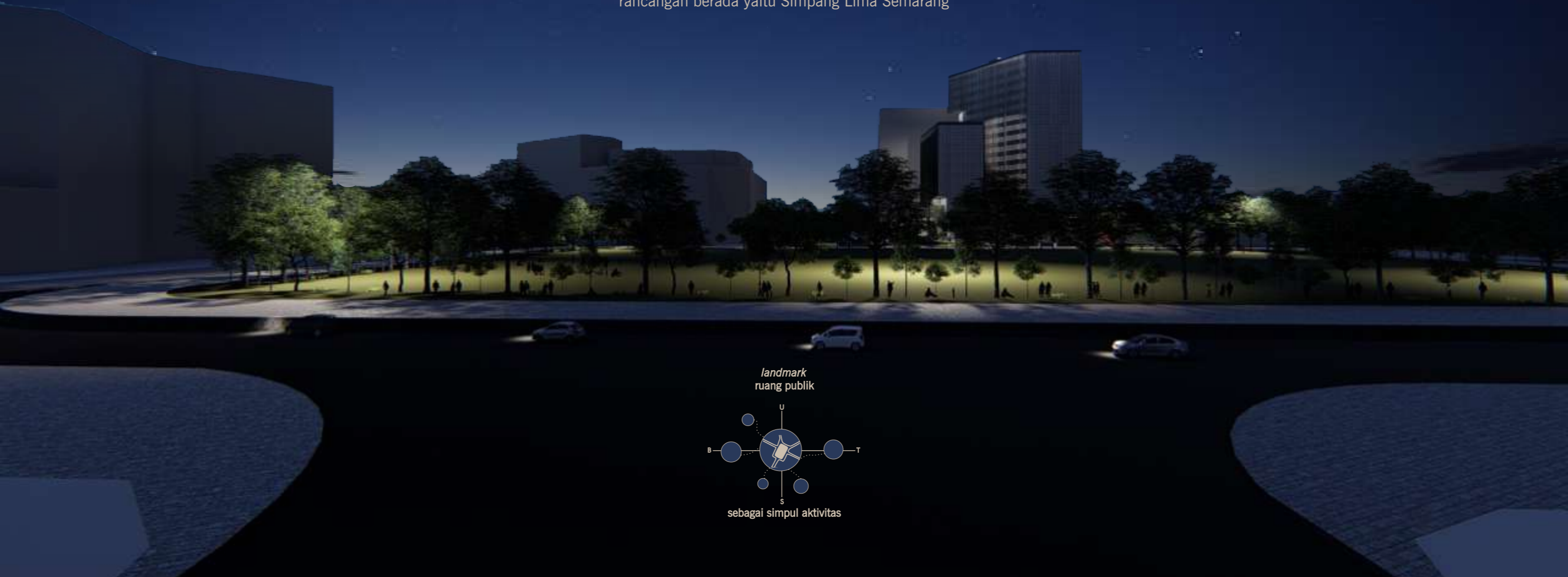


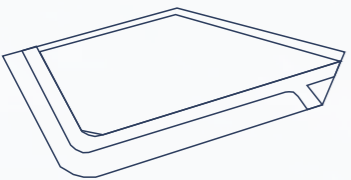


S5. 0.

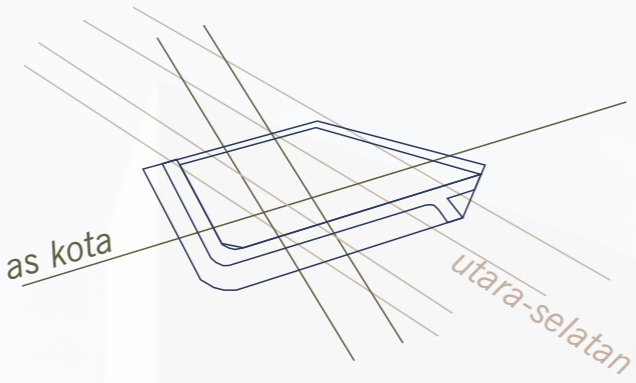
sebuah perancangan gedung tinggi bertipologi *office* di *tetenger* Kota Semarang dengan segala isu yang ada baik makro dan meso, berupaya untuk mengupayakan terjadinya simbiosis mutualisme antara rancangan dengan lingkungan sekitar dimana rancangan berada yaitu Simpang Lima Semarang



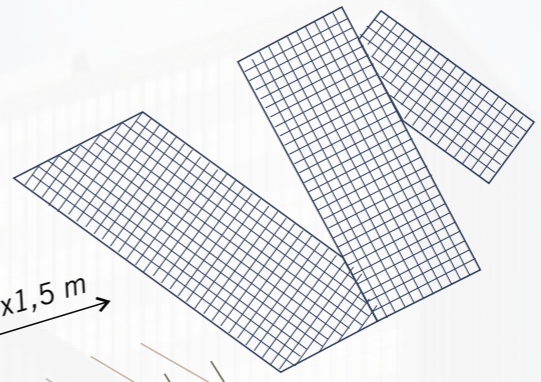
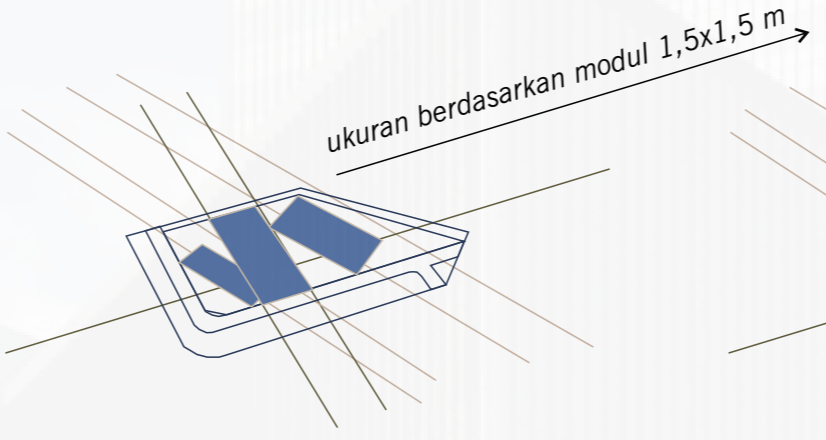
memaksimalkan KDB dengan penyesuaian terhadap *setback* keliling bangunan



pertimbangan aspek EDGE dengan orientasi utama ke utara, namun juga mempertimbangkan aspek *urban* kawasan sekitar

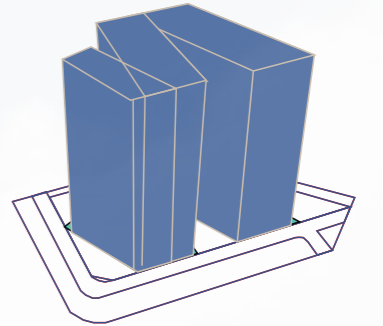


perletakkan tiga massa simetris dengan menyesuaikan tapak dan axis



fit and stretch to site and axis

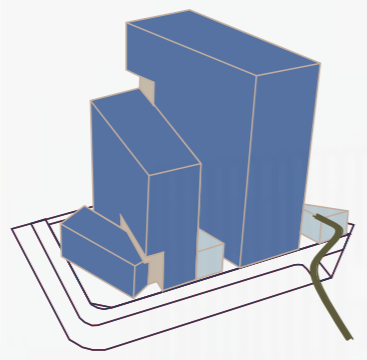
pertimbangan aspek fungsi dengan memaksimalkan KLB dan ketinggian



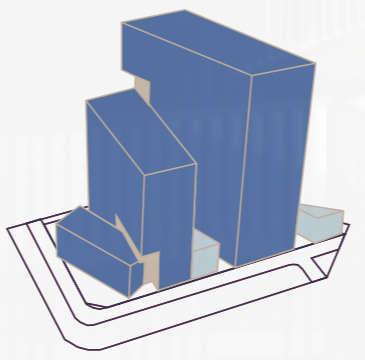
massing

shaped

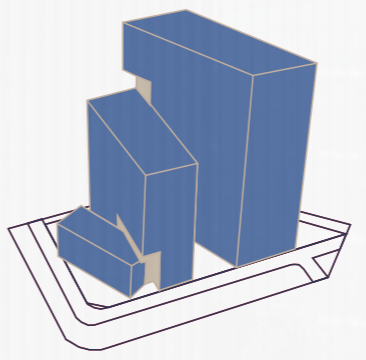
penambahan *slide* sebagai fitur atraktif yang membangun *citizen awareness*



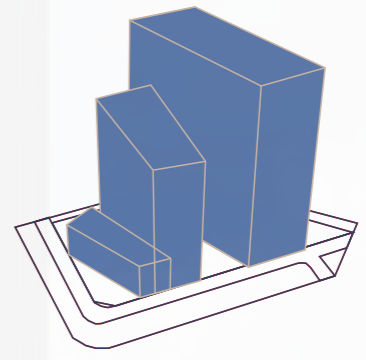
penambahan fungsi bangunan lain di dasar sebagai *base* dalam proporsi keseluruhan



menciptakan kesan 'terpotong' pada pertemuan antar massa bangunan

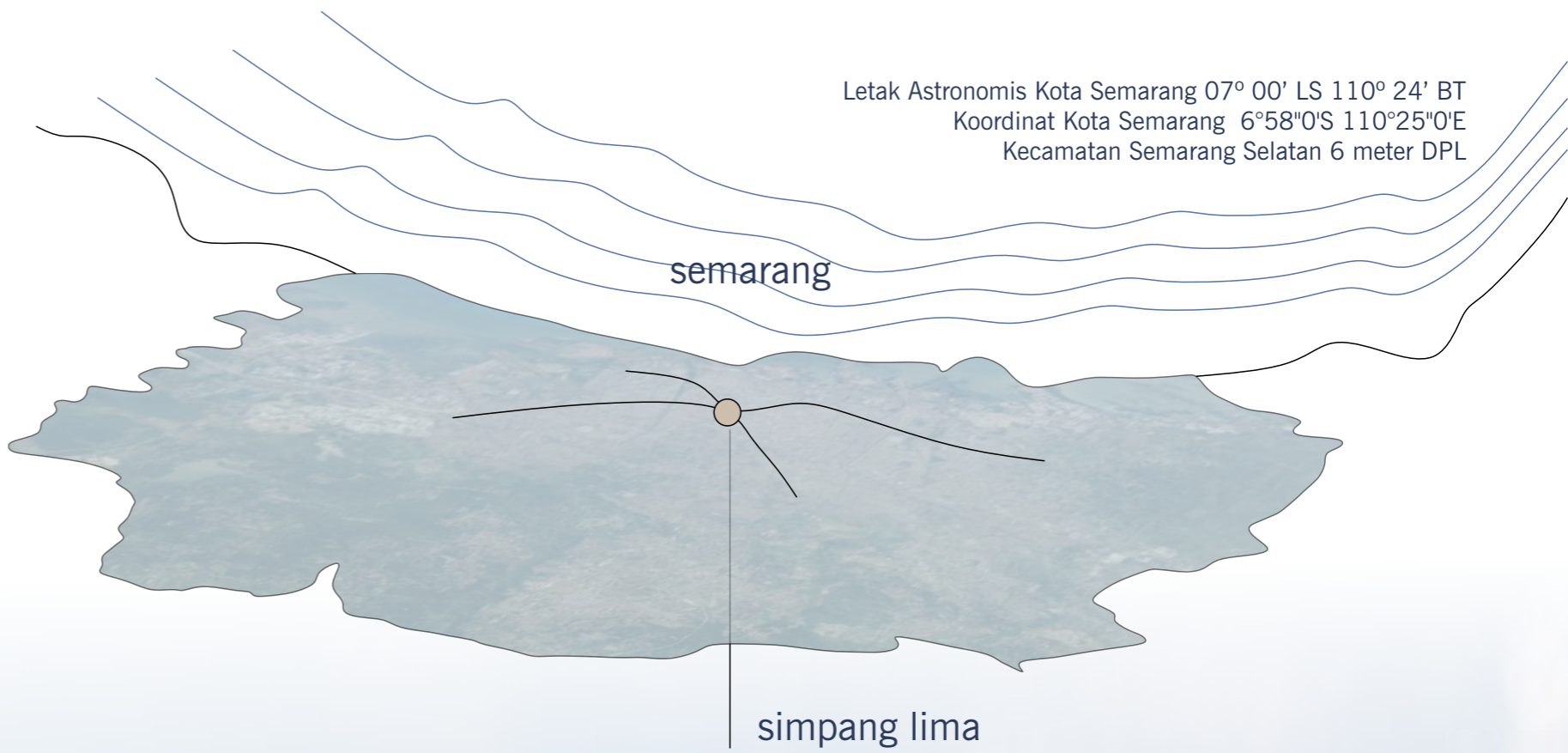
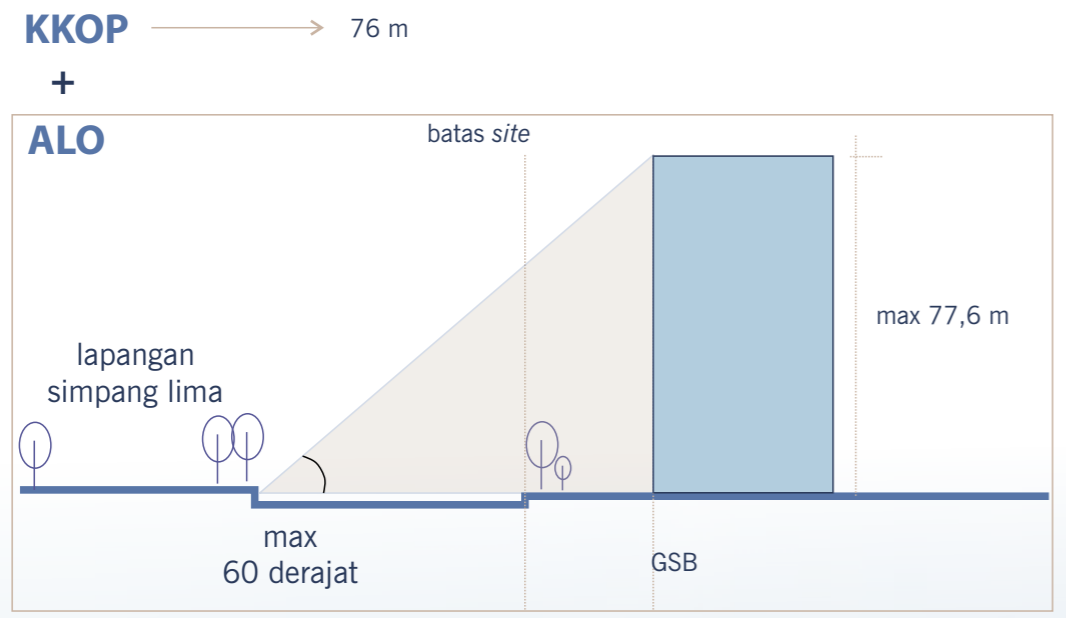


pertimbangan aspek keserasian lingkungan (posisi *hook*)



batas ketinggian

sumber : Dinas Tata Ruang Kota Semarang



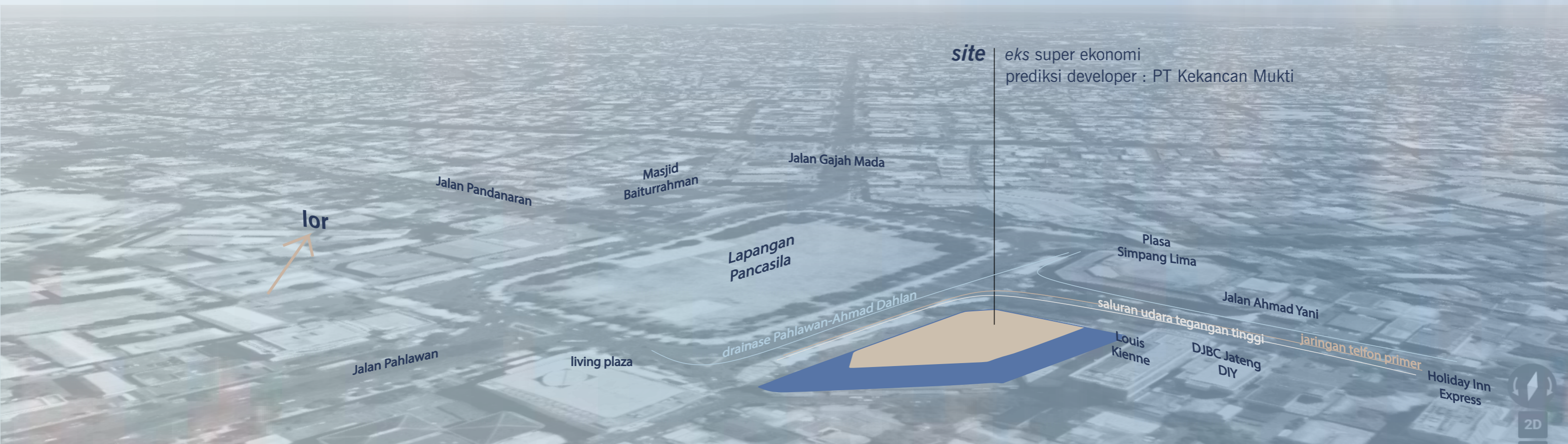
Letak Astronomis Kota Semarang 07° 00' LS 110° 24' BT
 Koordinat Kota Semarang 6°58'0"S 110°25'0"E
 Kecamatan Semarang Selatan 6 meter DPL

Dasar : Peraturan Menteri Pekerjaan Umum No. 29 Tahun 2006, RTRW Kota Semarang 2011-2031, RDTRK Kota Semarang 2000-2010

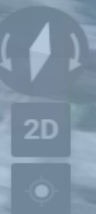
KDB 80% = 3.968 m²
 KLB 7,2 = 35.712 m²
 maksimal lapis = KKOP dan sudut 60'
 GSB 29 meter

RTA 20% = 992 m²
 dispensasi 30% RTA = 297,6 m²
 KDH = 694,4 m²

Fungsi : Perdagangan dan Jasa
 Letak : BWK I (Jalan Ahmad Yani sebagai jalan arteri sekunder)



site eks super ekonomi
 prediksi developer : PT Kekancan Mukti



- A glass to core dimension of 9–12m allows room for cellular office space or open plan plus circulation and storage.
- A glass to glass dimension of 13.5–18m allows two or three zones of office, circulation and support space.

Typical planning modules

United States	5 ft (1.5 m) module now the standard, although older buildings typically have smaller modules.
Japan	1.6 m and 1.8 m (5' 3" and 5' 11")
Europe and Asia	1.2 m (3' 11"), and 1.5 m (5' 0")

- The BCO recommends 2.5 kN/m², with hardened areas for extra weight of up to 7 kN/m², but says that institutions demand ranges of 3 to 4kN/m².

- Floor to floor heights of 4–4.5m provide more flexibility as well as visual comfort. However, a typical height of 2.75m from finished floor level to underside of ceiling is still considered good practice.

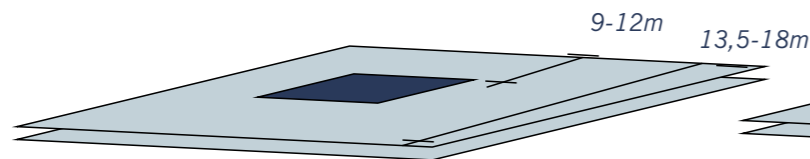
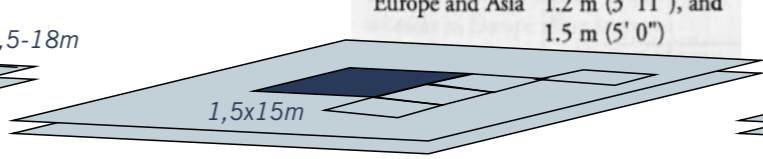
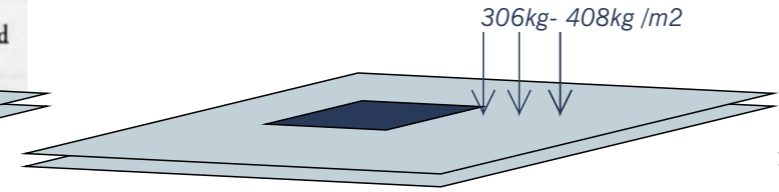


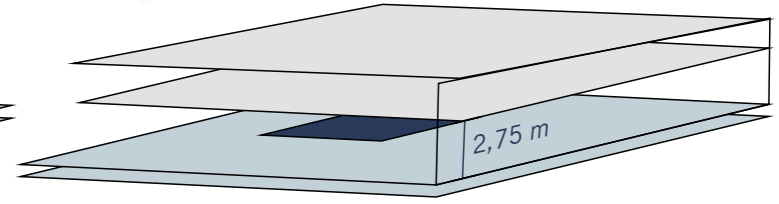
plate
Metric Handbook Fifth Edition



modules
Building Type Basics for Office Building A. Eugene Kohn

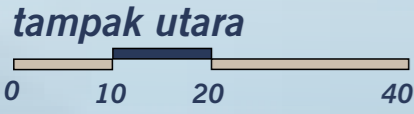


floor loading
Metric Handbook Fifth Edition



floor to ceiling
Metric Handbook Fifth Edition

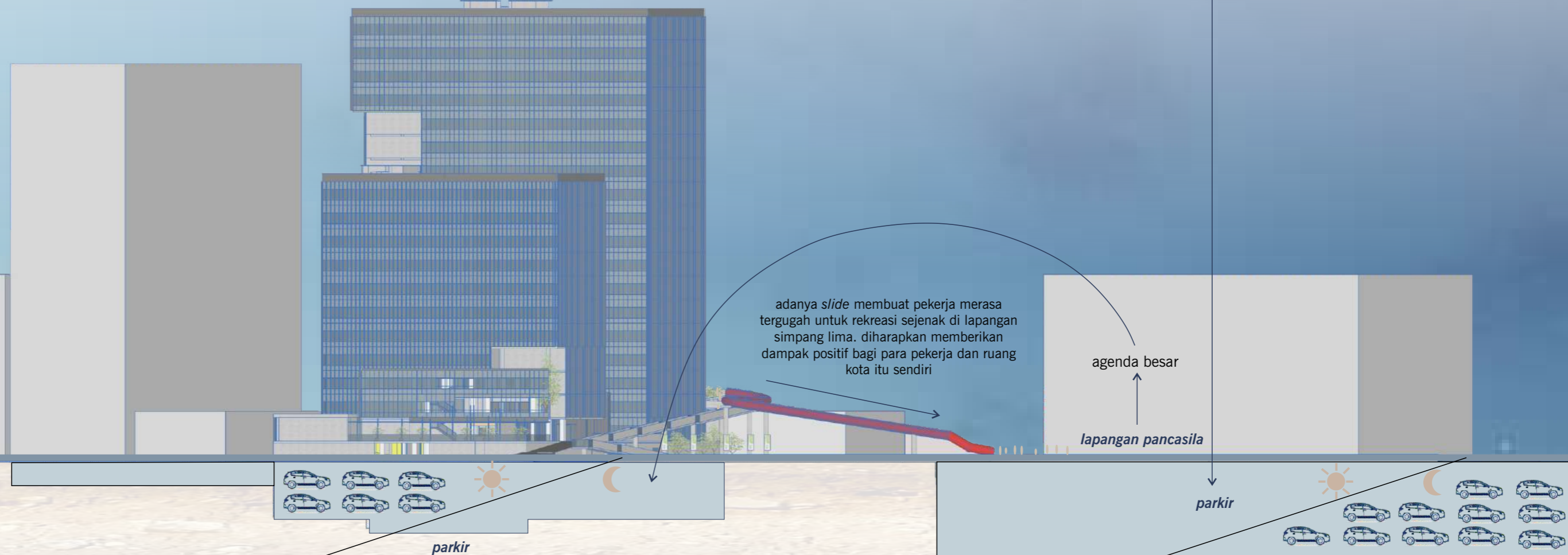
how it works

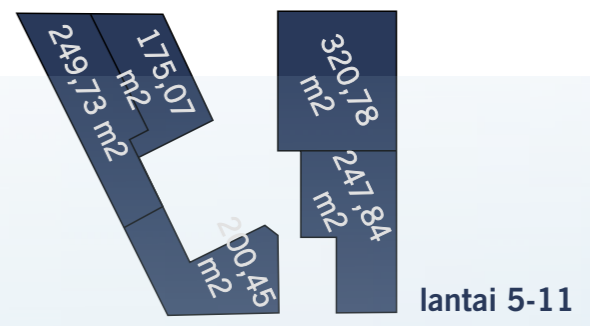
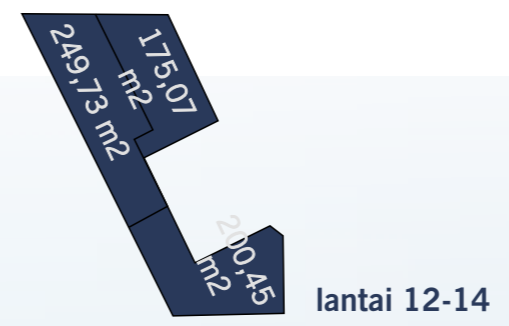
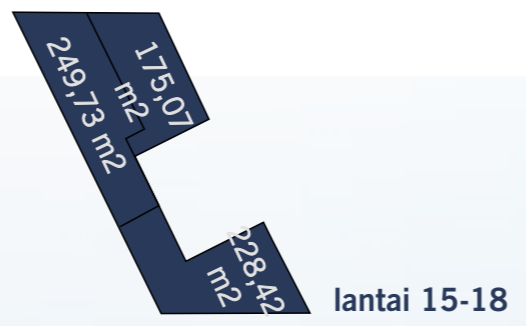
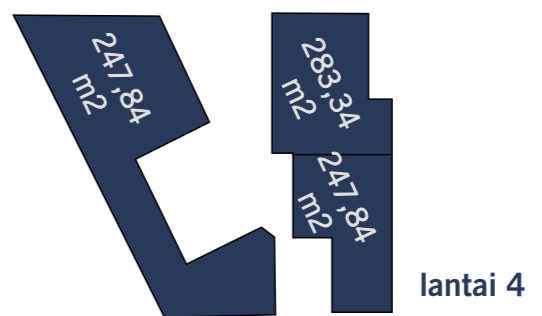
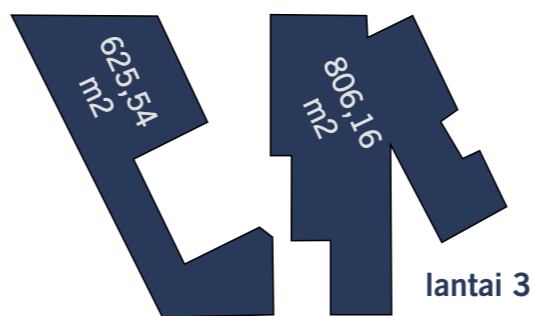
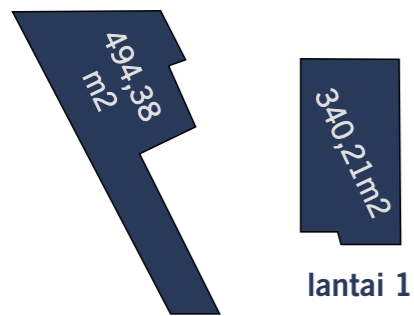


ruang parkir sengaja disediakan terbatas (rasio 1,9)

backup

kontinuitas fungsi

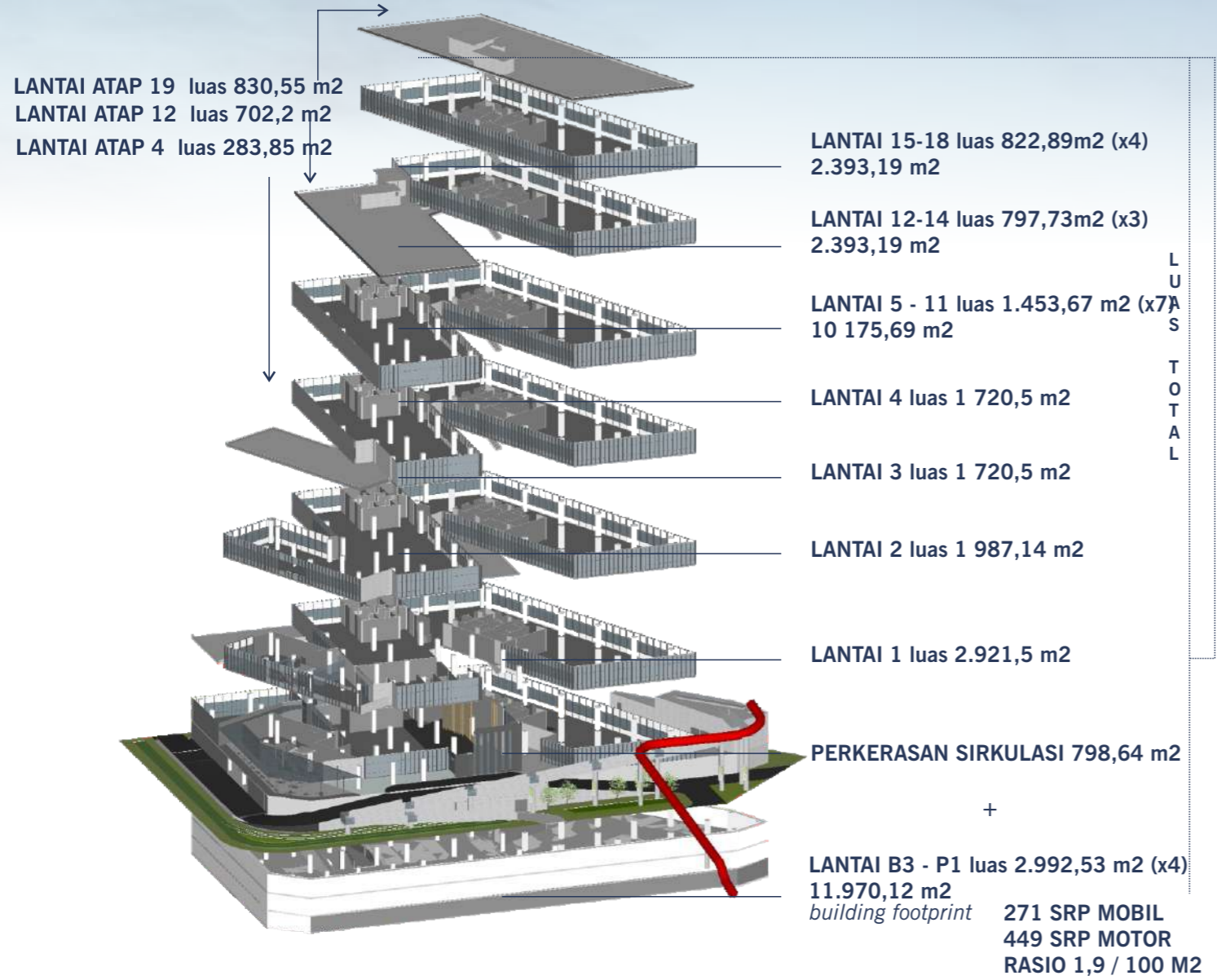




● luas NLA office space



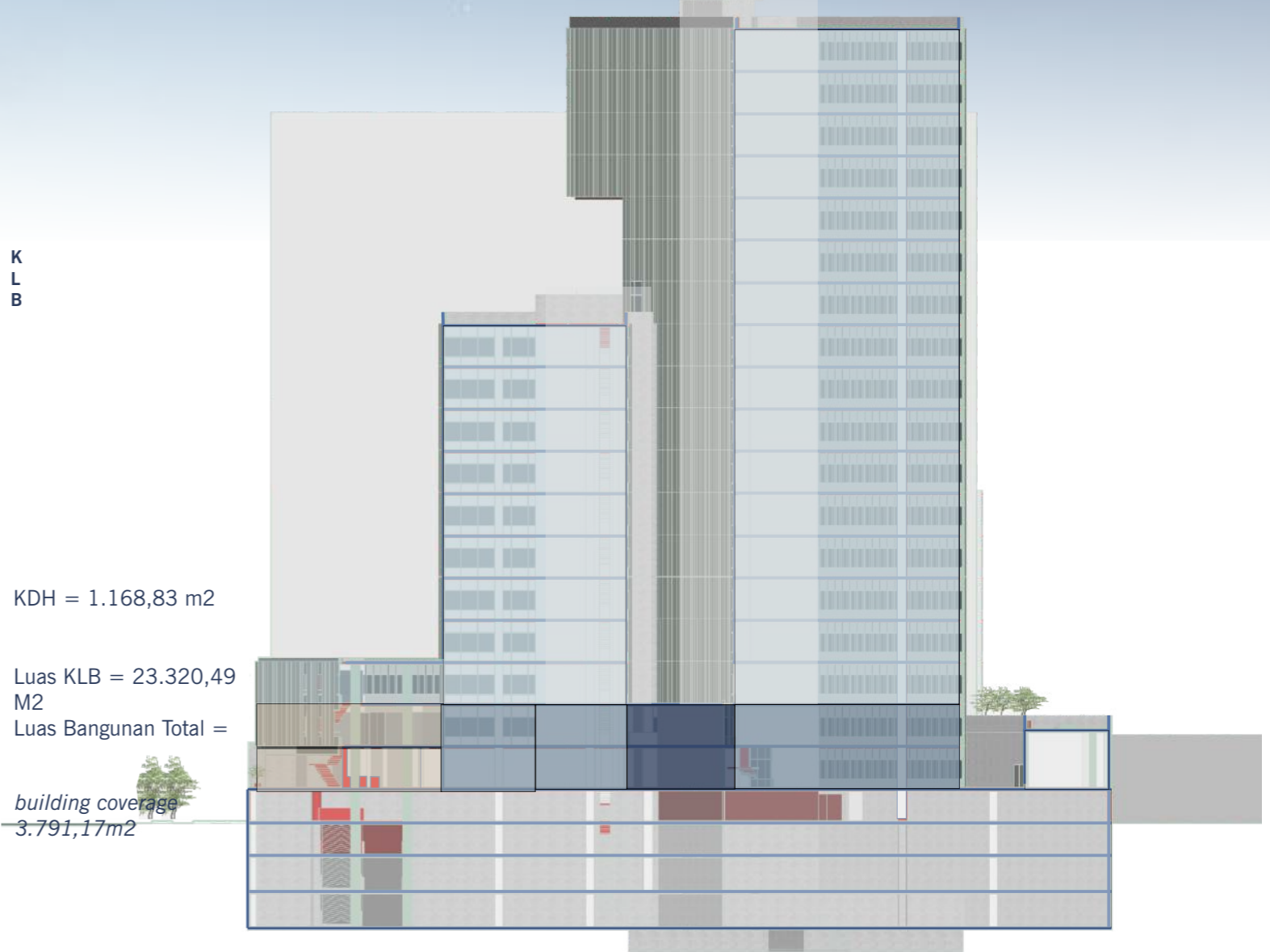
● *eksploda.*



rasio $\frac{\text{NLA OFFICE SPACE } 17.214,35\text{m}^2}{\text{GFA BUILDING } 21.503,89\text{m}^2}$

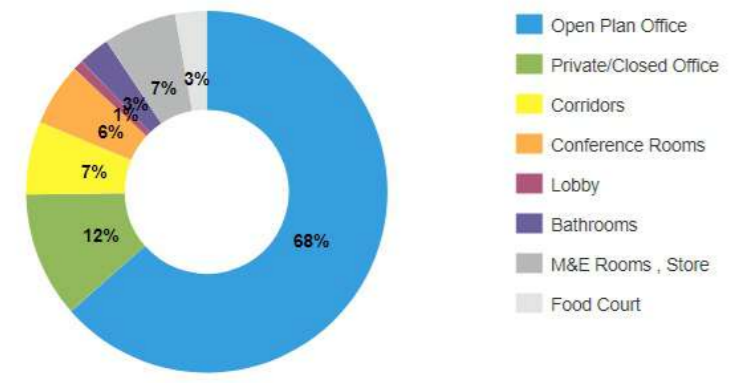
0,81 (profitable)

● *zoning*



- public office space**
- access limited office space**
- lobby**
- ME, core and parking**
- F&B**

passive design saving



BUILDING DATA

	Default	User Entry	Unit
Occupancy Density	10	10	m ² /Perso
Operational Hours	10		Hours/Da
Working Days	5		Days/We
Holidays	12	20	Days/Yea

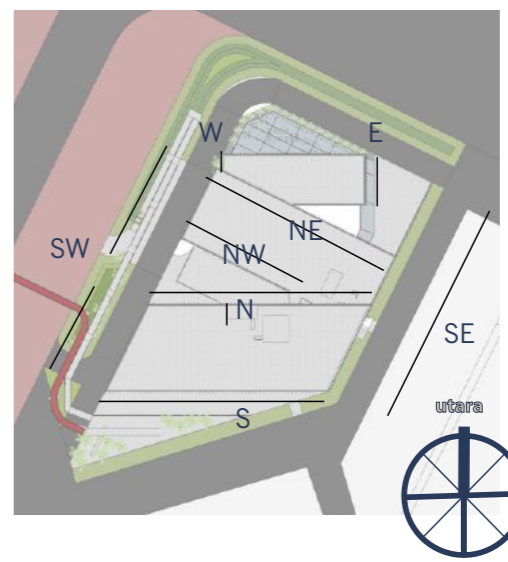
Food Court
Cellular Office

	Default	User Entry	Unit
Open Plan Office	13,050	14,631	m ²
Private/Closed Office	1,976	2,582	m ²
Corridors	1,438		m ²
Conference Rooms	1,223	0	m ²
Lobby	1,653	218	m ²
Bathrooms	578		m ²
M&E Rooms, Store **		1,479	m ²
Food Court	578		m ²
Gross Internal Area		21,504	m²

**The M&E Rooms, Store field is equal to the remaining space required to total the gross internal area excluding car parking.

dihasilkan dari proses perancangan dan preseden NLA office space yang direncanakan dalam proses perancangan adalah sebesar 17.314 m². Dengan rasio antara closed dan open plan sebesar 85% : 15%

BUILDING ORIENTATION



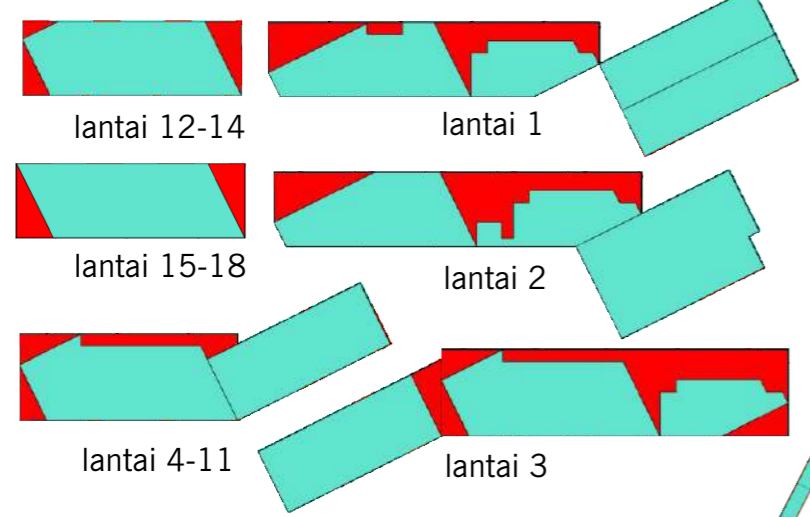
Direction	Default	User Entry	Unit
North	16.0	47	m
South	16.0	47	m
East	16.0	11	m
West	16.0	7	m
Northeast	16.0	42	m
Northwest	16.0	46	m
Southeast	16.0	47	m
Southwest	16.0	26	m

BUILDING DEPTH

Floor Plan Depth*** m
Main Orientation***

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

RATA-RATA BUILDING DEPTH = 16,2 METER



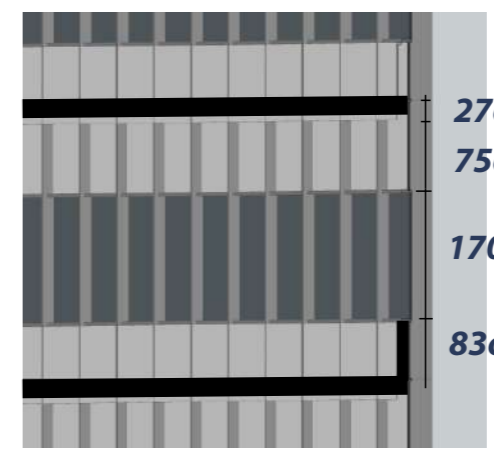
Perhitungan building depth menggunakan rasio antara luas dengan panjang total bangunan per lantai yang dijabarkan. Dengan ini maka rata-rata buidling depth yang didapat lebih logis

energy saving

WINDOW WALL TO RATIO

OFE01 - Reduced Window-to-Wall Ratio Calculator

Orientation	Wall Area (m ²) Example: 120	Glazing Area (m ²) Example: 60	Ratio in %
North	2637.00	705.00	26.73
South	3539.00	1466.00	41.42
East	81.00	18.00	22.22
West	57.00	20.00	35.09
Northeast	1655.00	690.00	41.69
Northwest	2229.00	41.00	1.84
Southeast	1893.00	743.00	39.25
Southwest	952.00	440.00	46.22
Total	13,043.00	4,123.00	



Energy: 17.21%

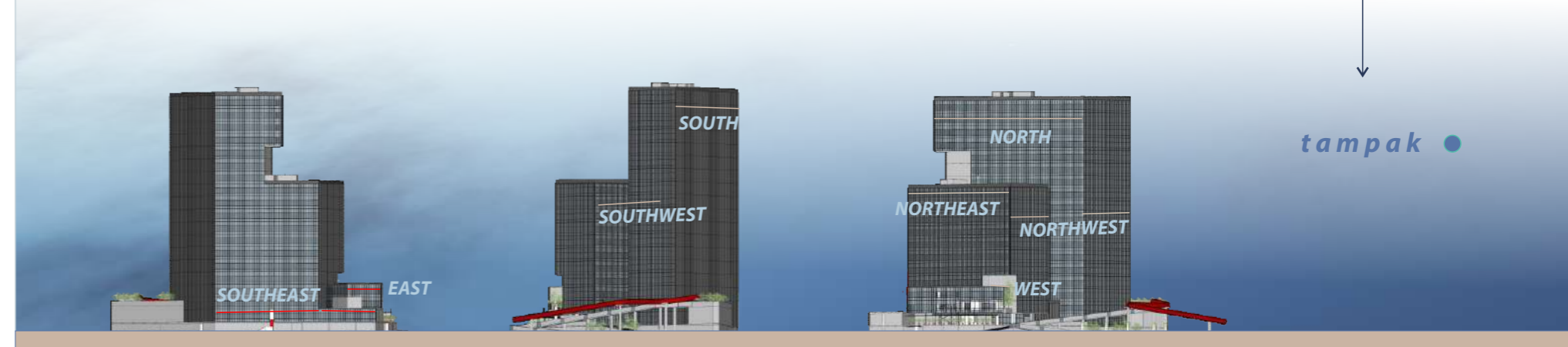
OFE01* Reduced Window to Wall Ratio - WWR of 31.62%

North	26.73 %	South	41.42 %
East	22.22 %	West	35.09 %
Northeast	41.69 %	Northwest	1.84 %
Southeast	39.25 %	Southwest	46.22 %

desain glazing typical pada bangunan ini. digunakan pada ruang kantor. namun pada beberapa bagian ada desain bukaan yang tidak typical utamanya pada ruang food and beverage dan juga lobby

Energy: 1.84%

RESULT FOR DESIGN



tampak ●

AASF

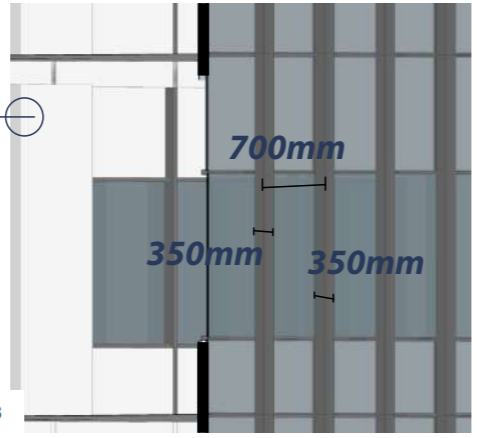
detail *side fin* sebagai instrumen pembayang bukan pada *glazing* gedung. *side fin* ini memiliki struktur yang menyatu dengan *curtain wall* yang menggunakan sistem *stick*. semua *glazing* gedung memiliki rasio 1 dengan *side fin* yang ada.

Energy: 20.17%

OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.23

AASF 0.23

Type	Direction	Area	Device	Factor
Type 1	North	705	Vertical Overhang	0.23
Type 2	Northeast	691	Vertical Overhang	0.22
Type 3	South	1486	Vertical Overhang	0.23
Type 4	Southeast	743	Vertical Overhang	0.23
Type 5	Southwest	440	Vertical Overhang	0.21
Type 6	Northwest	305	Vertical Overhang	0.2
Type 7	East	18	Vertical Overhang	0.18
Type 8	West	20	Vertical Overhang	0.18



ENERGY SAVING LIGHT BULBS

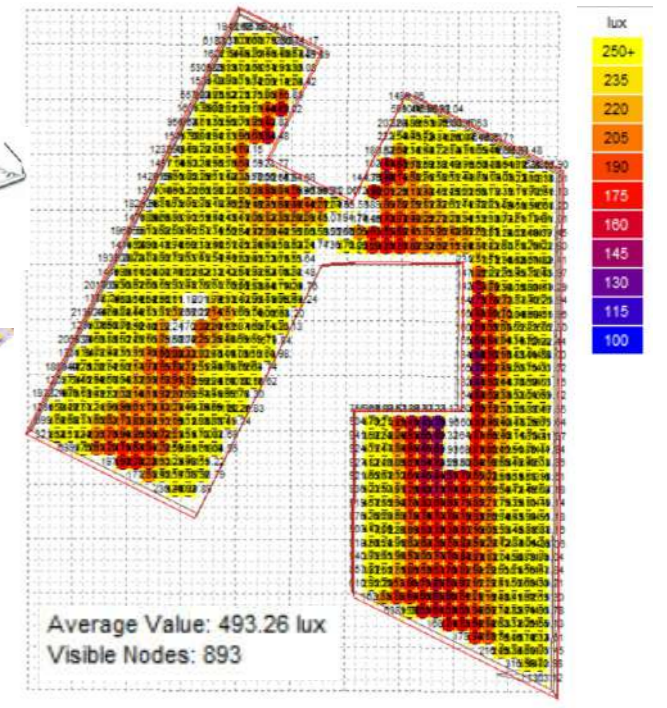
Energy: 34.11%

OFE24 Energy-Saving Light Bulbs - Internal Spaces

Upload Document(s)

Jenis lampu yang dipilih adalah lampu T5 HO, LED *downlight* dan LED *stripe* pada beberapa bagian dari gedung. Lampu ini masuk ke dalam kategori improved case dalam *tools* EDGE. Sehingga memberikan penghematan energi total bangunan. Lampu ini juga dipilih karena penggunaannya saat ini sudah merupakan hal yang sangat wajar pada gedung-gedung tinggi.

penghitungan *daylight* menggunakan aplikasi *ecotec* memilih salah satu denah yang merupakan denah paling dominan dan juga dirasa paling memiliki resiko mendapatkan *daylight* yang paling sedikit (bangunan saling membayangi). Dan didapatkan hasil dari *dylight analysis*, ruangan dalam memiliki potensi *daylight* sebesar 493,26 lux dari standar yang sebesar 250 lux.



VRF SYSTEM

Energy: 24.28%

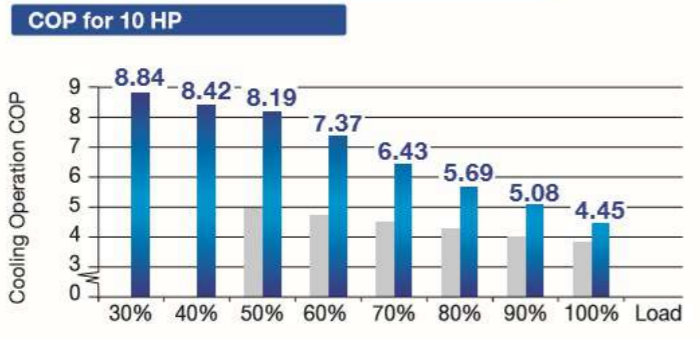
OFE11* Variable Refrigerant Flow (VRF) System - COP of 4.45

COP 4.45

UNIT VRV 10 HP COP 4,45

sistem penghawaan gedung menggunakan sistem VRV dari Daikin dengan jenis VRV X yang lebih hemat energi dibanding tipe sejenis lainnya. diagram penghawaan gedung terlampir.

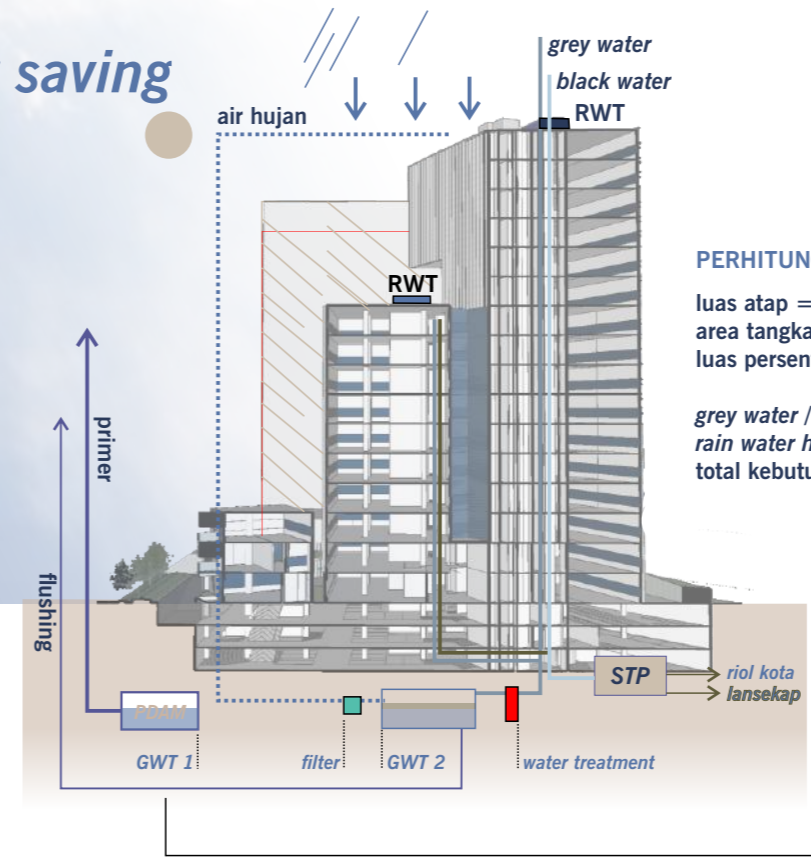
Higher Coefficient of Performance (COP)



Annual power consumption 20%* lower

* Simulation conditions:
• Location: Bangkok, Thailand
• System: Outdoor unit (10 HP) x 1
• Indoor unit (2 HP Round Flow with Serving type) x 5
• Operation time: 8300-20200 h days/week
• Outdoor units:
New model: FROU10A (VRV X series)
Conventional model: FRO10T (VRV IV)
VRV IV (FRO10T)
VRV X

water saving



PERHITUNGAN GWT 2

luas atap = 2.090 m2
area tangkapan = 90%
luas persentase = 1.881 m2
grey water / hari = 8.757 dm3
rain water harvesting = 27.888 dm3
total kebutuhan = 36.645 dm3

pemilihan kapasitas tangki = 45.000 liter



GWT 1 = VOLUME SEDIKITNYA SETARA GREY WATER
KEBUTUHAN GWT 1 : 8.757 DM3
PEMILIHAN TANGKI : 15.000 DM3



Water: 49.44%

OFE02* Dual Flush for Water Closets in All Bathrooms - 3.3 L/first flush and 3.3 L/second flush
Single Flush/Flush Valve

Water: 52.20%

OFE06 Rainwater Harvesting System - 90% of Roof Area Used for Collection
% of Roof Area Used 90

Water: 57.83%

OFE07 Grey Water Treatment and Recycling System
Upload Document(s)

Water: 71.97%

OFE08 Black Water Treatment and Recycling System
Upload Document(s)

materials saving

Materials: 30.51%

Ref	Building Material	Improved Case Selection	Proportion %	Thickness	Steel Rebar
OFM01*	Floor Slabs	In-Situ Waffle Concrete Slab		270 mm	16 kg/m ²
OFM02*	Roof Construction	Type 1 In-Situ Reinforced Concrete Slab	100 %	120 mm	6 kg/m ²
OFM03*	External Walls	Type 1 Curtain Walling (Opaque Element)	87 %	160 mm	
		Type 2 Common Brick Wall with Internal & External Plaste	13 %	150 mm	

OFM04*	Internal Walls	Type 1 Common Brick Wall with Plaster on Both Sides	100 %	150 mm
OFM05*	Flooring	Type 1 Vinyl Flooring	85 %	
		Type 2 Finished Concrete Floor	15 %	
OFM06*	Window Frames	Type 1 UPVC	100 %	



VINYL FLOORING
AREA OFFICE SPACE
LUAS : 17.214,6 M2 DARI 21.505 M2
PRESENTASE : 85%

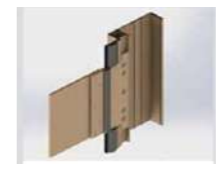
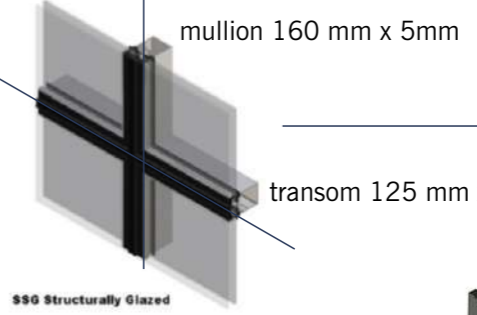


CONCRETE FLOORING
AREA F&B, KORIDOR, LOBBY,
KAMAR MANDI
LUAS : 2.245,35 M2 DARI 21.505M2
PRESENTASE : 15%

INTERNAL COMMON BRICK WALL
DOUBLE PLASTER
(100%)

EXTERNAL WALL COMMON BRICK WITH
DOUBLE PLASTER 13%

● curtain walling



side fin
panjang 350 mm

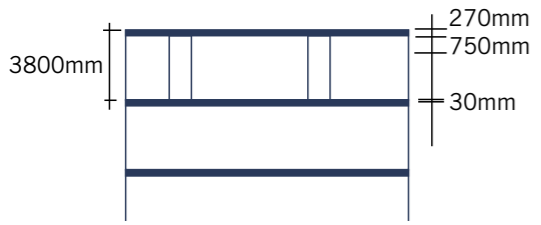


kaca double panasap dark grey

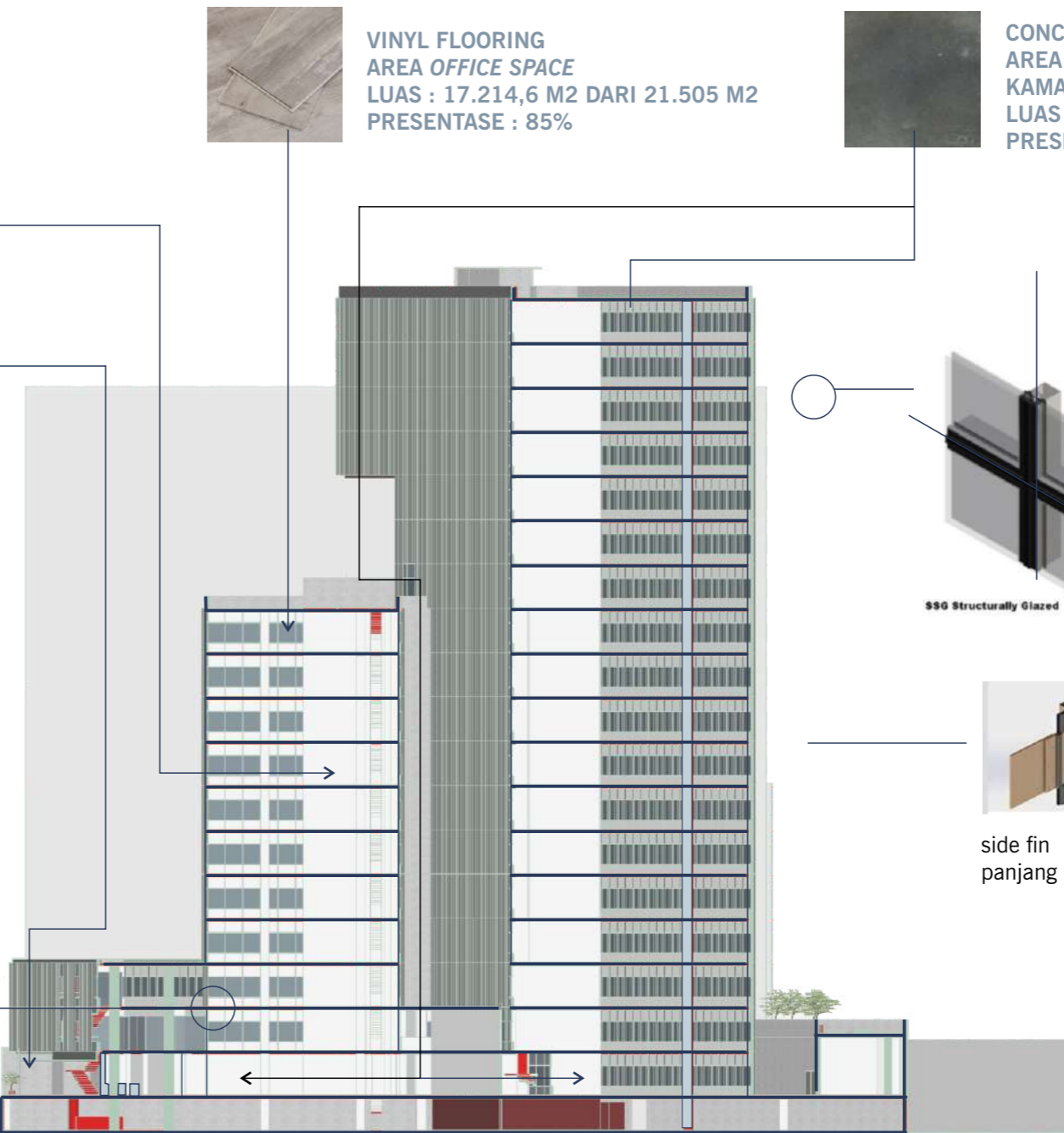
● post tension flat slab

menyikapi konteks kota semarang
dengan keterbatasan ijin
ketinggian gedung

tebal 270mm
bentang disarankan 7-9m
rebar reinforcement 15,4 kg/m²
(hemat 65%)

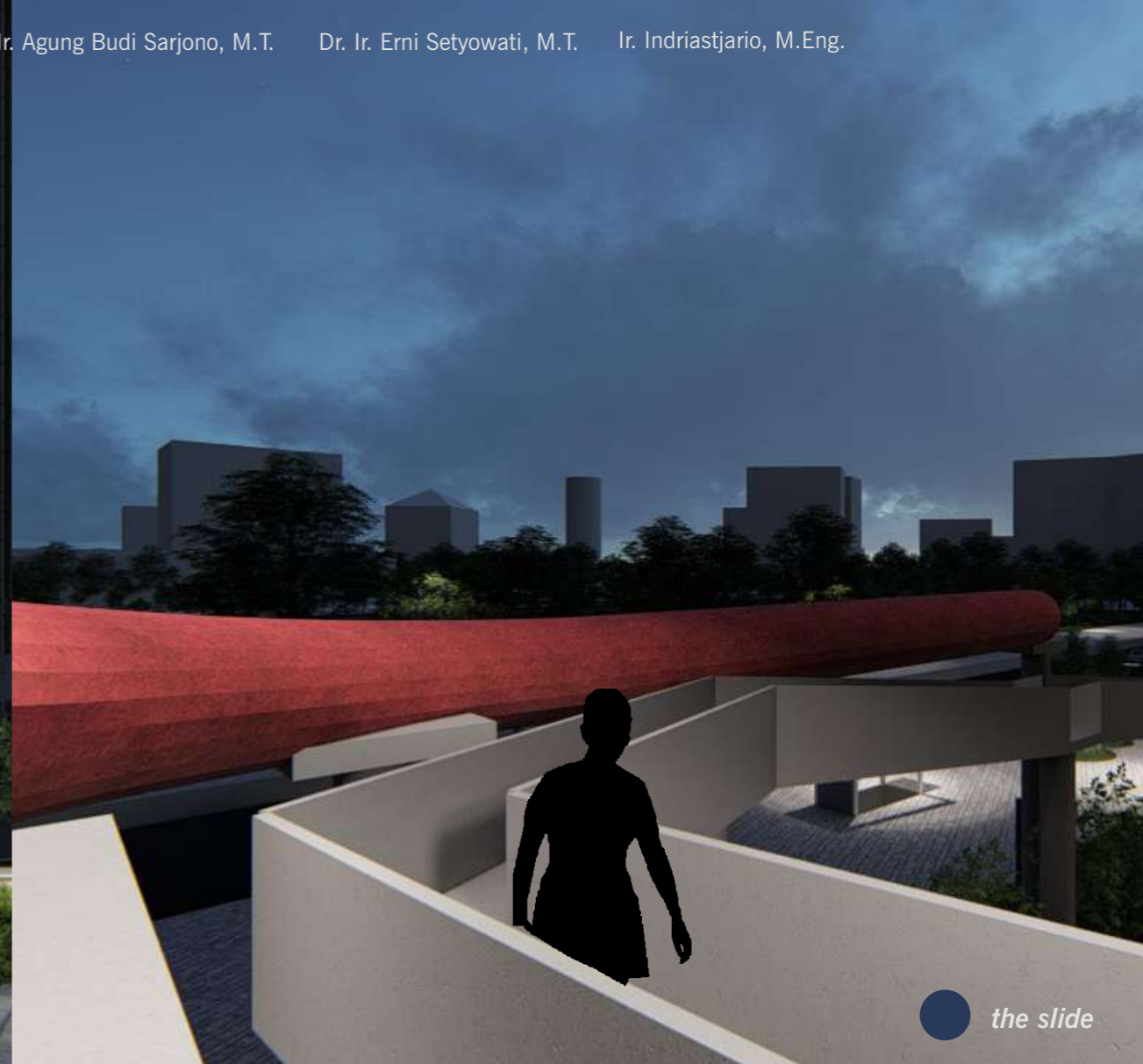


Reduction in building height	
10	10
9	9
8	8
7	7
6	6
5	5
4	4
3	3
2	2
1	1





● view from pedestrian way



● the slide



● nightshot



bagian F and B diperkirakan dapat beroperasi selama 24 jam sehingga gedung ini tetap membuat hidup suasana Simpang Lima meskipun aktivitas perkantoran telah usai



● view from simpang lima



● drop off zone



● F & B night view



● good evening



● F & B and drop off zone



lobby



foodcourt



2nd floor corridor



north tower hallway lift



1st floor south tower hallway lift



south tower hallway lift



south tower core corridor



example for office layout



open plan



private lobby



open plan



conference room



ruang sudut bisa digunakan sebagai meeting room informal dikarenakan tidak terlalu mengacu pada standar ruang sebagaimana workstation