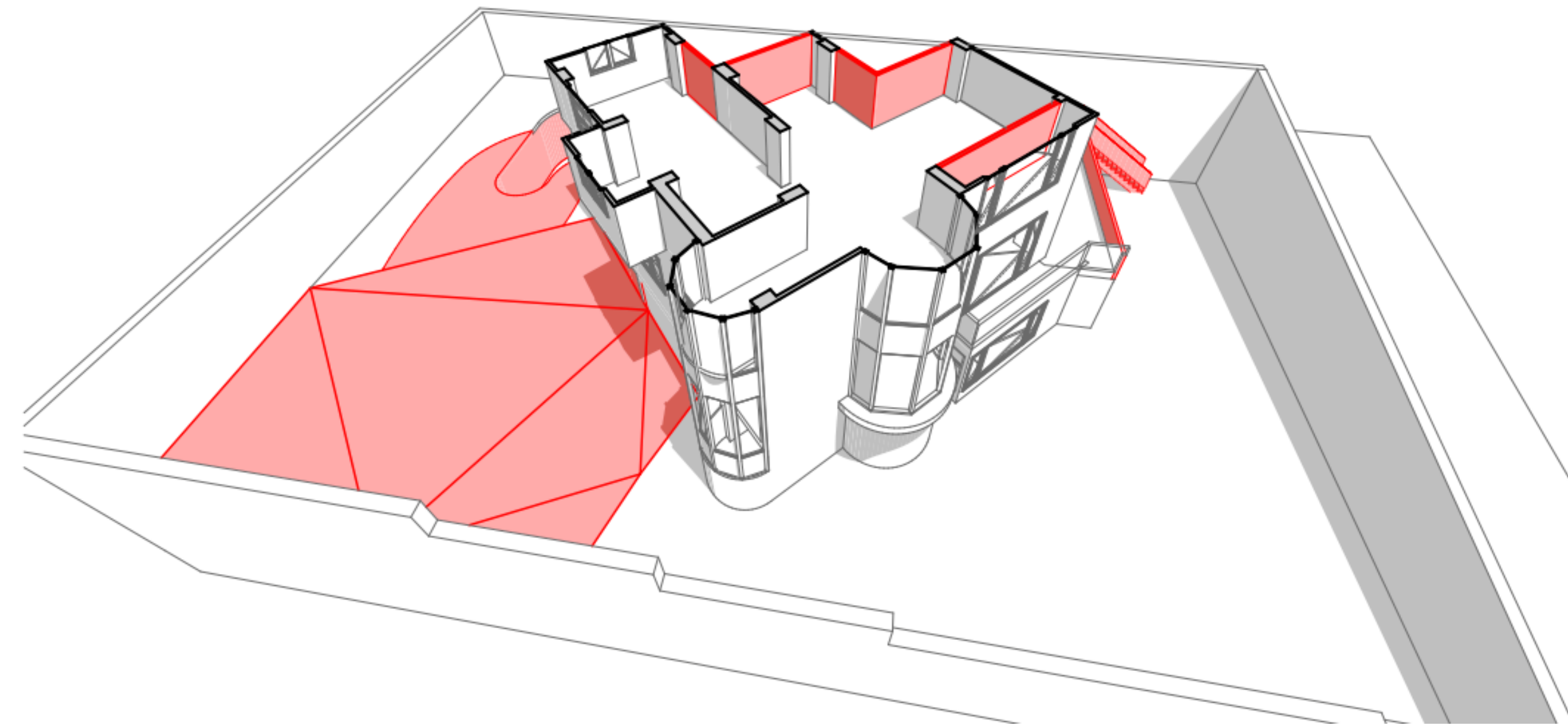
Yellow = UBW



2/F

Original

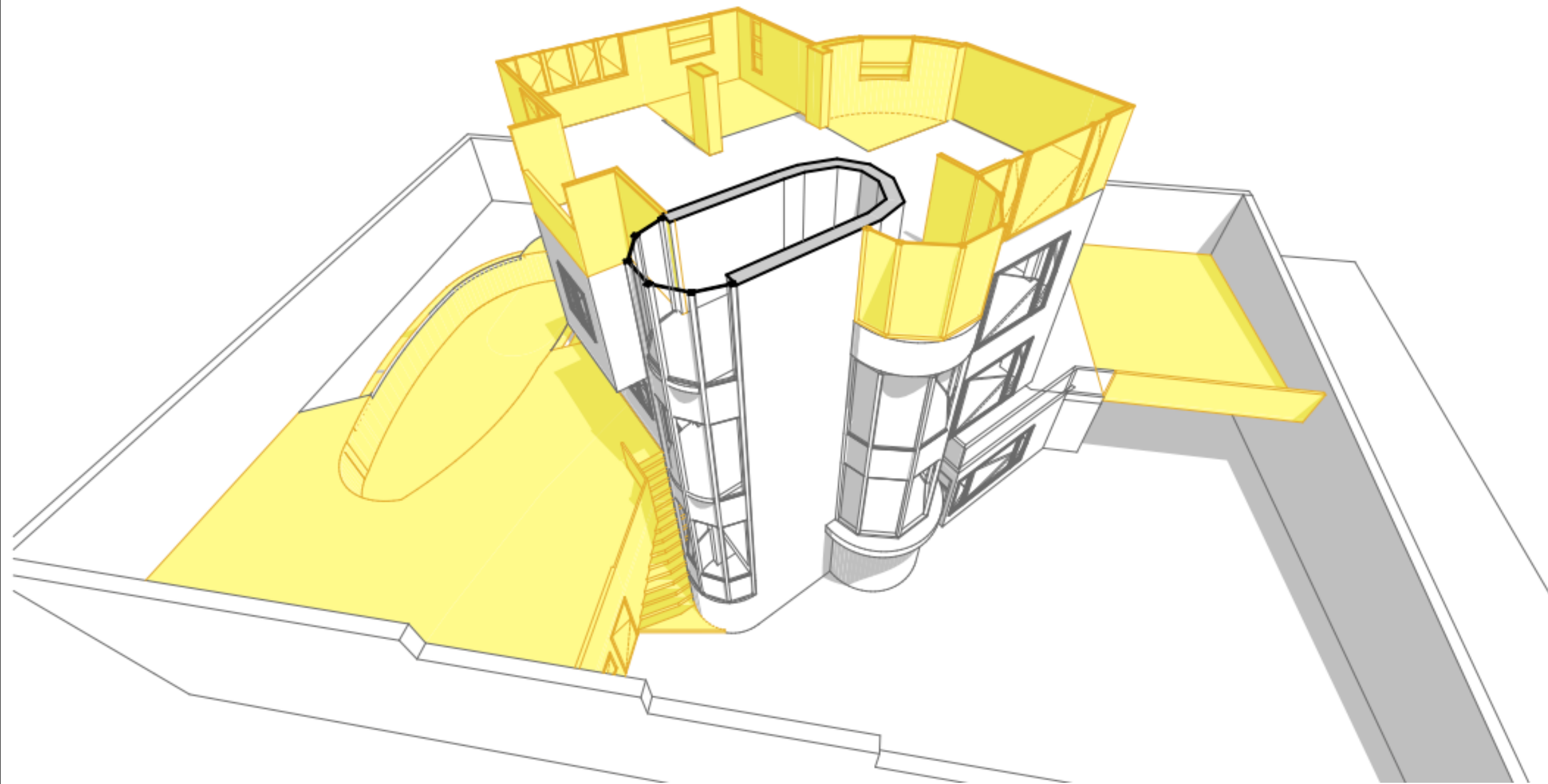
Red = to reinstate



2/F

Existing

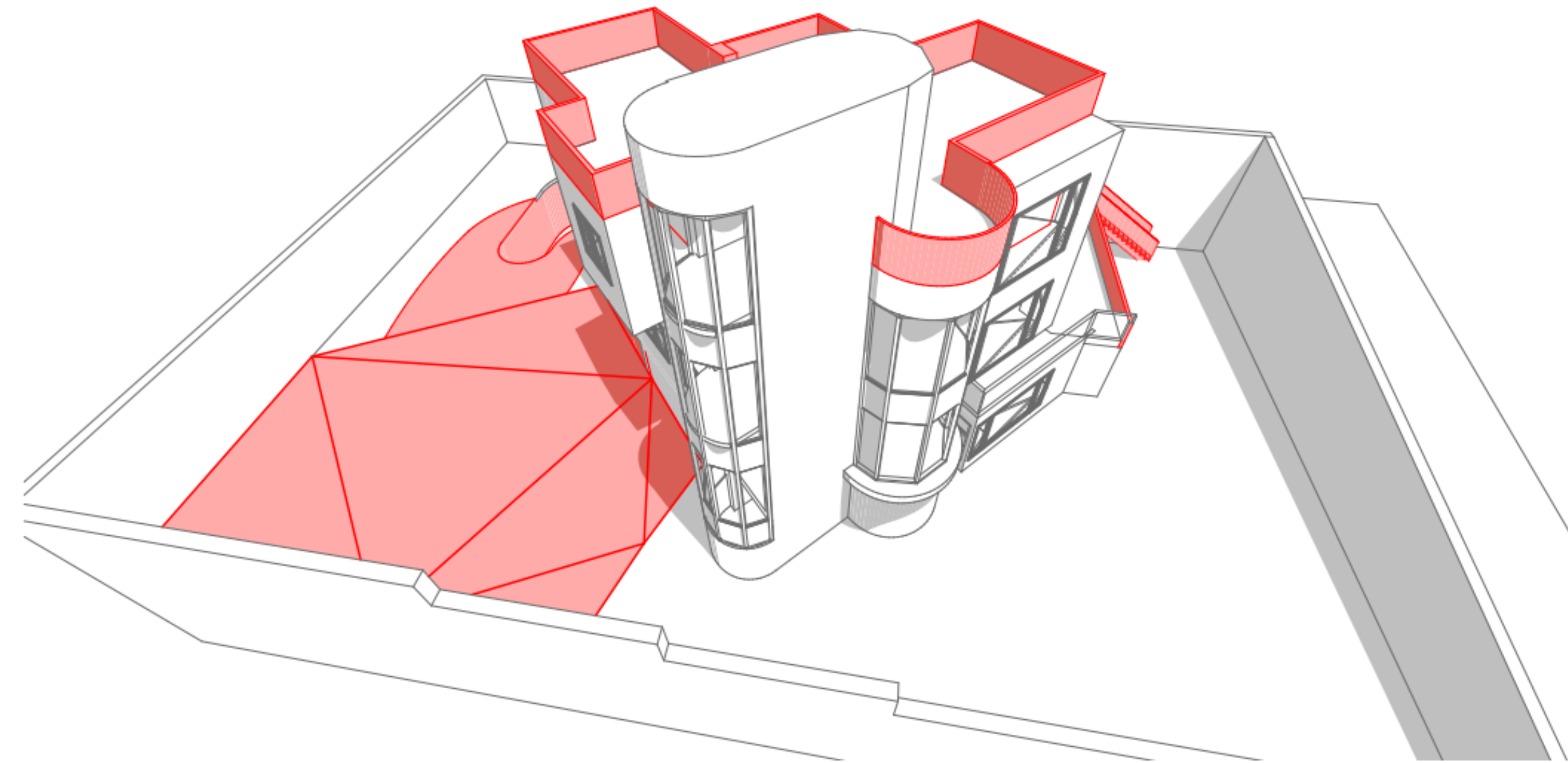
Yellow = UBW



3/F

Original

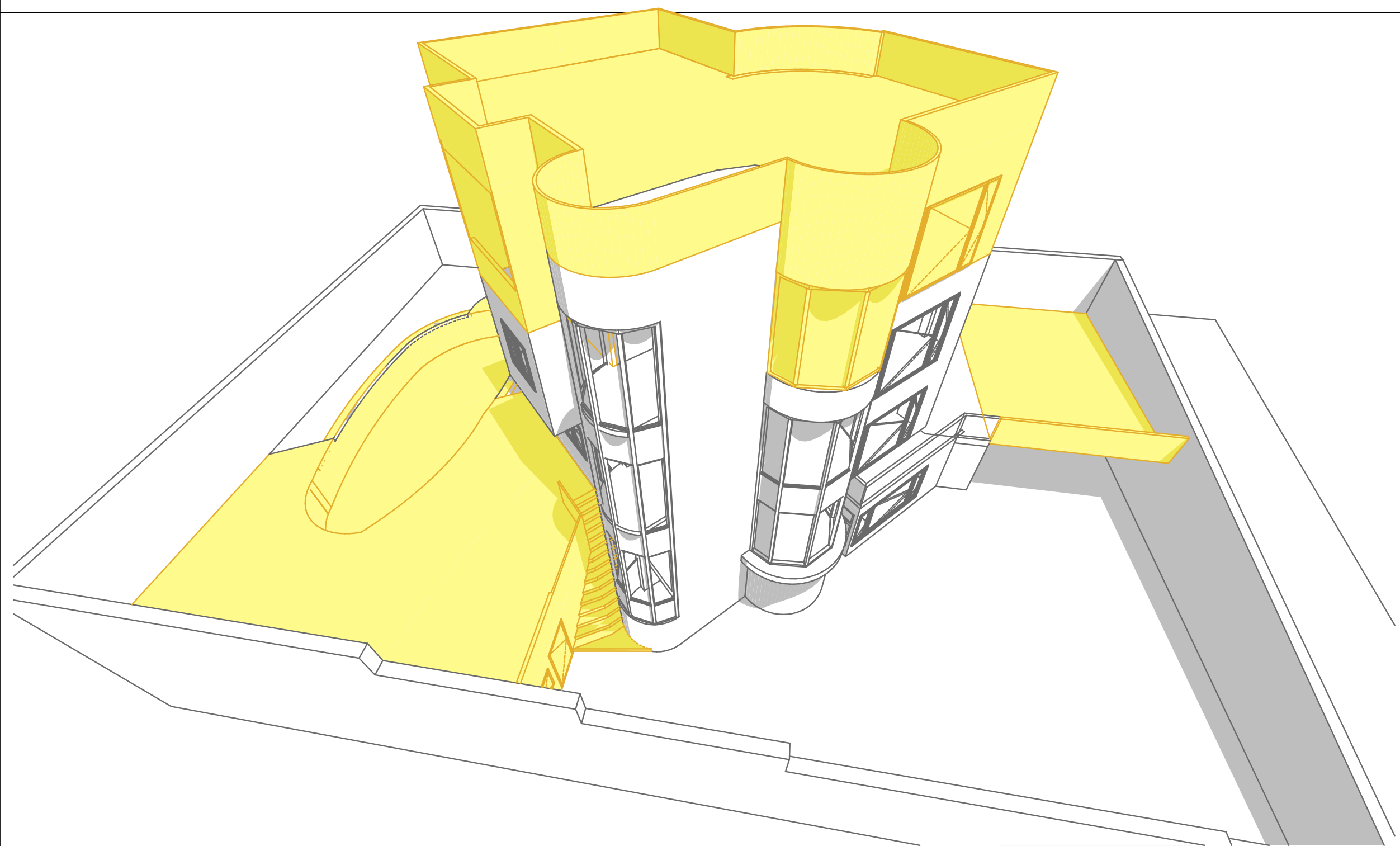
Red = to reinstate



Roof

Existing

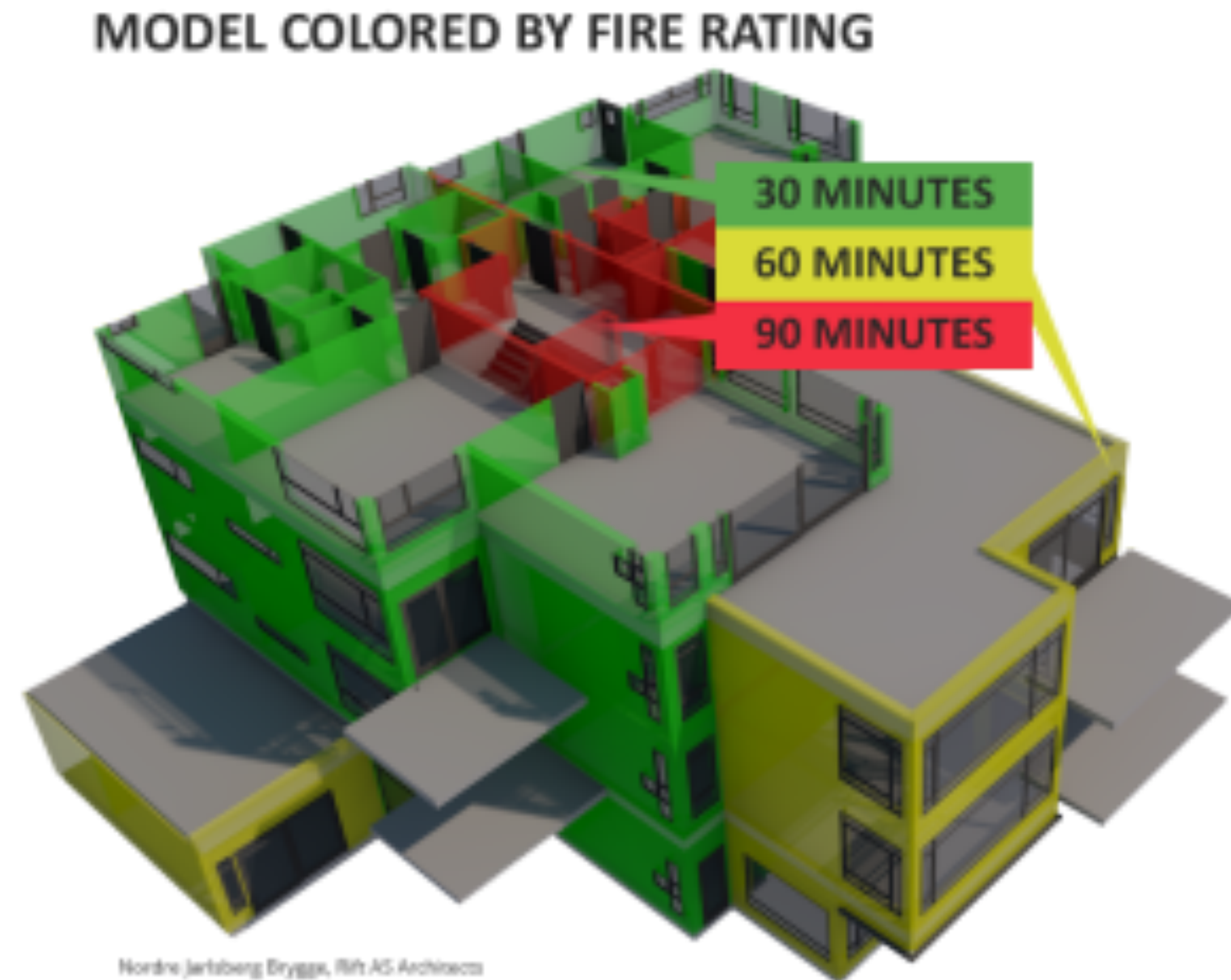
Yellow = UBW



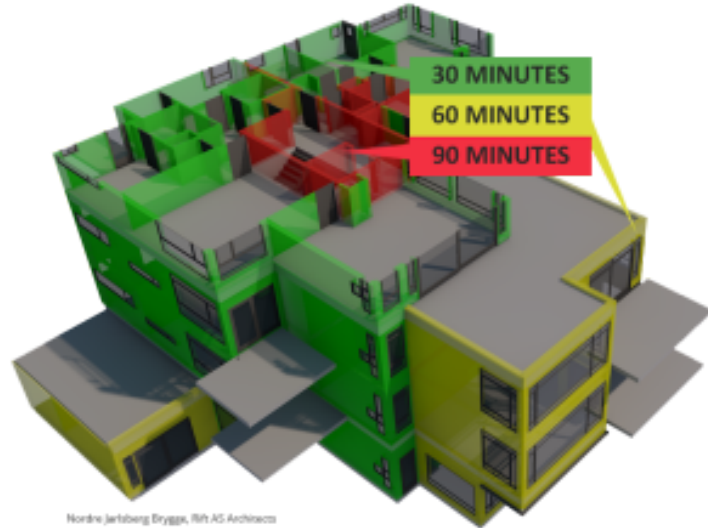
Roof

Fire resistance rating (FRR)

Makes a good demo
But architects don't work like
that.



MODEL COLORED BY FIRE RATING

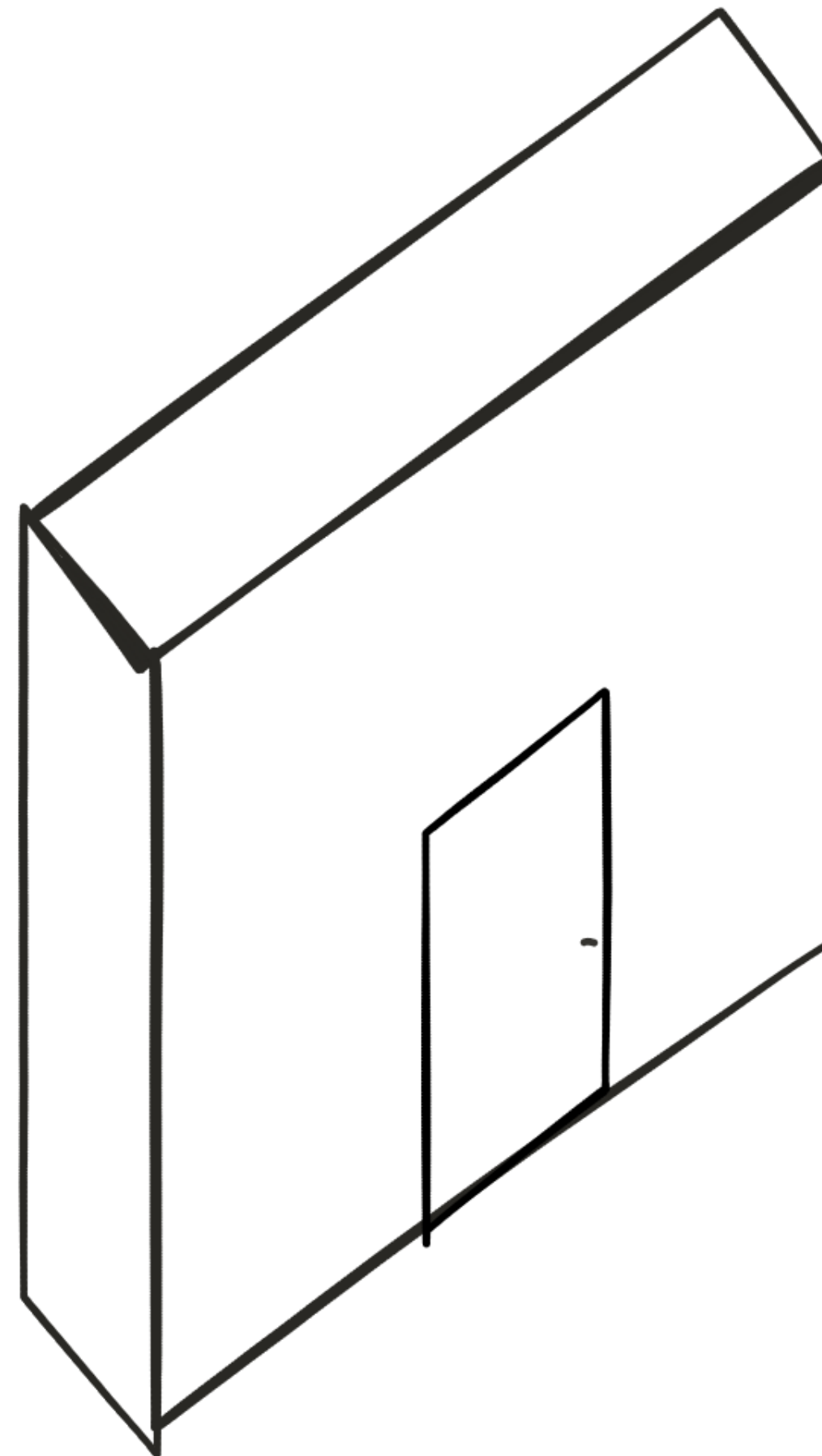


Nordthor Jørgensen Brygge, RTH AG Architects

60 min

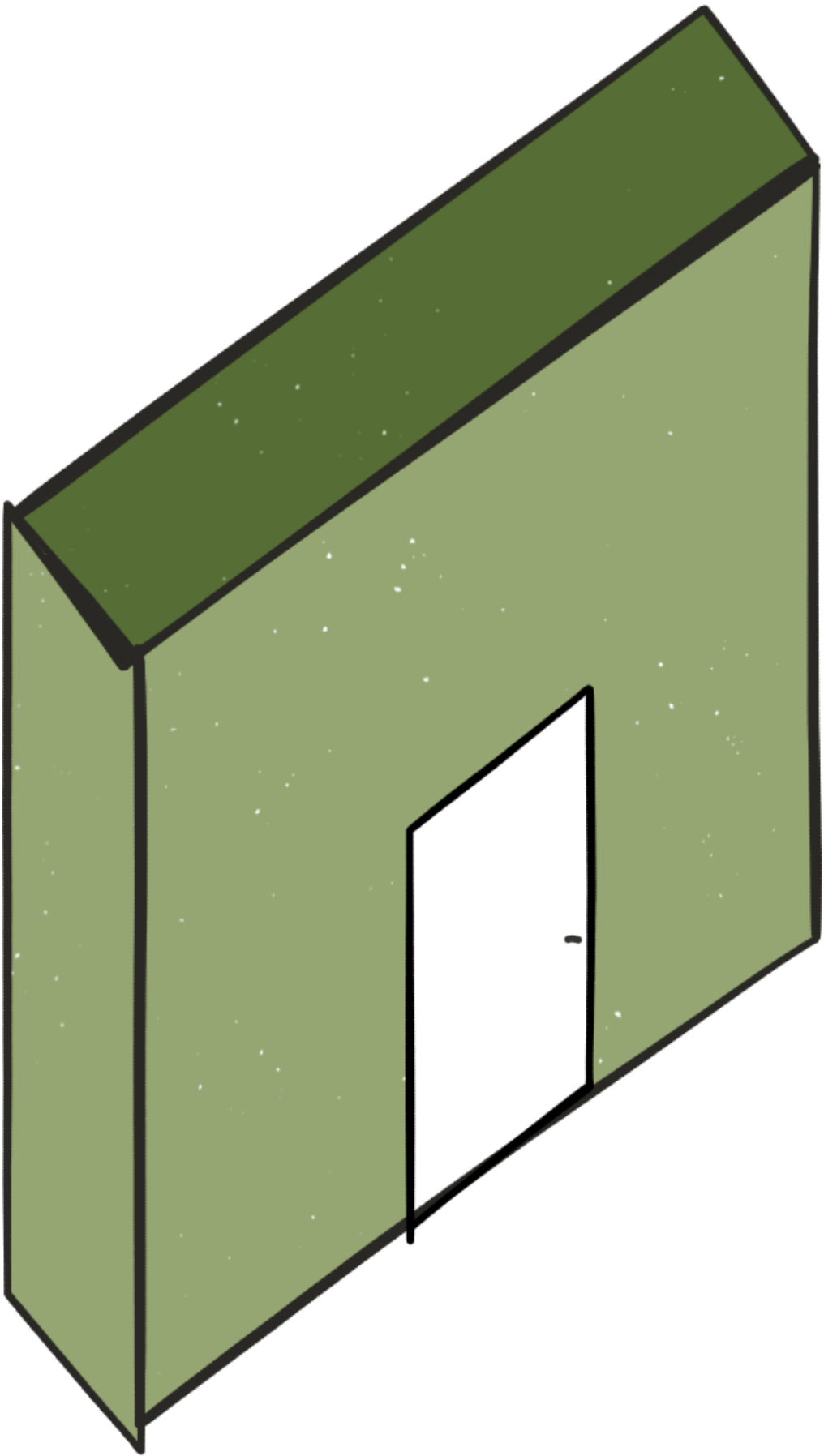
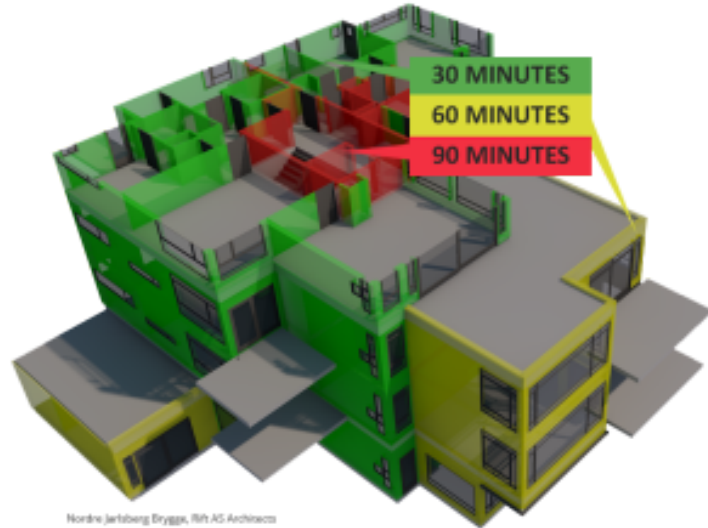
120 min

240 min



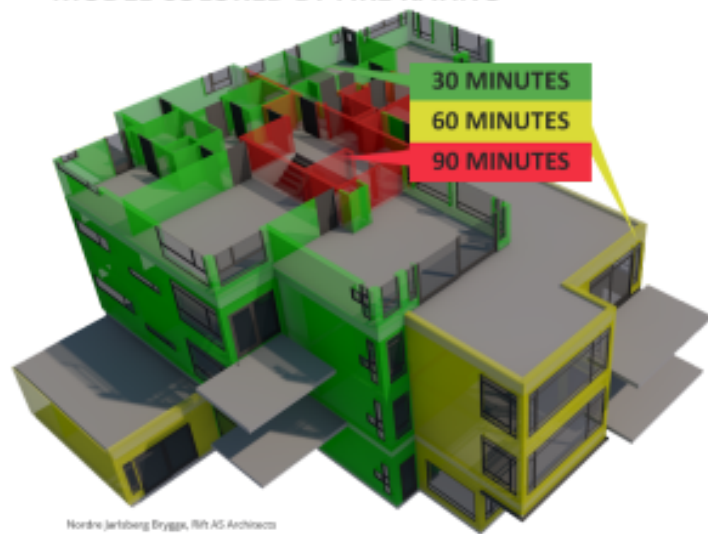
Wall A & Door B

MODEL COLORED BY FIRE RATING

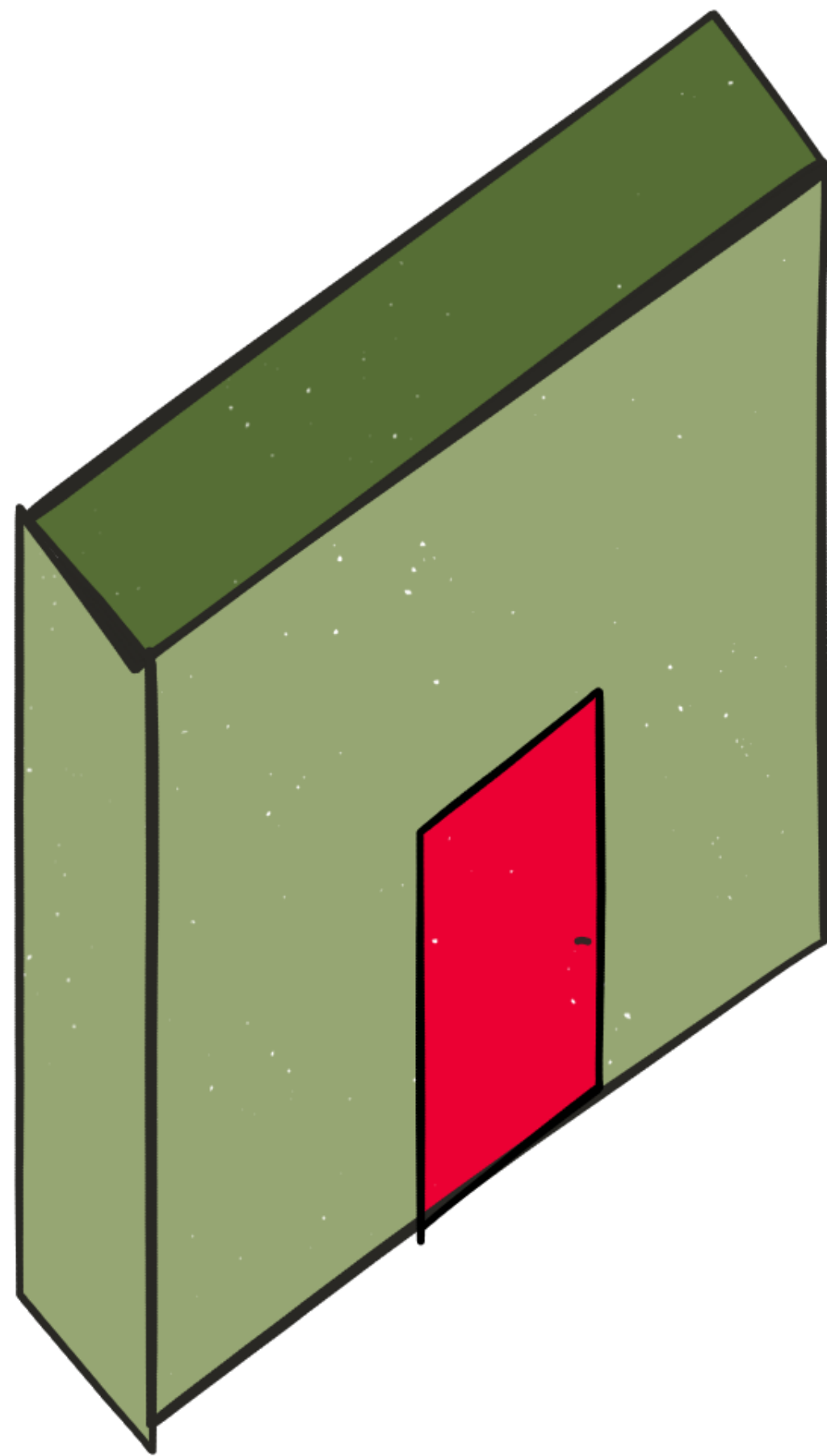


Wall A & Door B

MODEL COLORED BY FIRE RATING

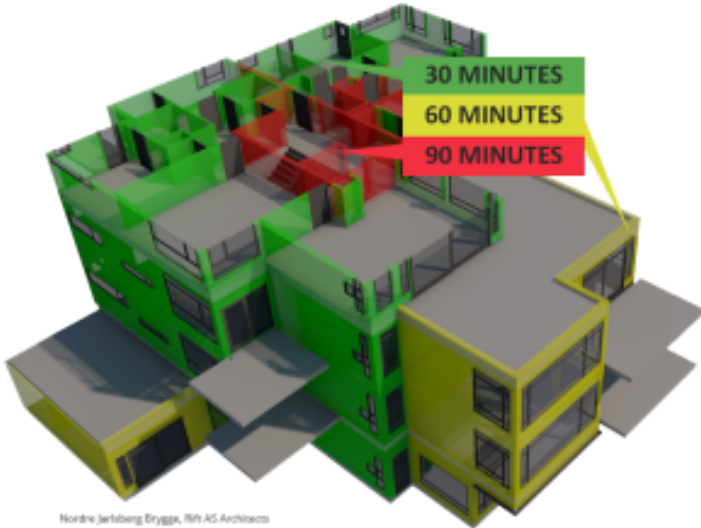


Nordthorberg Brygge, RTH AG Architects



Wall A & Door B

MODEL COLORED BY FIRE RATING

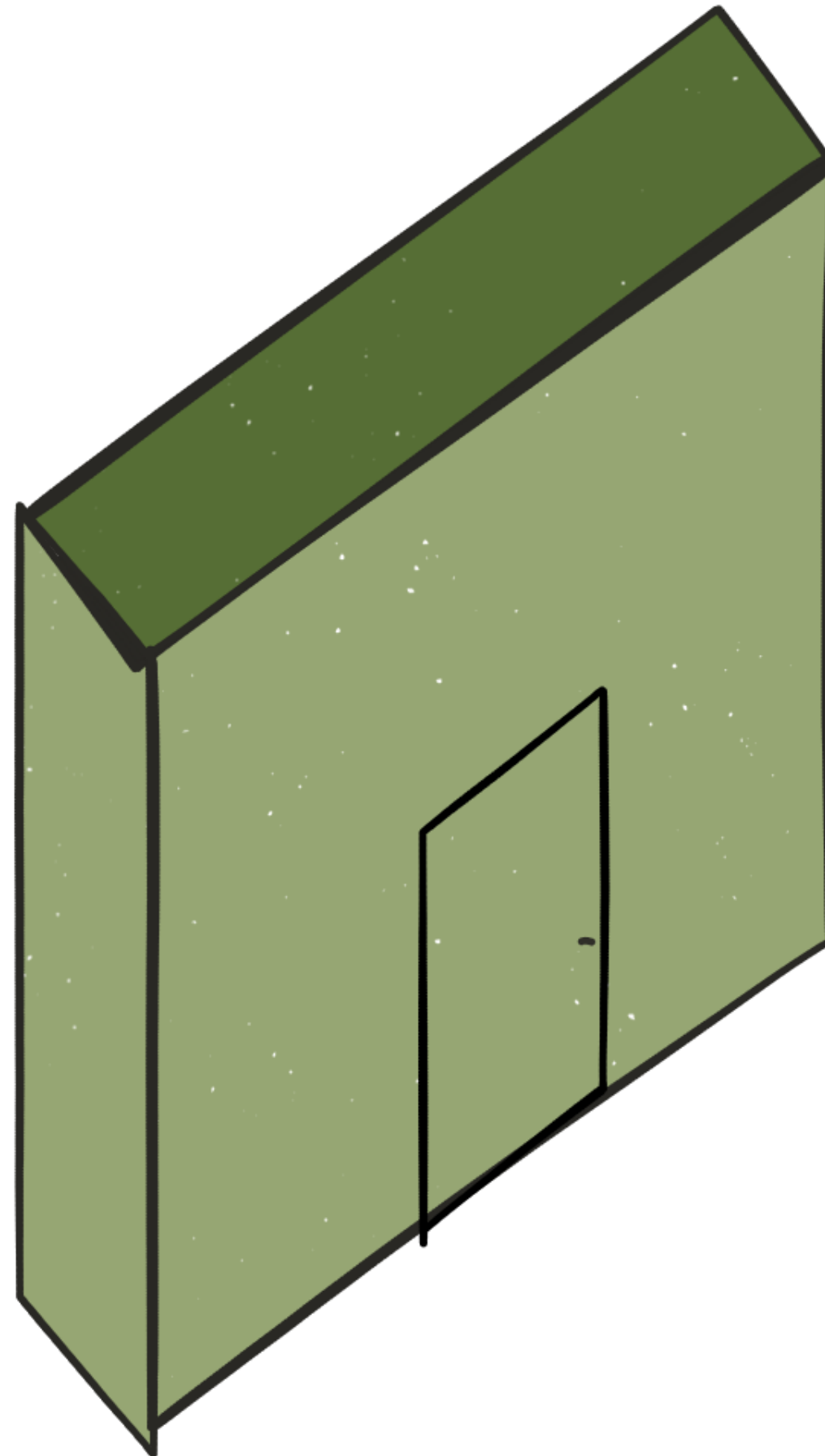


Nordthorberg Brygge, RTH AG Architects

60 min

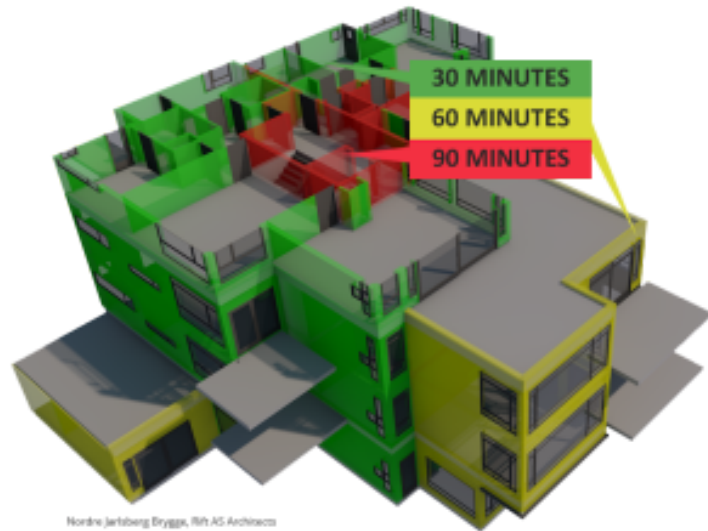
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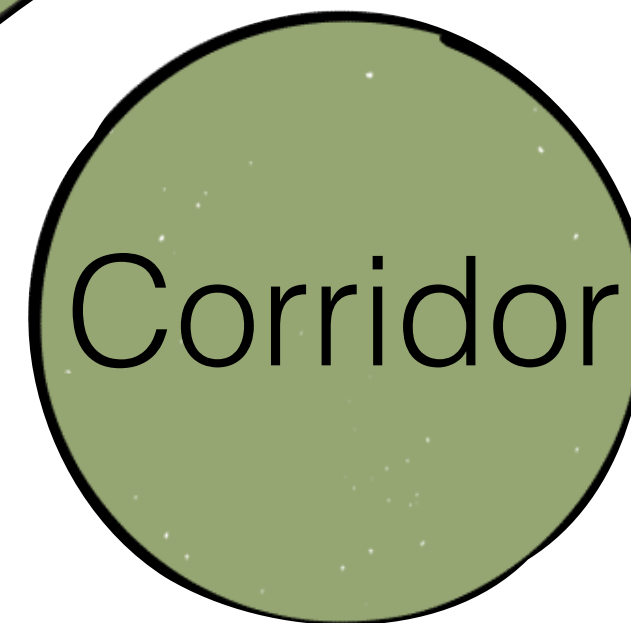
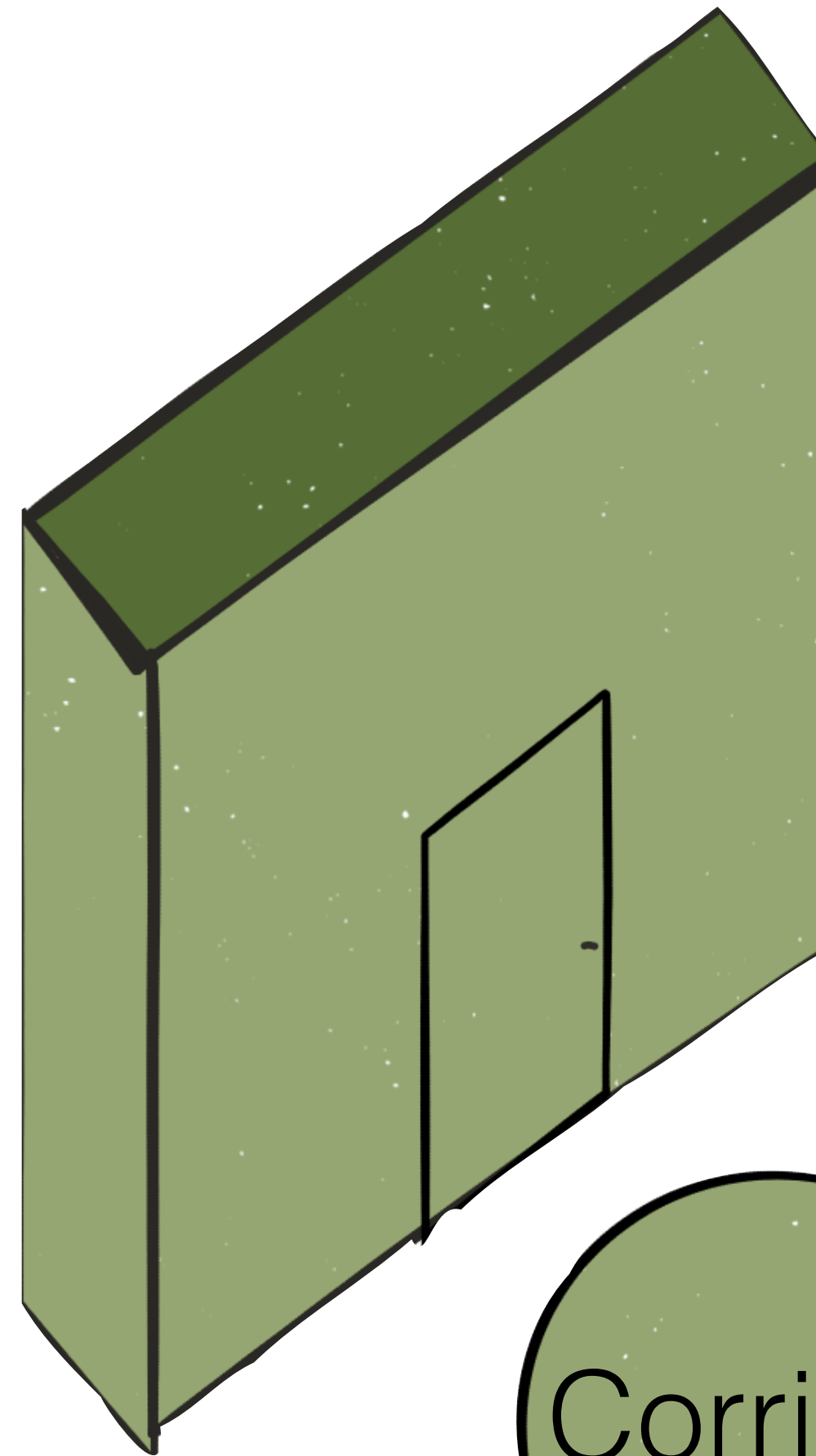


Wall A & Door B

MODEL COLORED BY FIRE RATING

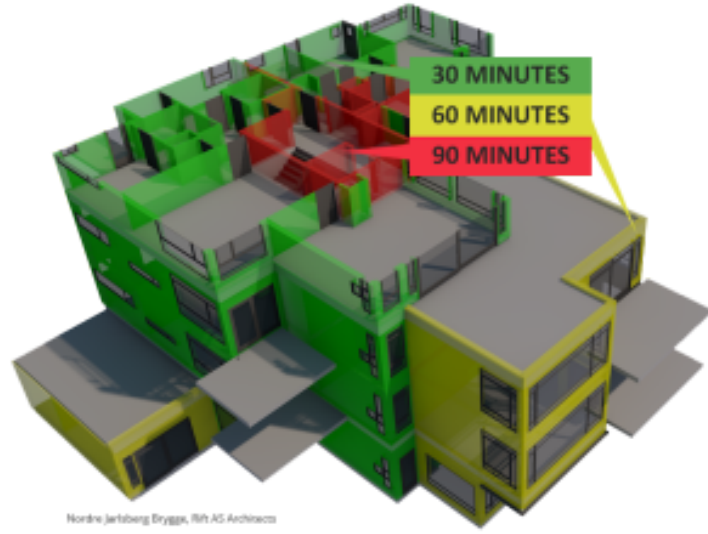


Nordthorberg Brygge, RTH AG Architects

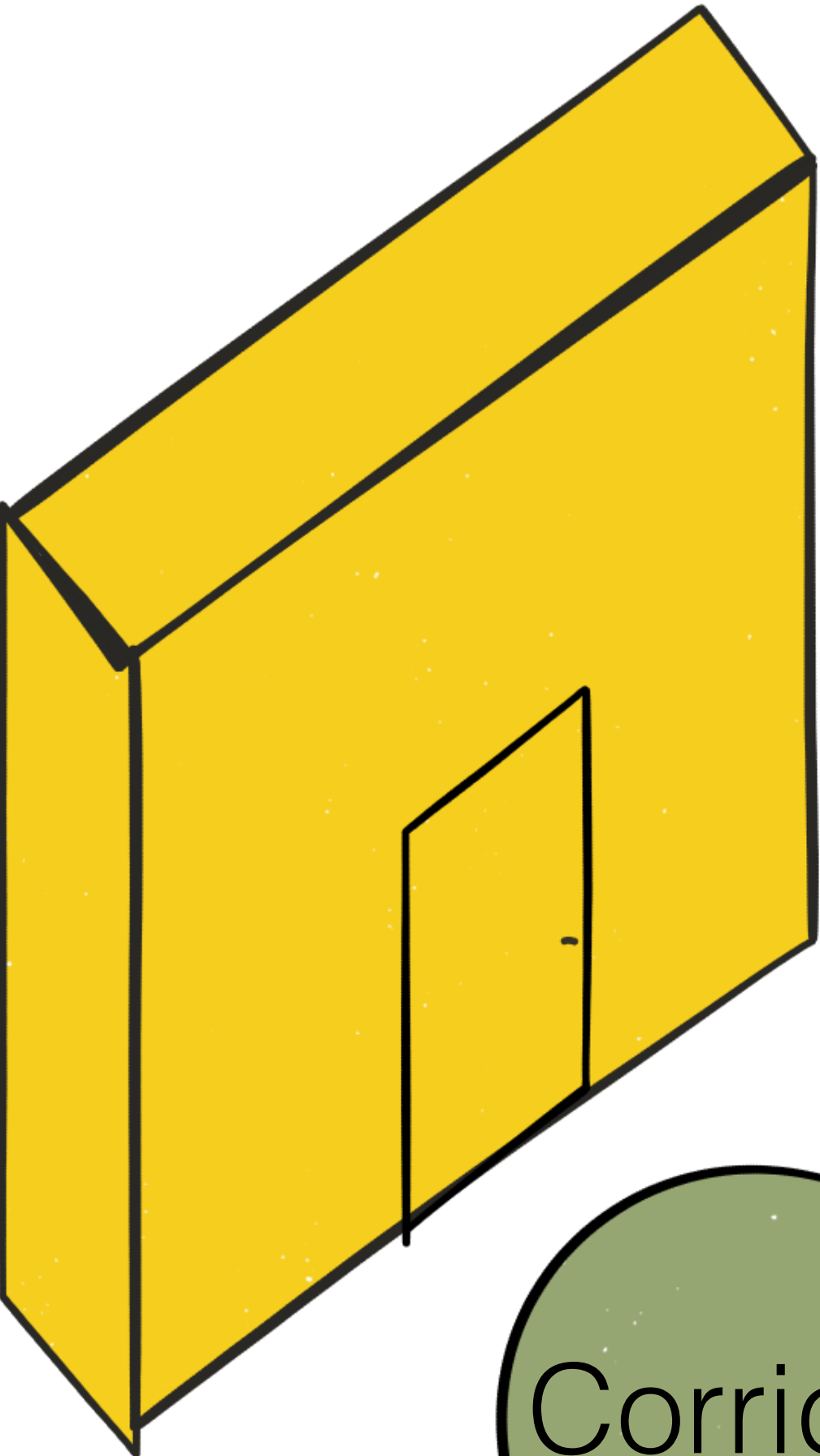


Wall A & Door B & rooms

MODEL COLORED BY FIRE RATING



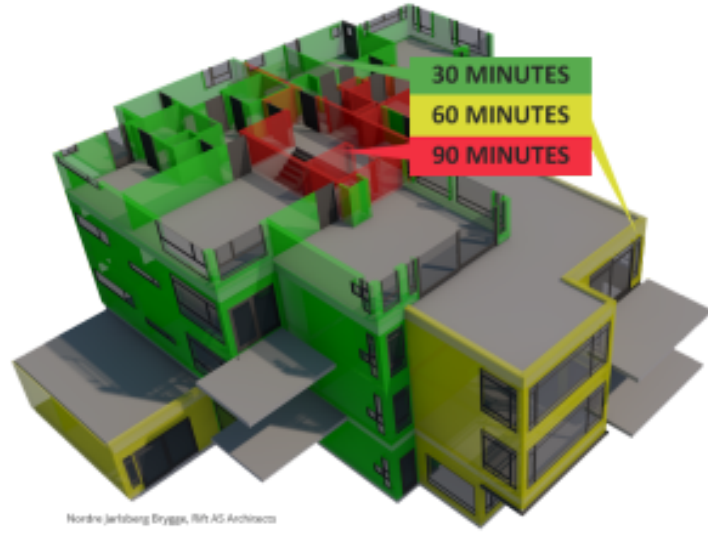
E&M
rooms



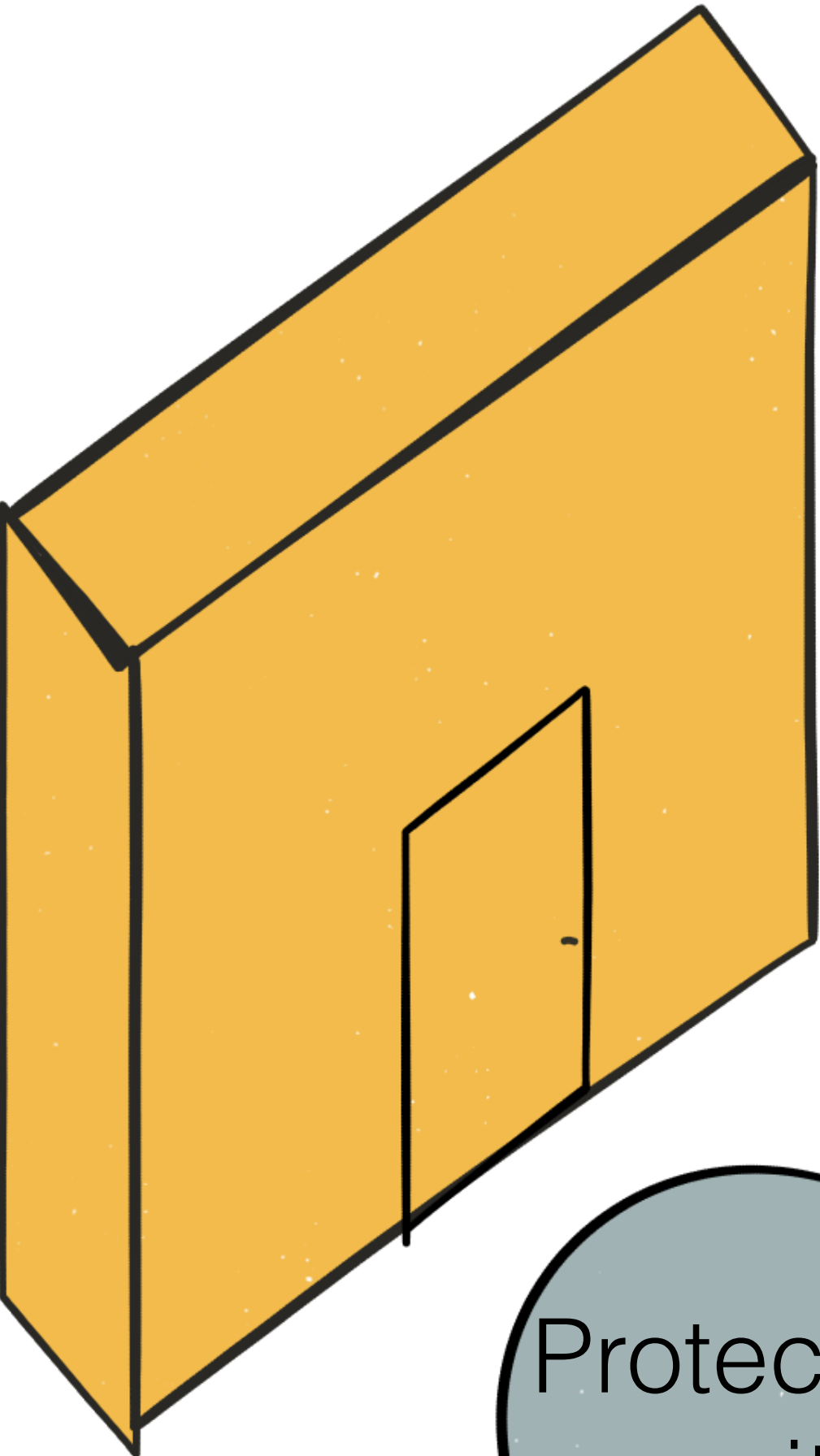
Corridor

Wall A & Door B & rooms

MODEL COLORED BY FIRE RATING



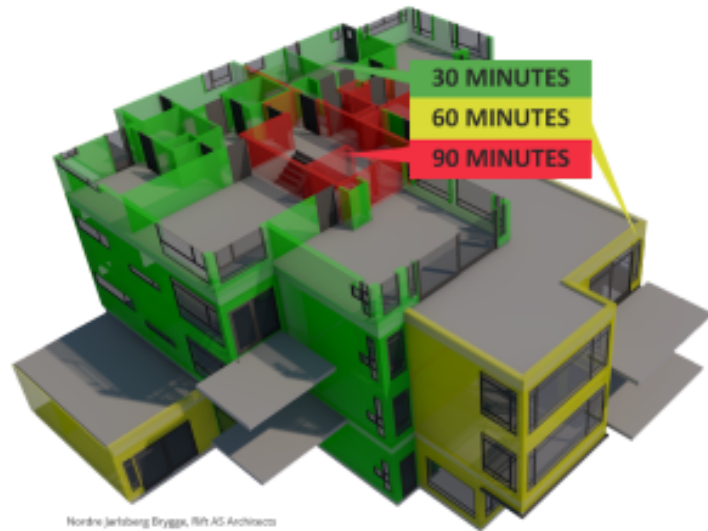
Special hazard



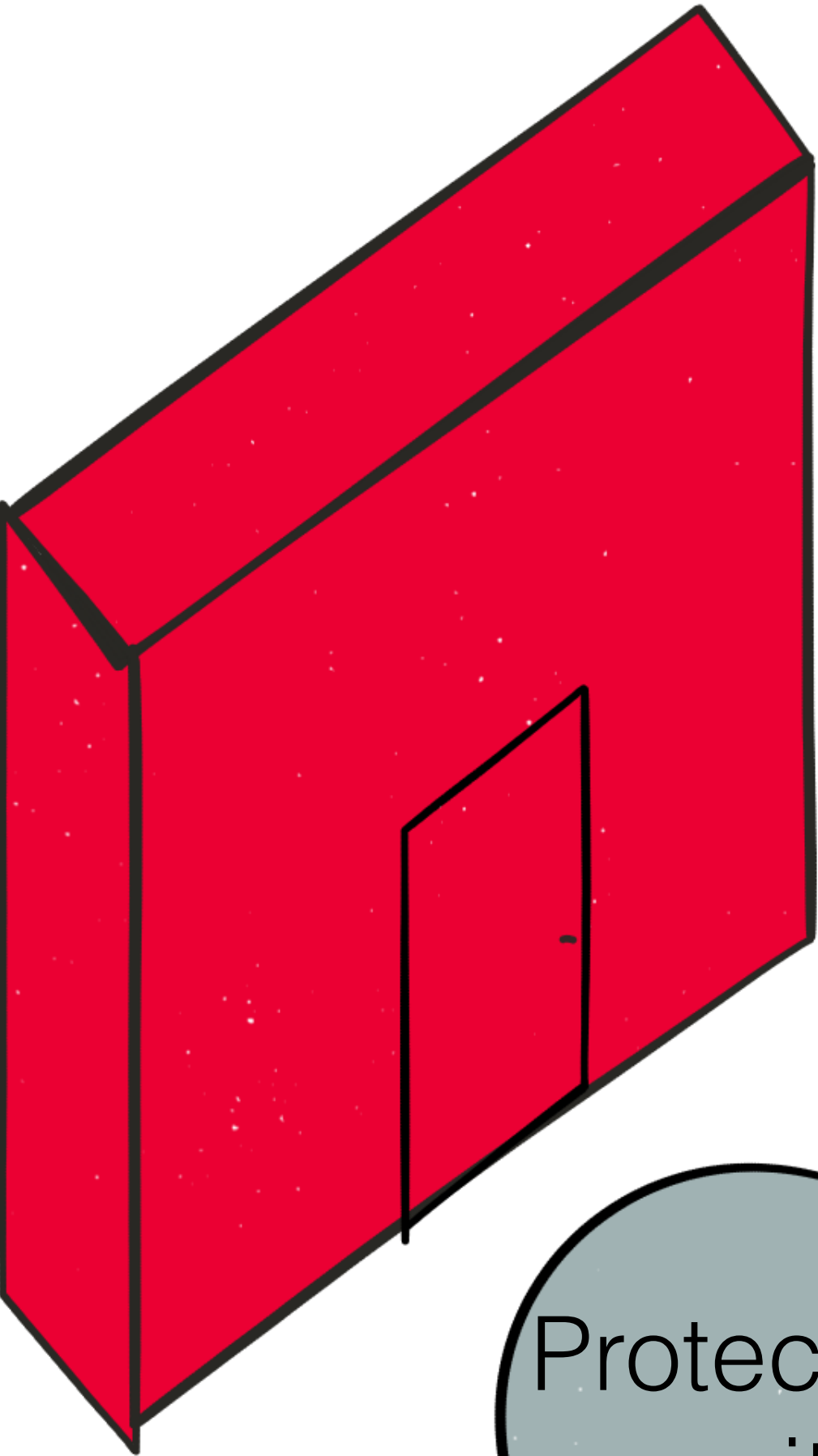
Protected exit

Wall A & Door B & rooms

MODEL COLORED BY FIRE RATING

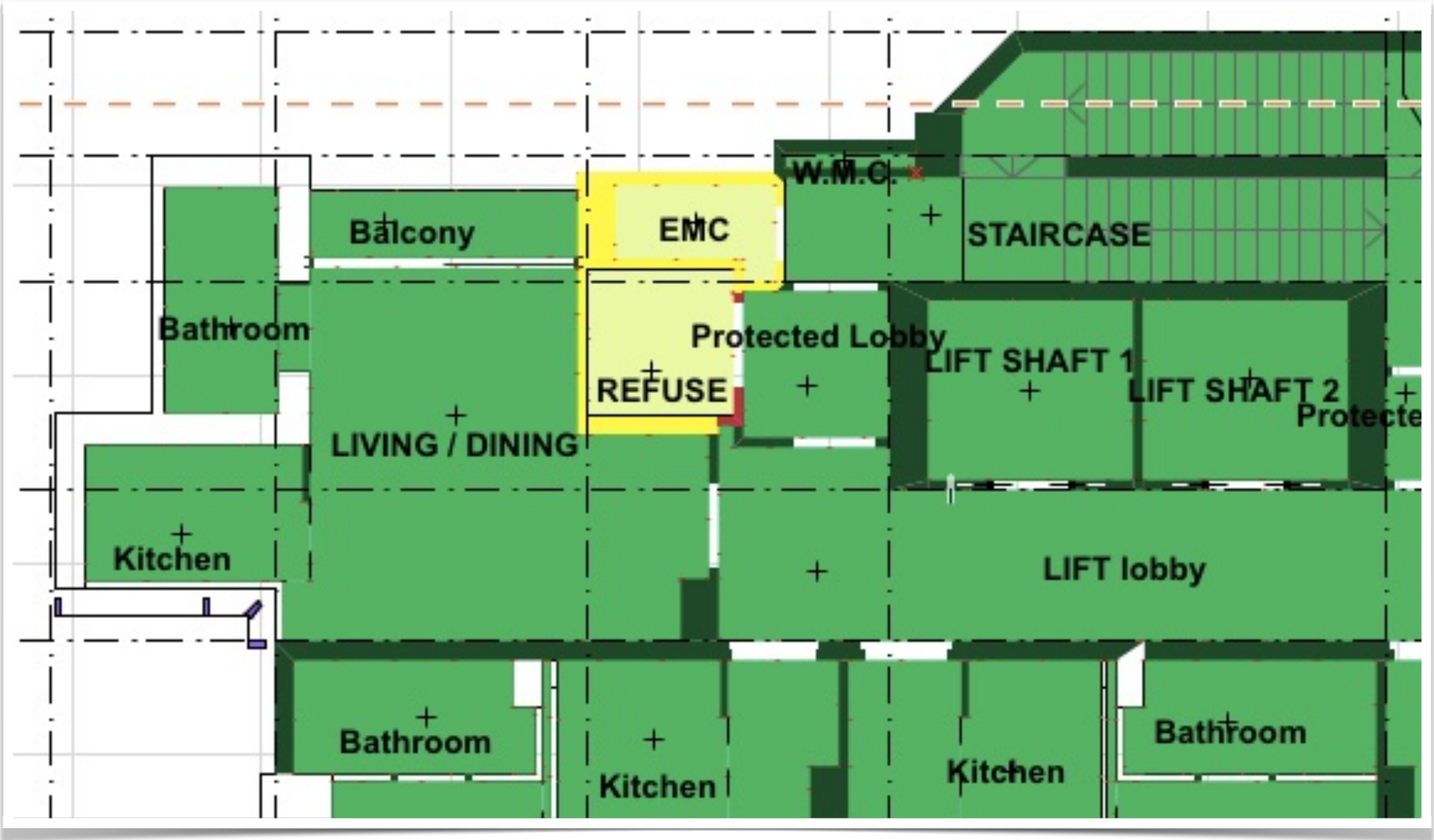
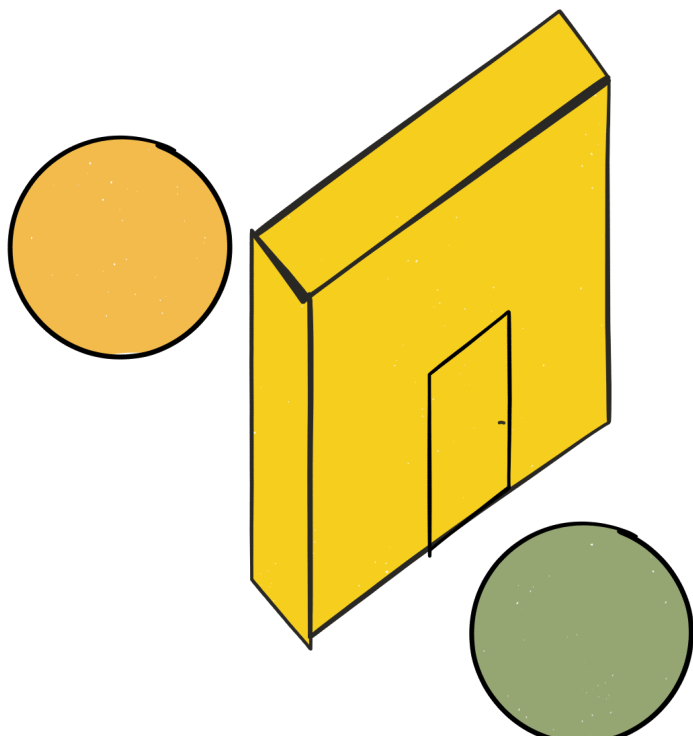


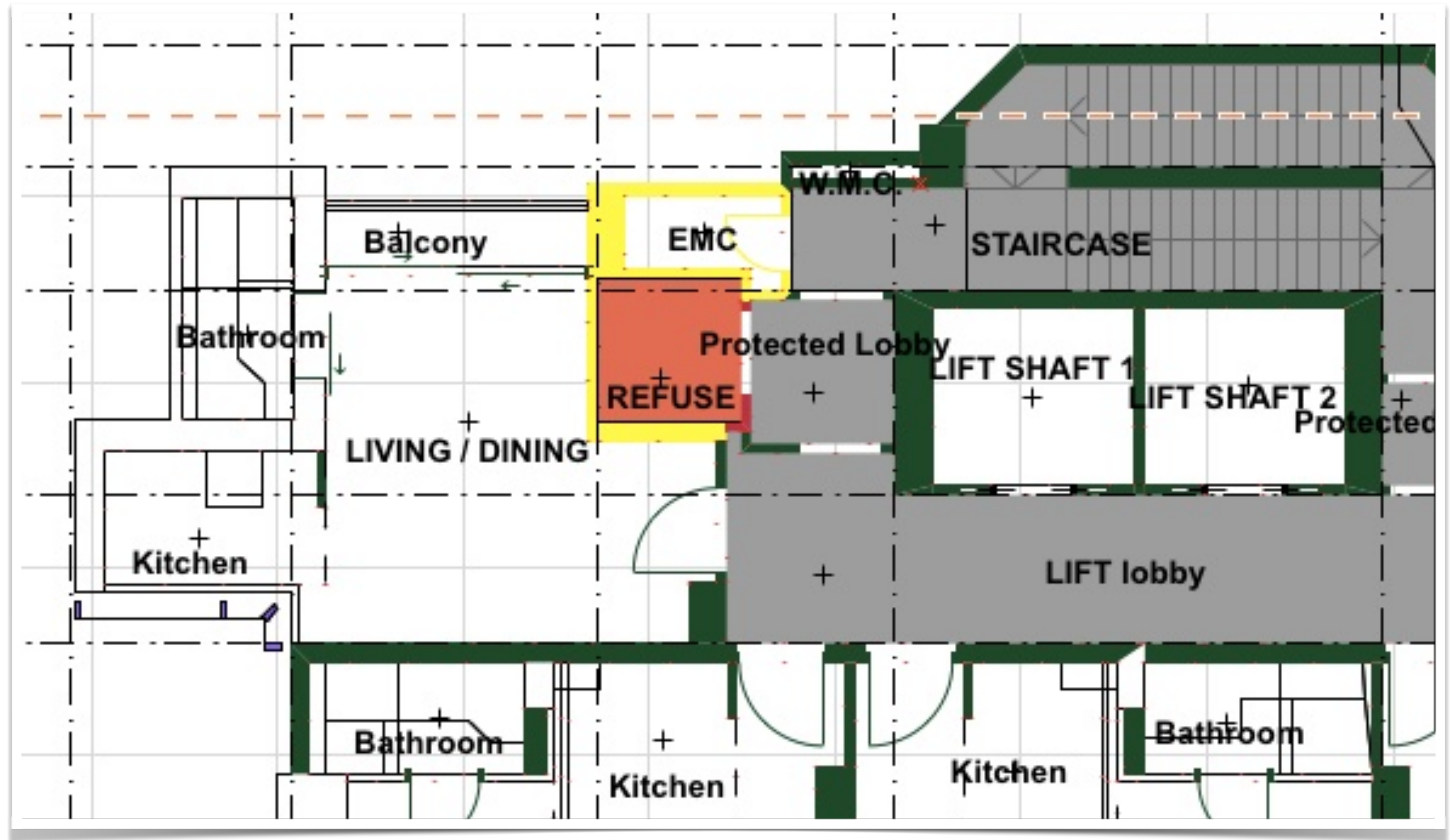
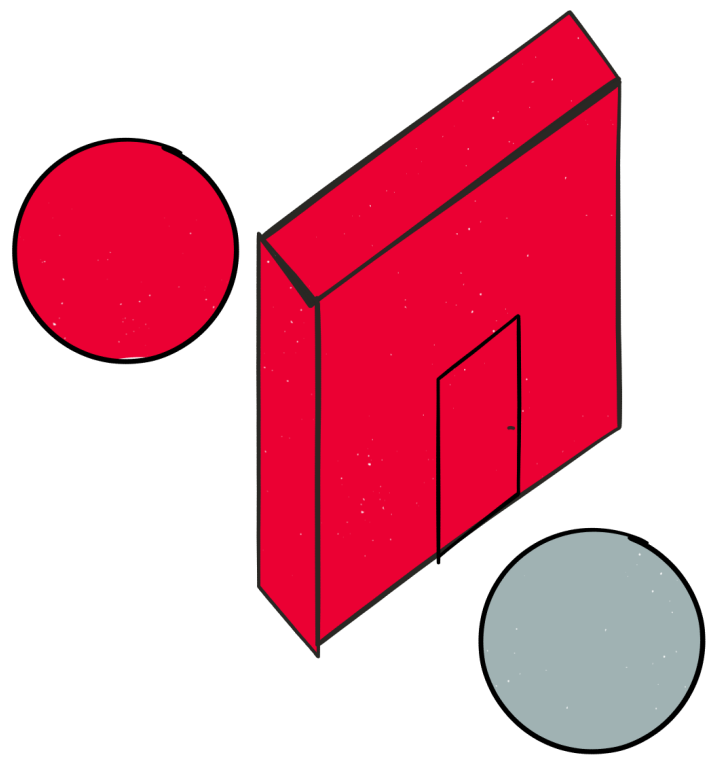
Special hazard



Protected exit

Wall A & Door B & rooms







Automation

**resolving
drawing
discrepancies**

**Cloud
changes**

**Proof checking
drawings against
markup**

**Worrying
about drawing
quality**



**Overlaying
consultant
drawings**

**Looking for
relevant
sections**

**Looking for
rooms &
doors**

**Looking for
updated
drawings**

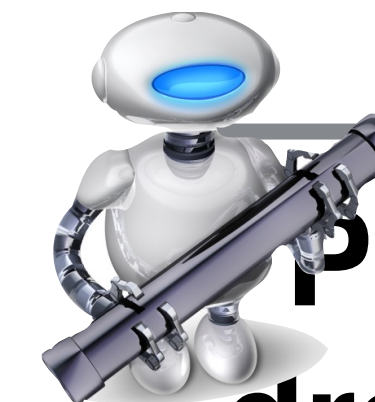
**resolving
drawing
discrepancies**



**Cloud
changes**



**Proof checking
drawings against
markup**



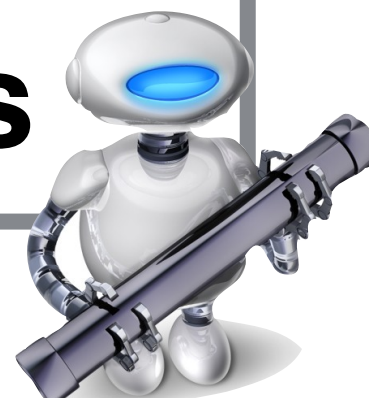
**Worrying
about drawing
quality**



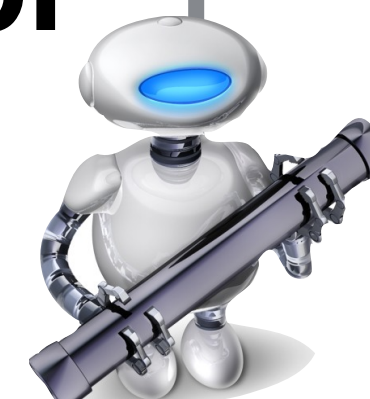
**Overlaying
consultant
drawings**



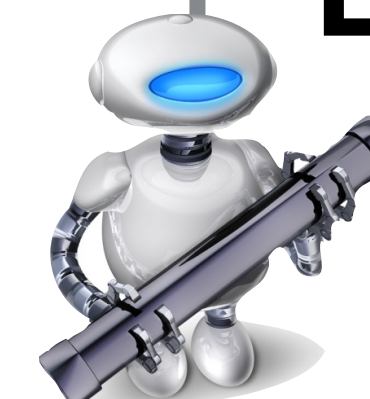
**Looking for
relevant
sections**



**Looking for
rooms &
doors**



**Looking for
updated
drawings**



What is

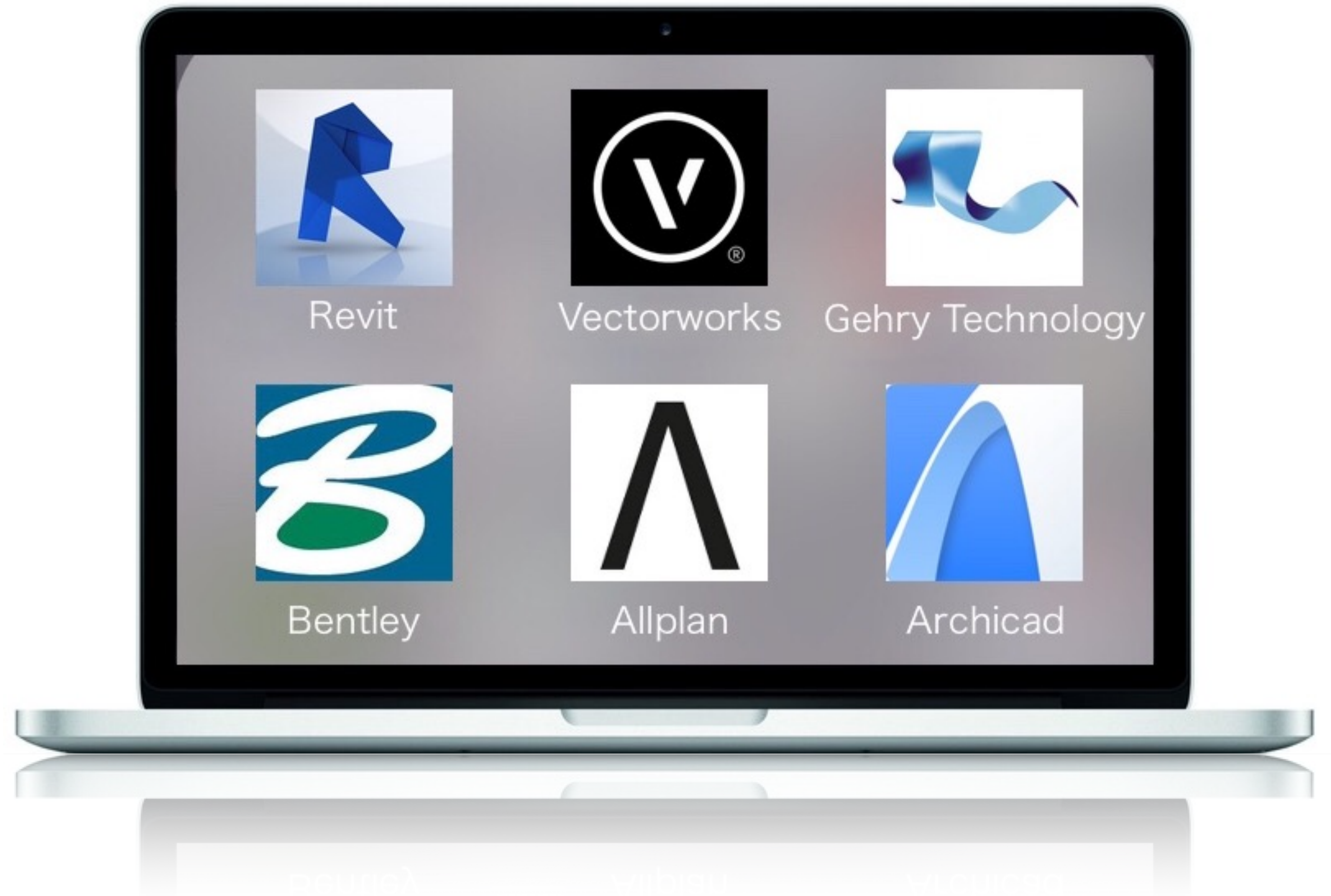
BIM Compliant Software?

Does it mean a **PROPRIETARY SINGLE PLATFORM** solution?

BIM Compliant Software?

BIM Compliant Software?

Can we pick our
own BIM tool of
choice?



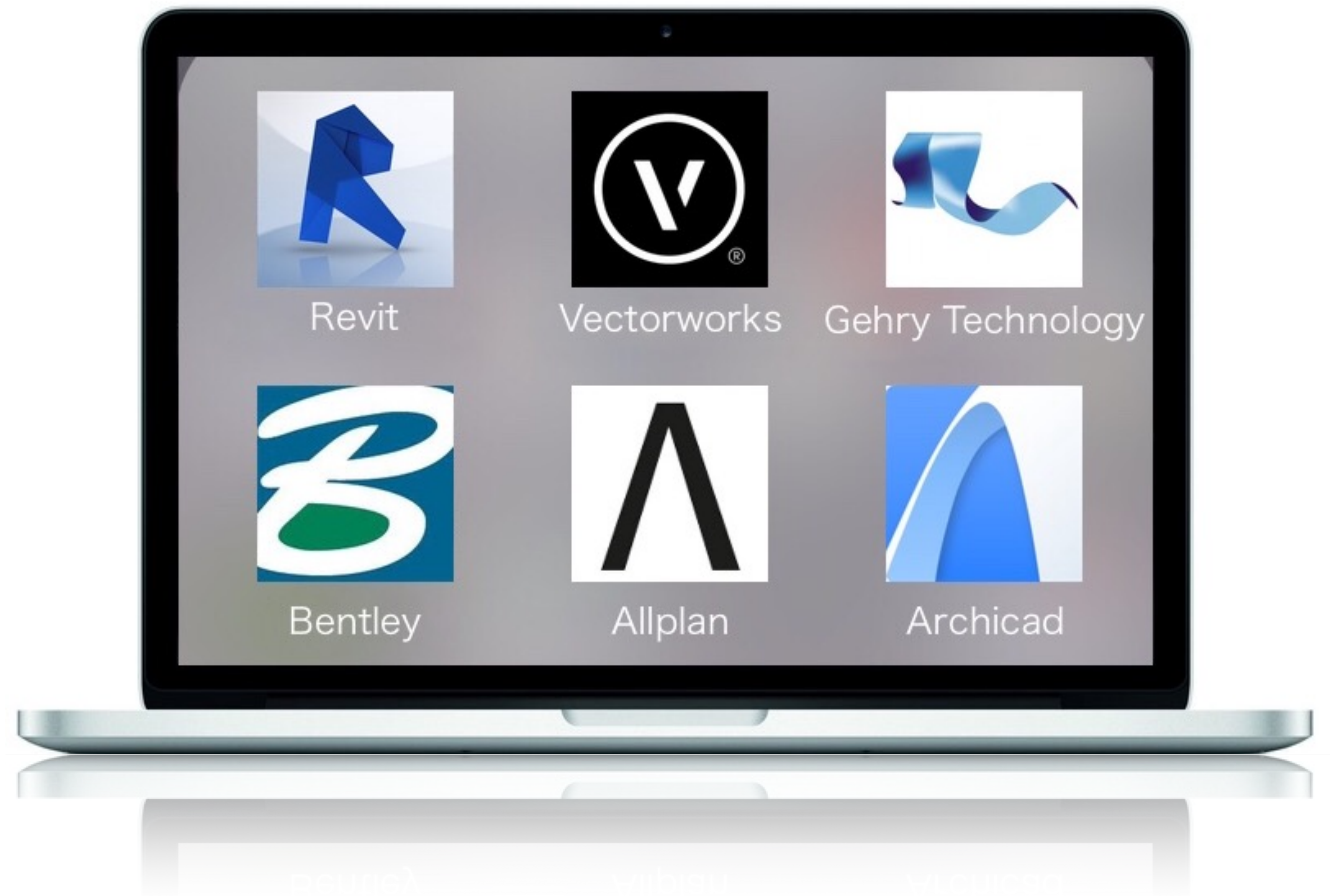
BIM Compliant Software?

So that we can
improve efficiency
& accuracy?



BIM Compliant Software?

**BD has
no restriction**



BIM Compliant Software?

Would other authorities and stakeholders follow?

Thank You!

Contributors

- Wing Y W Mang, Allgain Architects Engineers & Surveyors
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Organization:



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