

apartemen mahasiswa

UNDIP

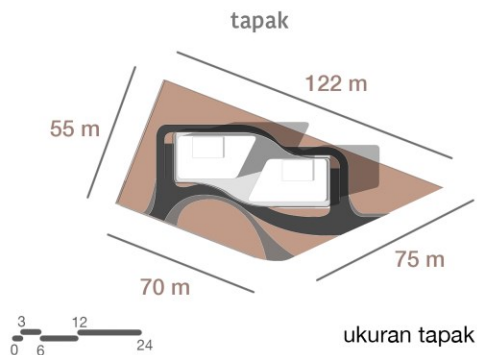
innez nadia damayanti
21020115120001



APARTEMEN MAHASISWA @ UNDIP

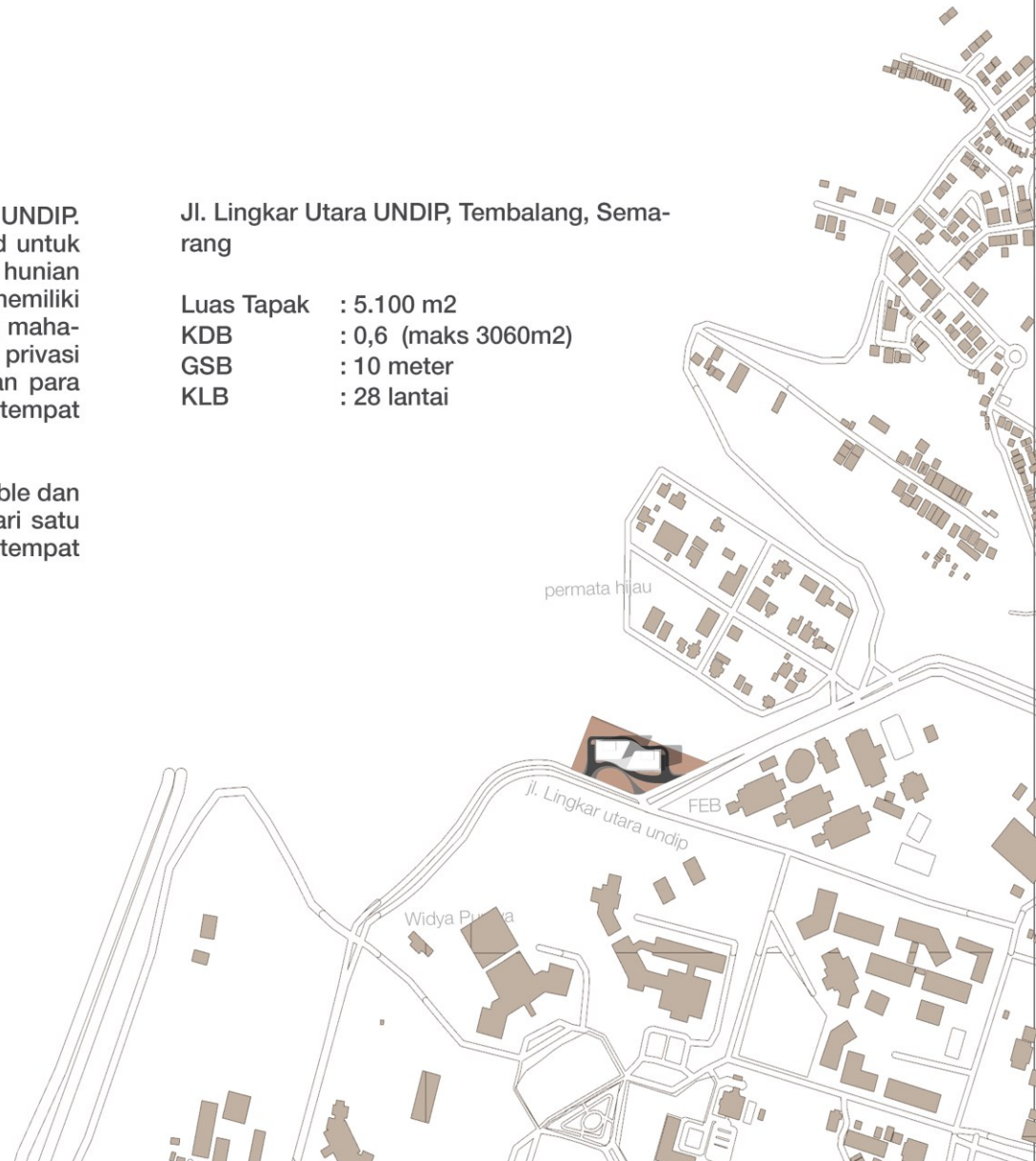
Hunian apartemen mahasiswa yang dikelola langsung oleh UNDIP. apartemen mahasiswa undip ini dibangun dengan maksud untuk memenuhi kebutuhan dari mahasiswa yang ingin memiliki hunian dekat dengan kampus namun juga eksklusif. apartemen ini memiliki fasilitas-fasilitas yang dapat memenuhi kebutuhan seorang mahasiswa juga fasilitas apartemen pada umumnya. Selain itu, privasi dan keamanan lebih terjaga, hal ini pula yang meyakinkan para orang tua mahasiswa untuk memilih apartemen sebagai tempat tinggal sementara untuk anaknya

Apartemen memiliki 3 tipe unit, tipe single(studio), tipe double dan tipe studio plus. tipe single merupakan unit yang terdiri dari satu tempat tidur. dan tipe double dan double plus memiliki dua tempat tidur.



Jl. Lingkar Utara UNDIP, Tembalang, Semarang

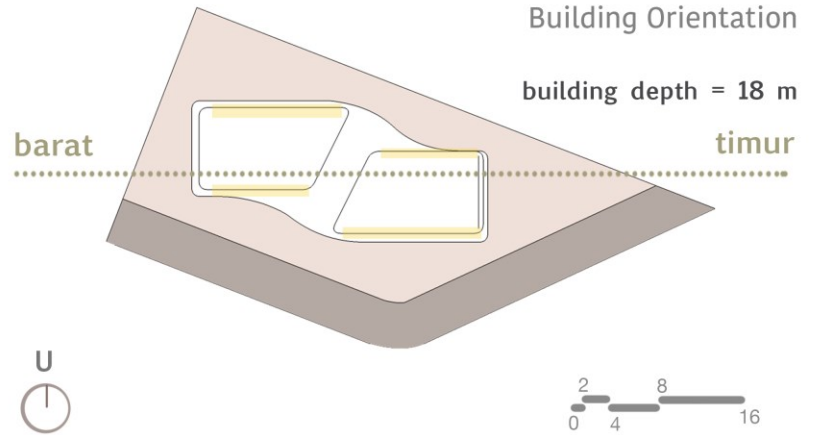
Luas Tapak : 5.100 m²
KDB : 0,6 (maks 3060m²)
GSB : 10 meter
KLB : 28 lantai



EKSPLORASI DESAIN

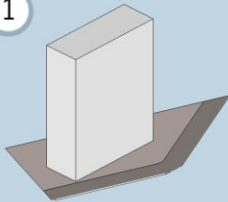
Konsep Bangunan

Hunian eksklusif mahasiswa yang dapat menaungi dan memfasilitasi segala kebutuhan mahasiswa. Seperti hunian mahasiswa undip yang sudah ada yaitu rusunawa yang memisahkan antara gedung mahasiswa perempuan dan laki-laki apartemen ini pula di bagi menjadi dua tower yang membedakan hunian mahasiswa dan mahasiswi, dengan akses fasilitas umum yang digunakan bersamaan.



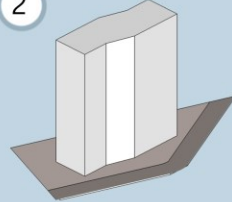
Form Exploration

1



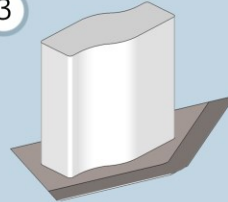
main orientation building utara-selatan. sehingga memanjang ke barat-timur

2



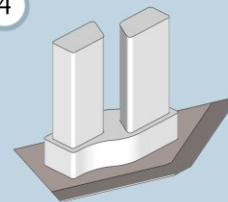
untuk merespon bentuk tapak bangunan dibuat bengkok

3



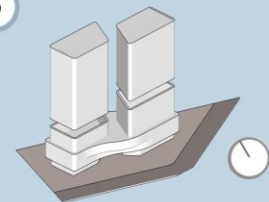
pada tiap lekuk bangunan dibuat melengkung

4



dibagi menjadi 2 tower, penghuni perempuan dan laki-laki dengan podium dibawahnya

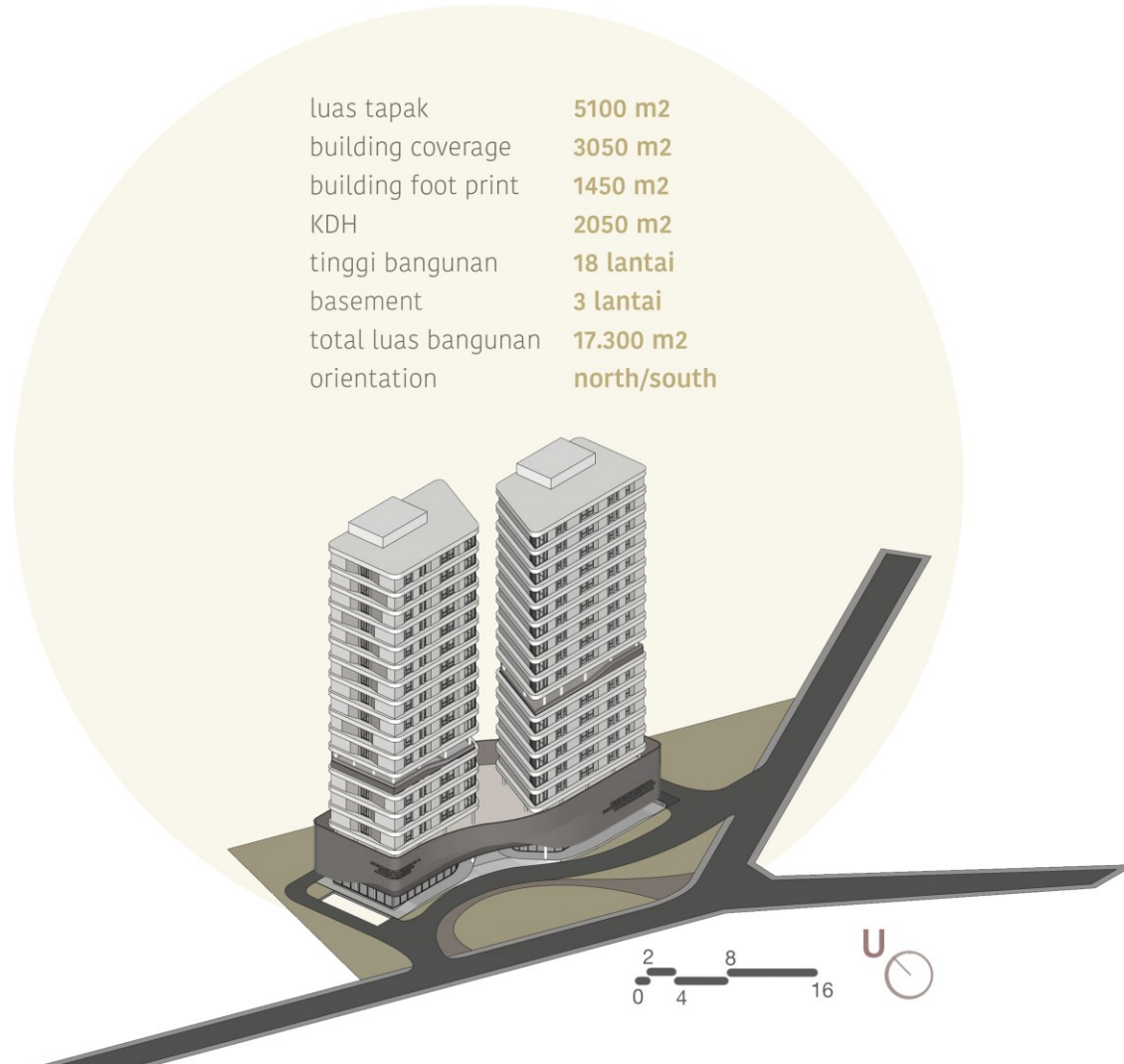
5



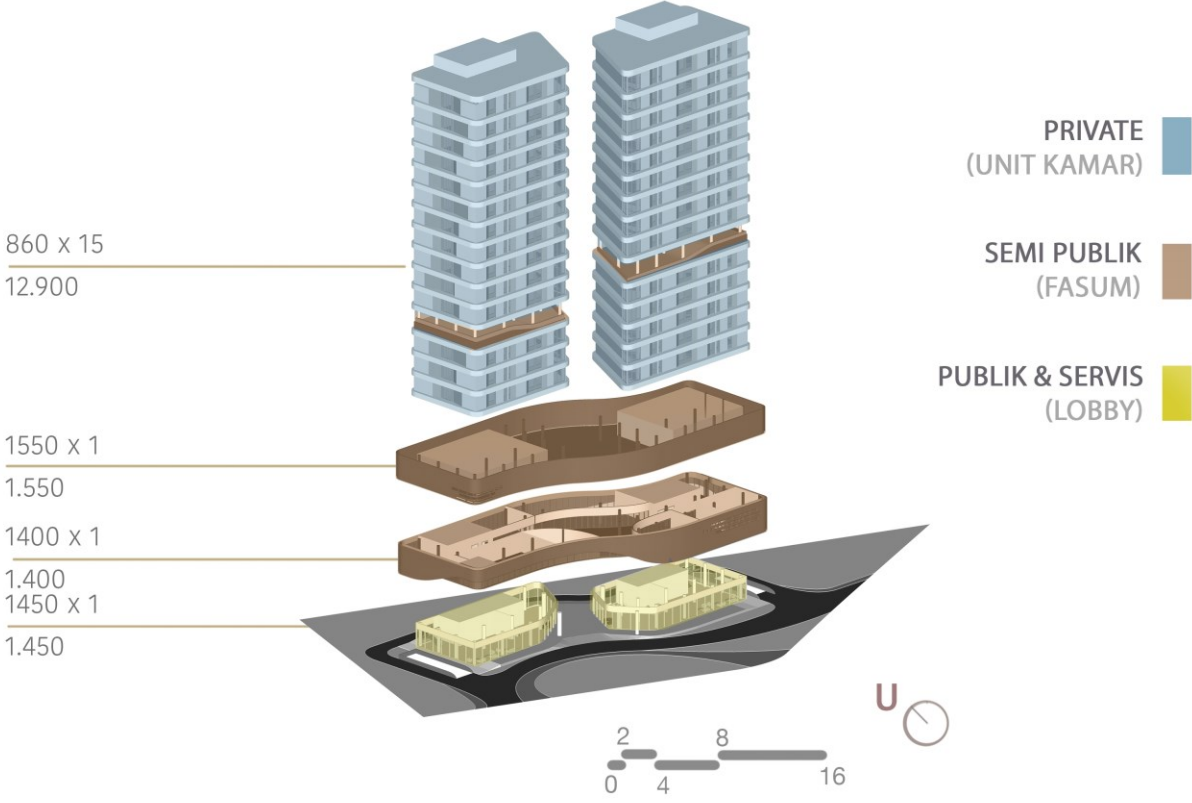
pada tiap tower terdapat satu lantai yang digunakan sebagai aksan 'hijau'

BUILDING DATA

luas tapak	5100 m²
building coverage	3050 m²
building foot print	1450 m²
KDH	2050 m²
tinggi bangunan	18 lantai
basement	3 lantai
total luas bangunan	17.300 m²
orientation	north/south



BUIDING ZONATION



UNIT & FASILITAS

Apartemen dengan dua tower yang memisahkan antara hunian mahasiswa dan mahasiswa. dengan fasilitas umum yang digabung.

Jenis Hunian

Terdiri dari tiga pilihan yaitu single unit (untuk satu orang mahasiswa), double unit (untuk dua orang mahasiswa, dan Double Plus unit (untuk dua orang mahasiswa dengan kamar lebih luas).

Fasilitas Penunjang

Apartemen yang memfasilitasi kebutuhan-kebutuhan seorang mahasiswa. fasilitas umum yang disediakan yaitu, work space, laundry, printing room, cafeteria, mini amphitheater, entertainment area, apotek, minimarket dan atm.



referensi workspace & amphitheater

Unit Single



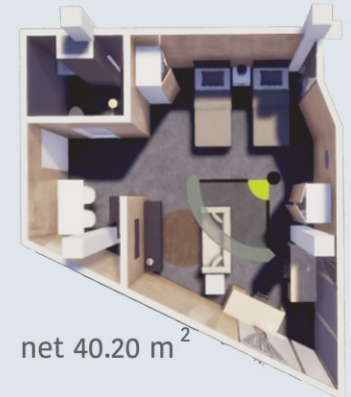
net 19,22 m²

Unit Double



net 29.80 m²

Unit Double Plus



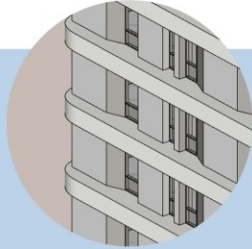
net 40.20 m²

1

ENERGY EFFICIENCY MEASURES

AASF, WWR & LOW-E COATED GLASS

Plat lantai dibuat menjorok keluar sebagai *shading* (overhang) cahaya yang masuk ke kamar hunian. menjorok sepanjang 60 cm keluar.

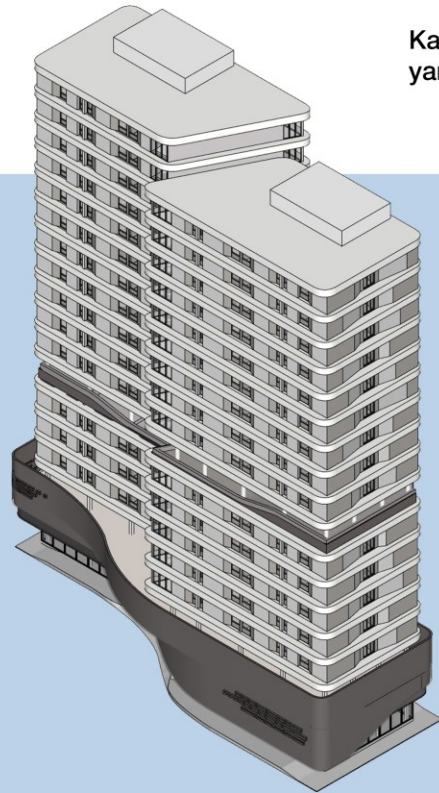


WWR

wwr	0.21
south	0.23
north	0.23
east	0.19
west	0.19

AASF

aasf		0.541
1	overhang plat sisi barat/timur	0.5
	a = 1.5 b = 3	a/b
2	overhang plat sisi utara/selatan	0.5
	a = 1.5 b = 3	a/b
3	plat lantai 2 terhadap lantai 1	1
	a = 3 b = 3	a/b
4	side fin jendela	0.167
	c = 0.4 d = 1.2	c/2/d



Kaca yang digunakan merupakan *double glass* yang terdiri dari Panasab Green 5.0 dan kaca Low E energy Advantage

1	2	Thick
		4.9
		17.0
		4.7

Ufactor	SC	SHGC
W/m2-K		
1.423	0.484	0.421

1

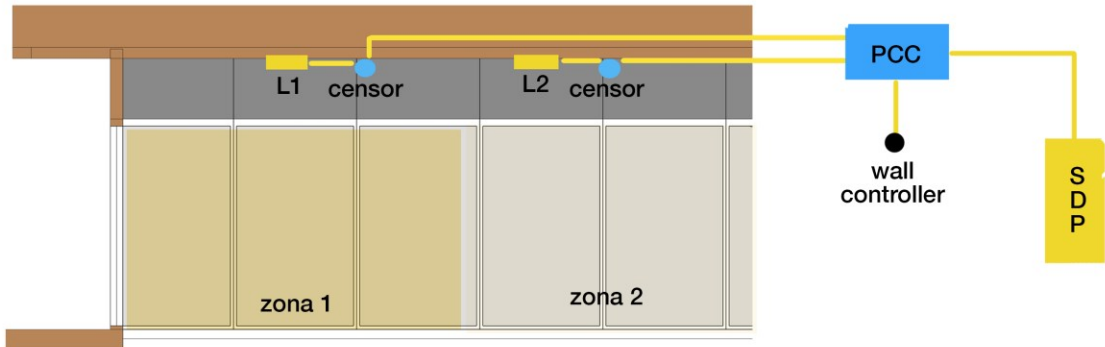
ENERGY EFFICIENCY MEASURES



Occupancy Censor & Daylight Censor

pada lantai fasum yang dikelilingi kaca, terdapat lampu yang menggunakan sistem daylight censored

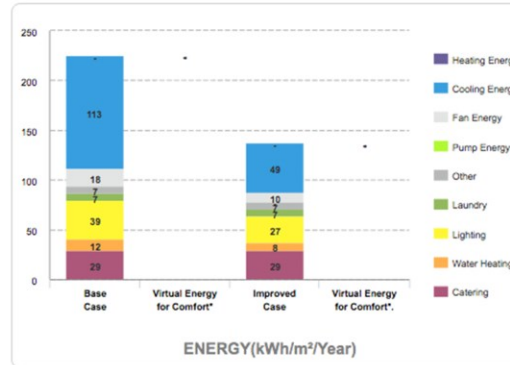
pada toilet umum terdapat okupansi sensor dekat pintu yang akan membuat lampu toilet langsung menyala ketika ada orang masuk.



Skema Kerja Sensor

RESULT

39.18% Meets EDGE Energy Standard



Energy-Saving Light Bulbs - Internal Spaces

[Upload Document\(s\)](#)

Energy-Saving Light Bulbs - External Spaces

[Upload Document\(s\)](#)

Energy-Saving Light Bulbs - Back-of-House

[Upload Document\(s\)](#)

Lighting Controls for Corridors

[Upload Document\(s\)](#)

Occupancy Sensors in Bathrooms

[Upload Document\(s\)](#)

Low-E Coated Glass : U-value of 1.5 W/m².K and SHGC of 0.42

[W/m².K]

External Shading Devices - Annual Average Shading Factor (AASF) of 0.54

AASF

Insulation of Roof : U-value of 0.56

[W/m².K]

Reduced Window to Wall Ratio - WWR of 21%

WWR %

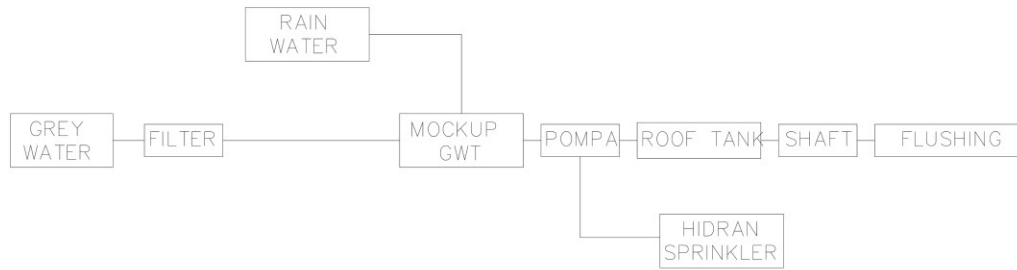
Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5









COP

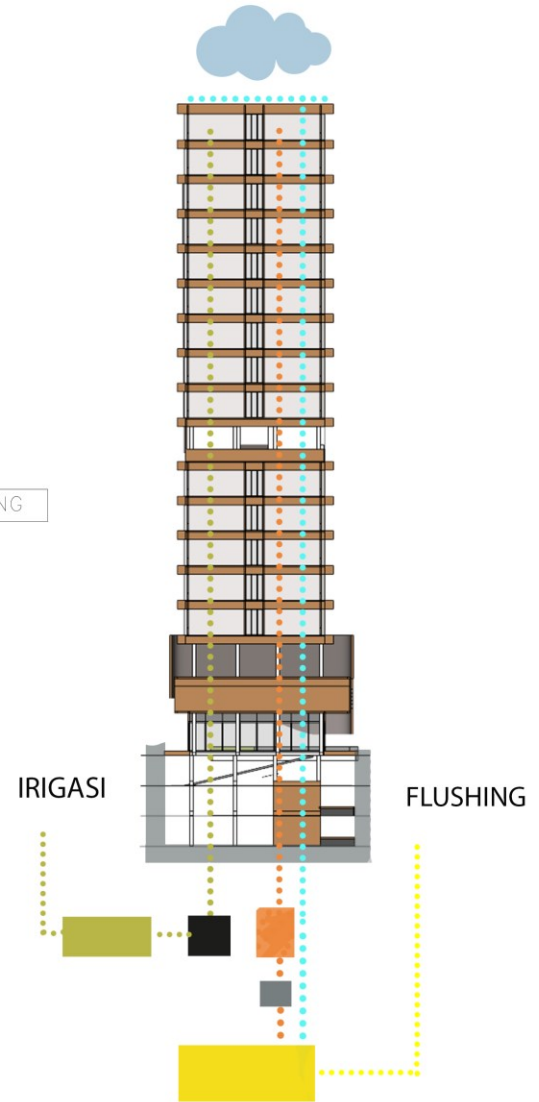
2

WATER EFFICIENCY MEASURES

SKEMA SISTEM PENGOLAHAN AIR



-  Gray water
-  Black water
-  Rain water
-  STP
-  Grey water tank
-  Grey water & rain water tank (Mockup Water)
-  IPAL
-  Black Water Tank



2

WATER EFFICIENCY MEASURES

WATER CALCULATOR

Low-Flow Showerheads - 6 L/min

Low-Flow Faucets in Guest Rooms/Apartment Area - 5 L/min

Single Flush/Flush Valve for Water Closets in Guest Rooms/Apartment Area - 3.3L/flush

Water-Efficient Kitchen Faucets - 5 L/min

Black Water Treatment and Recycling System

Rainwater Harvesting System - 100% of Roof Area Used for Rainwater Collection

Water-Efficient Landscaping - 4 L/m²/day

Grey Water Treatment and Recycling System

kebutuhan air per hari (PDAM)	19.61 L orang/hari	14,805.55 L/hari	
			15 m ³

Black Water	units		
flush		2007.72	
peturasan		1544.4	
		3,552.12	4.000 L

Rainwater			
Curah Hujan (I)		15.61	
Koefisien Limpasan (C)		0.95	
Luas atap (A)		1550	
total L/hari		22,980.17	23.000 L

+

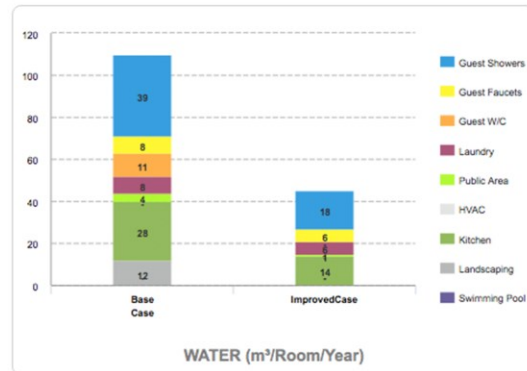
Grey water			
keran wastafel		3656	
wudhu		4400	
shower		2640	
air kondensasi		173	
total l/hari		10869	11.000 L

=

Mockup Water	mockup water		
rain water		22,980.17	
grey water		10869	
total rain water + grey water		33,849.17	34.000 L

RESULT

58.77% Meets EDGE Water Standard



Low-Flow Showerheads - 6 L/min

Low-Flow Faucets in Guest Rooms/Apartment Area - 5 L/min

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Black Water Treatment and Recycling System

Rainwater Harvesting System - 100% of Roof Area Used for Rainwater Collection

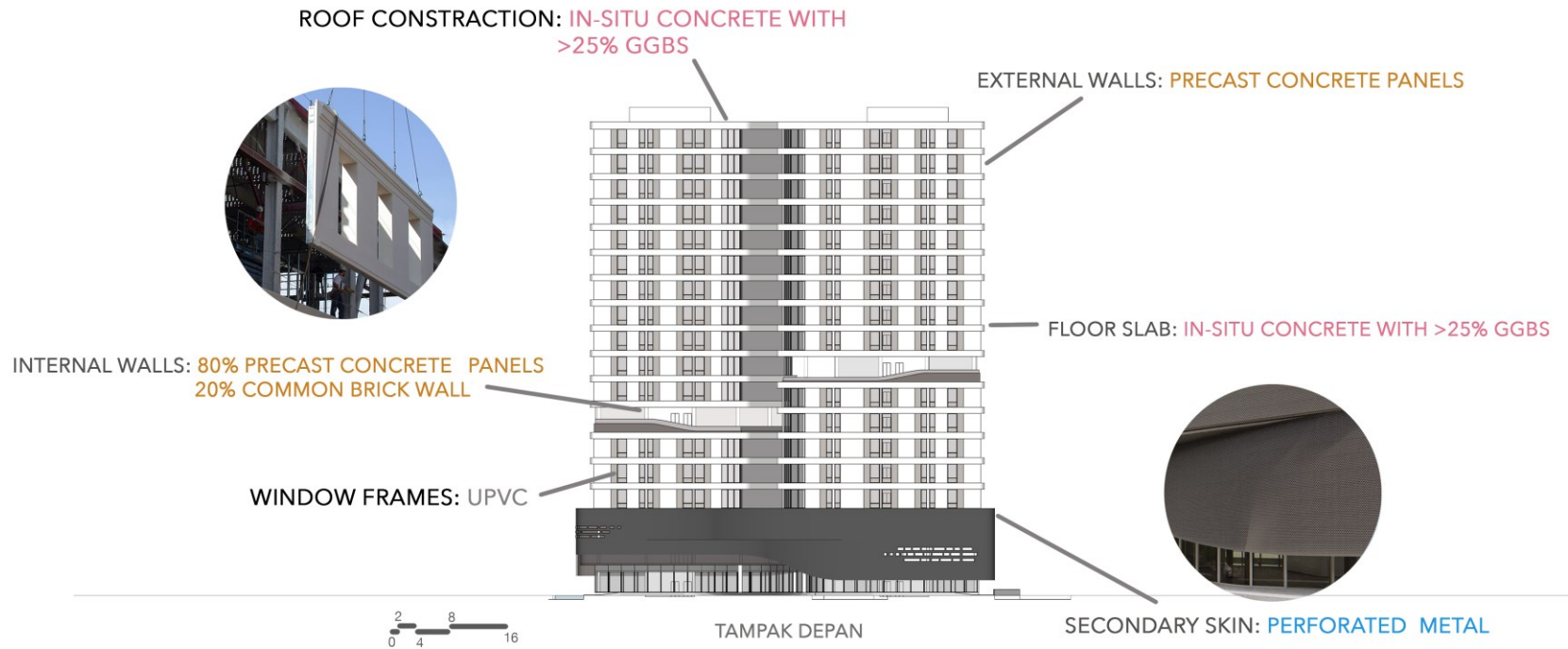
Water-Efficient Landscaping - 4 L/m²/day

Grey Water Treatment and Recycling System

3

MATERIAL EFFICIENCY MEASURES

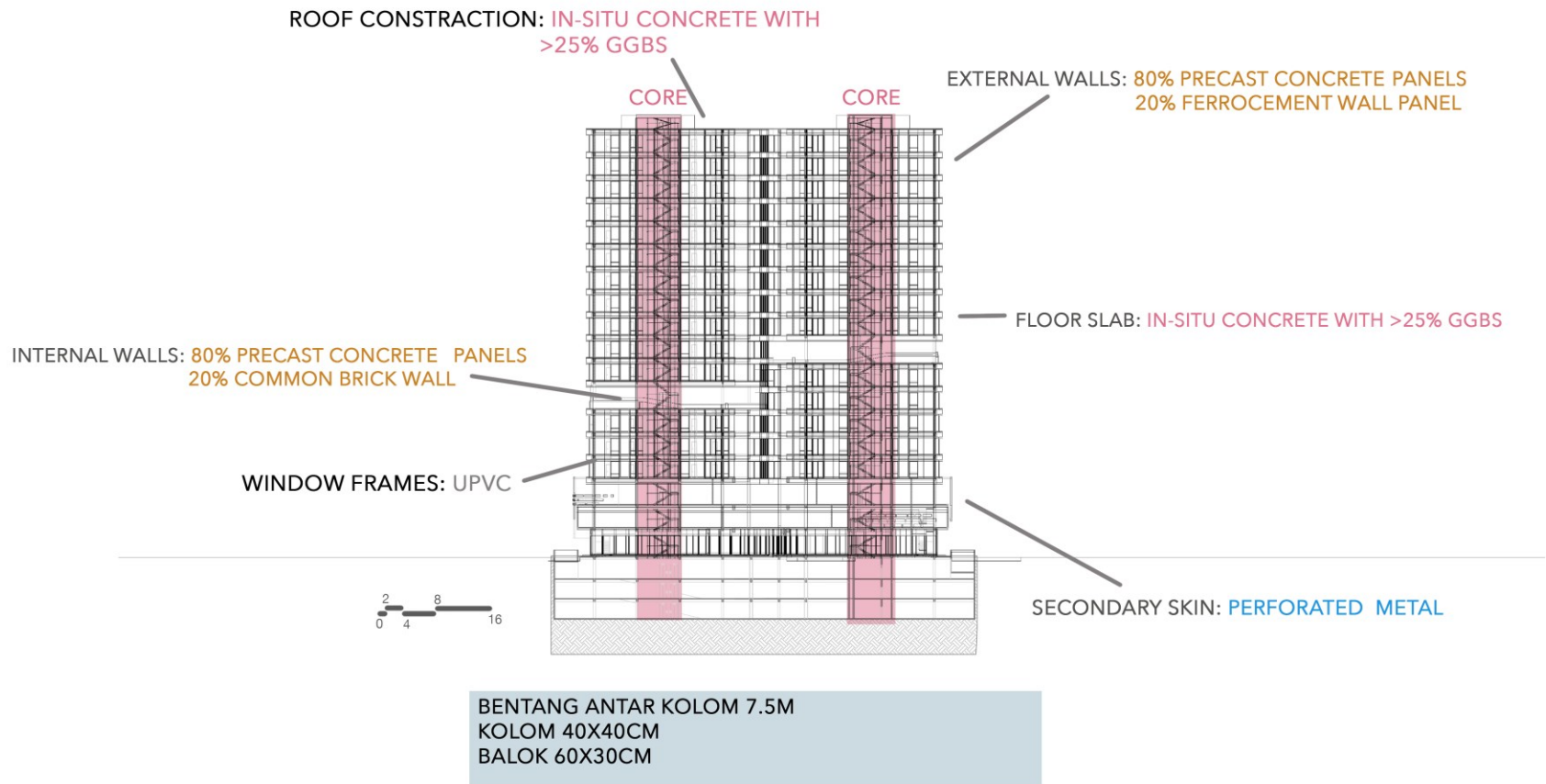
MATERIAL



3

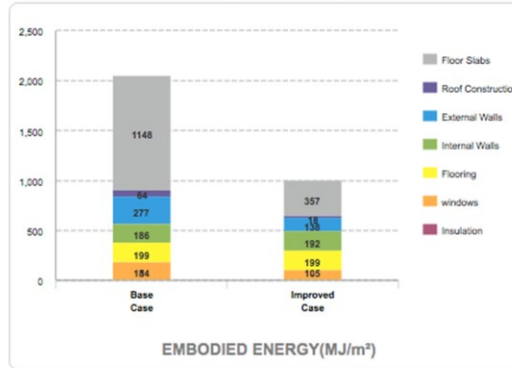
MATERIAL EFFICIENCY MEASURES

STRUKTURAL



RESULT

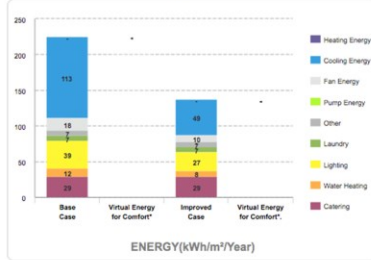
50.97% Meets EDGE Materials Standard



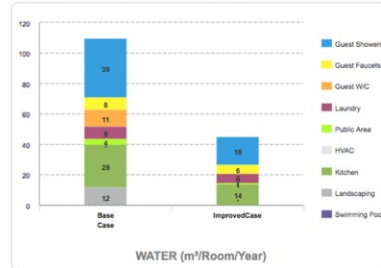
Ref	Building Material	Improved Case Selection	Proportion %	Thickness	Steel Rebar
HTM01*	Floor Slabs Upload Document(s)	In-Situ Concrete with >25% GGBS		120 mm	kg/m²
HTM02*	Roof Construction Upload Document(s)	Type 1: In-Situ Concrete with >25% GGBS	100 %	100 mm	kg/m²
HTM03*	External Walls Upload Document(s)	Type 1: Precast Concrete Panels	80 %	150 mm	
		Type 2: Ferrocement Wall Panel	20 %	mm	
HTM04*	Internal Walls Upload Document(s)	Type 1: Precast Concrete Panels	80 %	150 mm	
		Type 2: Common Brick Wall with Plaster on Both Sides	20 %	mm	
HTM05*	Flooring Upload Document(s)	Type 1: Ceramic Tile	100 %		
HTM06*	Window Frames Upload Document(s)	Type 1: UPVC	100 %	Triple Glazing	
HTM08	Roof Insulation Upload Document(s)	Polystyrene <i>U : ~ 1.28 W/m²k</i>			mm

FINAL
RESULT

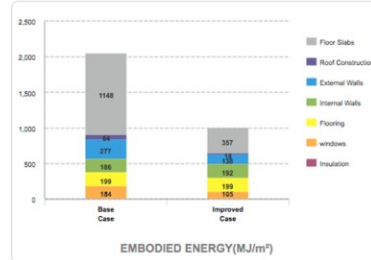
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58.77% Meets EDGE Water Standard



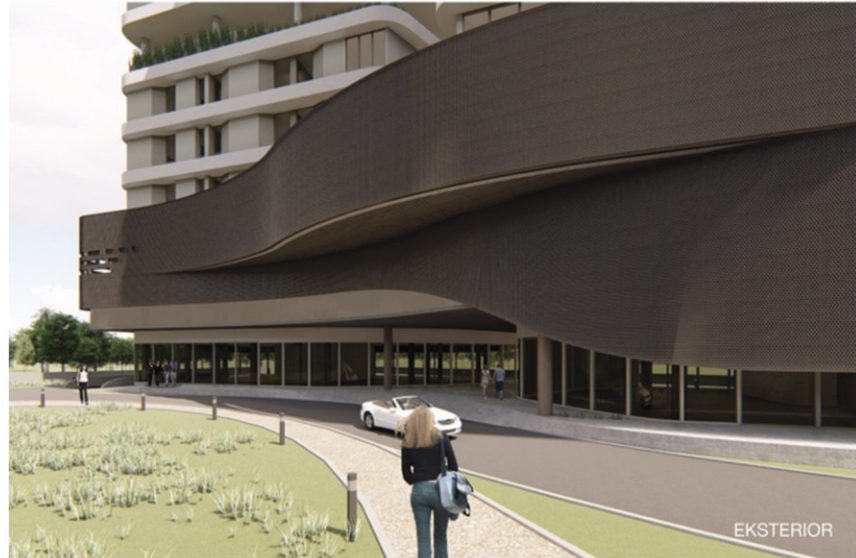
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1.423 [W/m².K]
- External Shading Devices - Annual Average Shading Factor (AASF) of 0.54
AASF 0.54
- Insulation of Roof : U-value of 0.56
0.56 [W/m².K]
- Reduced Window to Wall Ratio - WWR of 21%
WWR % 21
- Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
COP

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- Black Water Treatment and Recycling System
- Rainwater Harvesting System - 100% of Roof Area Used for Rainwater Collection
- Water-Efficient Landscaping - 4 L/m²/day
- Grey Water Treatment and Recycling System

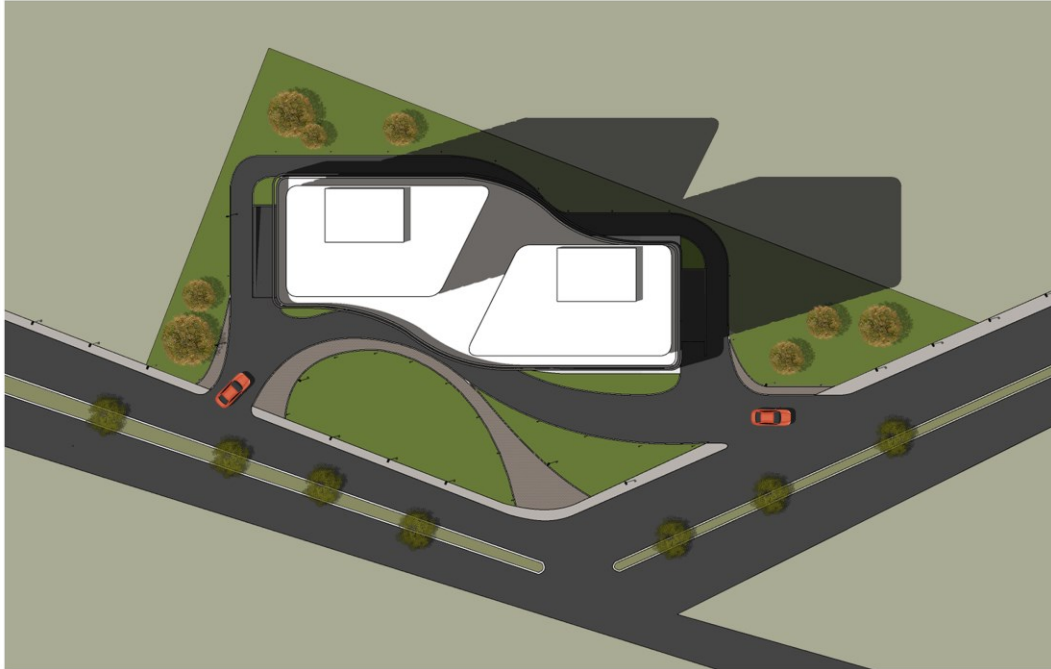
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HTM05*	Flooring Upload Document(s)	Type 1 Ceramic Tile	100 %		
HTM06*	Window Frames Upload Document(s)	Type 1 UPVC	100 %	Triple Glazing	
HTM08	Roof Insulation Upload Document(s)	Polystyrene U : ~ 1.28 W/m²K			mm







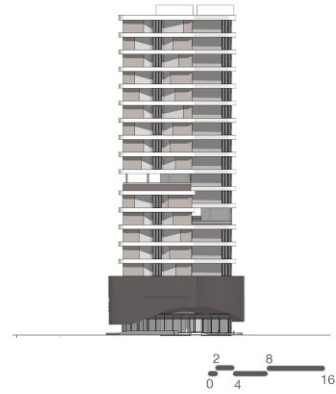
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TAMPAK DEPAN



TAMPAK KANAN

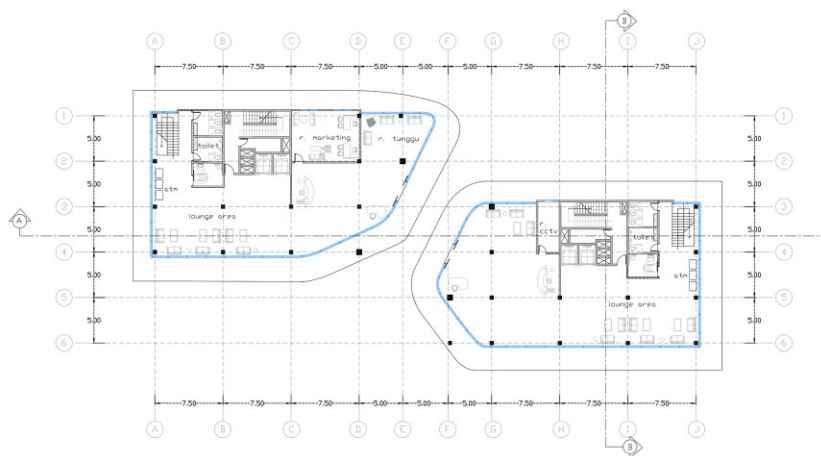


TAMPAK KIRI

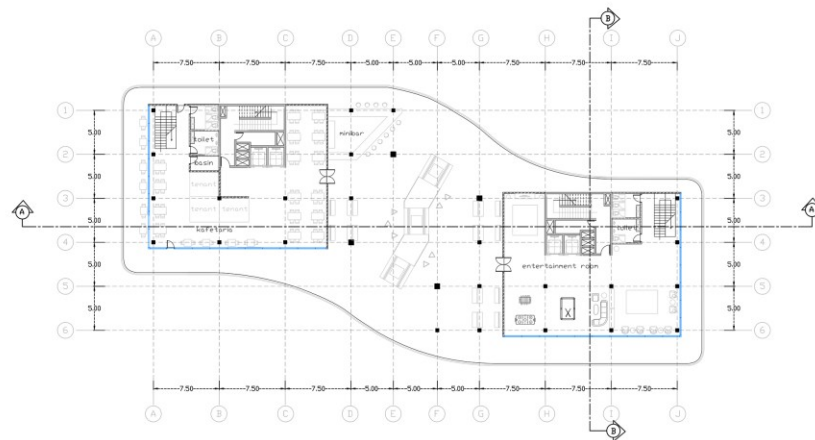


TAMPAK BELAKANG

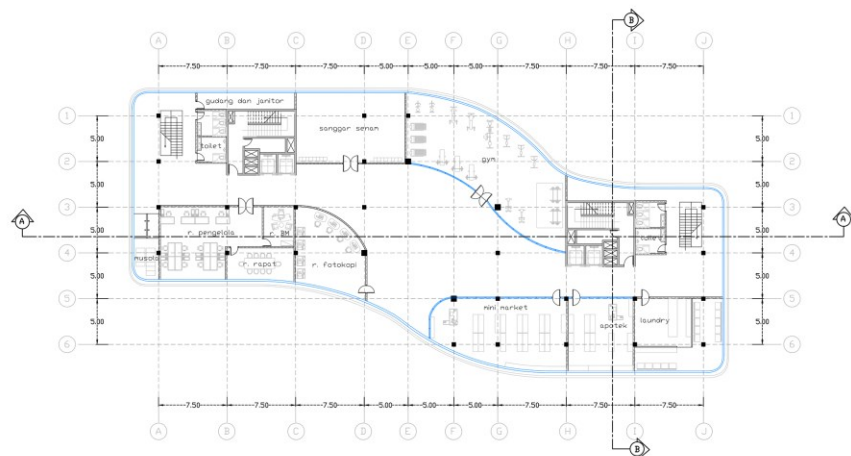




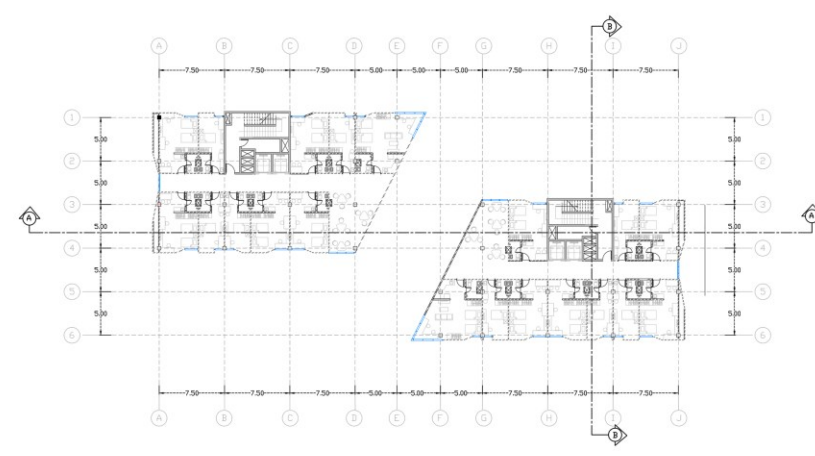
DENAH LANTAI 1



DENAH LANTAI 3

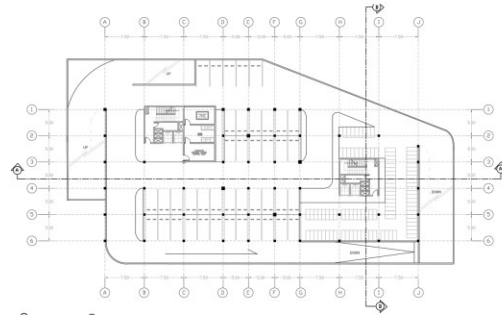


DENAH LANTAI 2

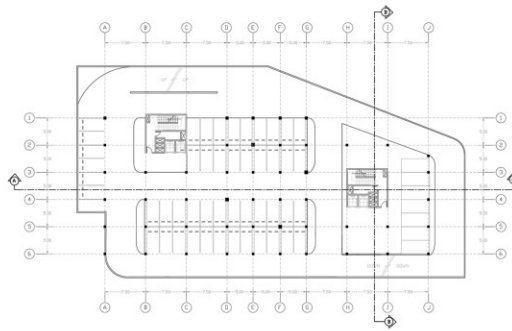


DENAH LANTAI HUNIAN

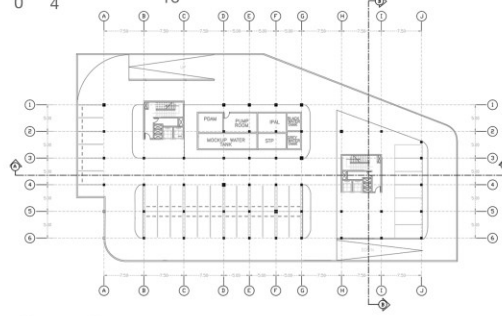
GAMBAR KERJA



DENAH BASEMENT 1



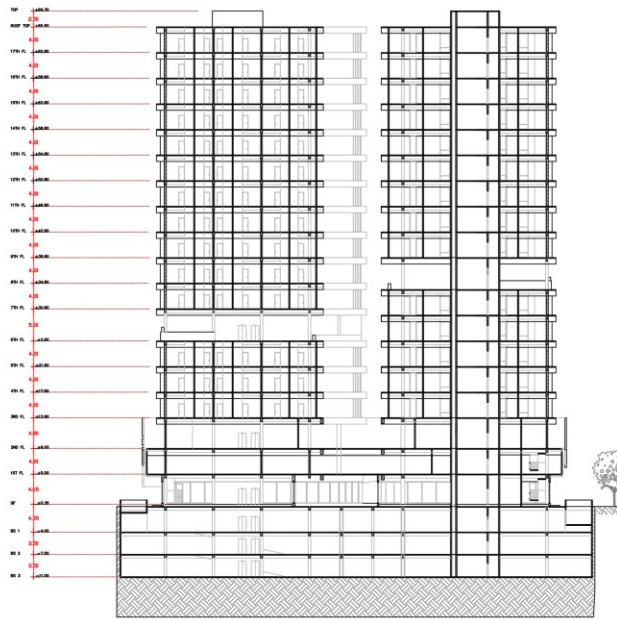
DENAH BASEMENT 2



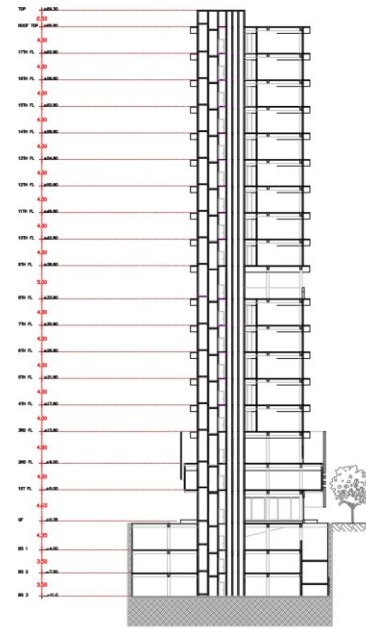
DENAH BASEMENT 3



GAMBAR KERJA



POTONGAN A



POTONGAN B



