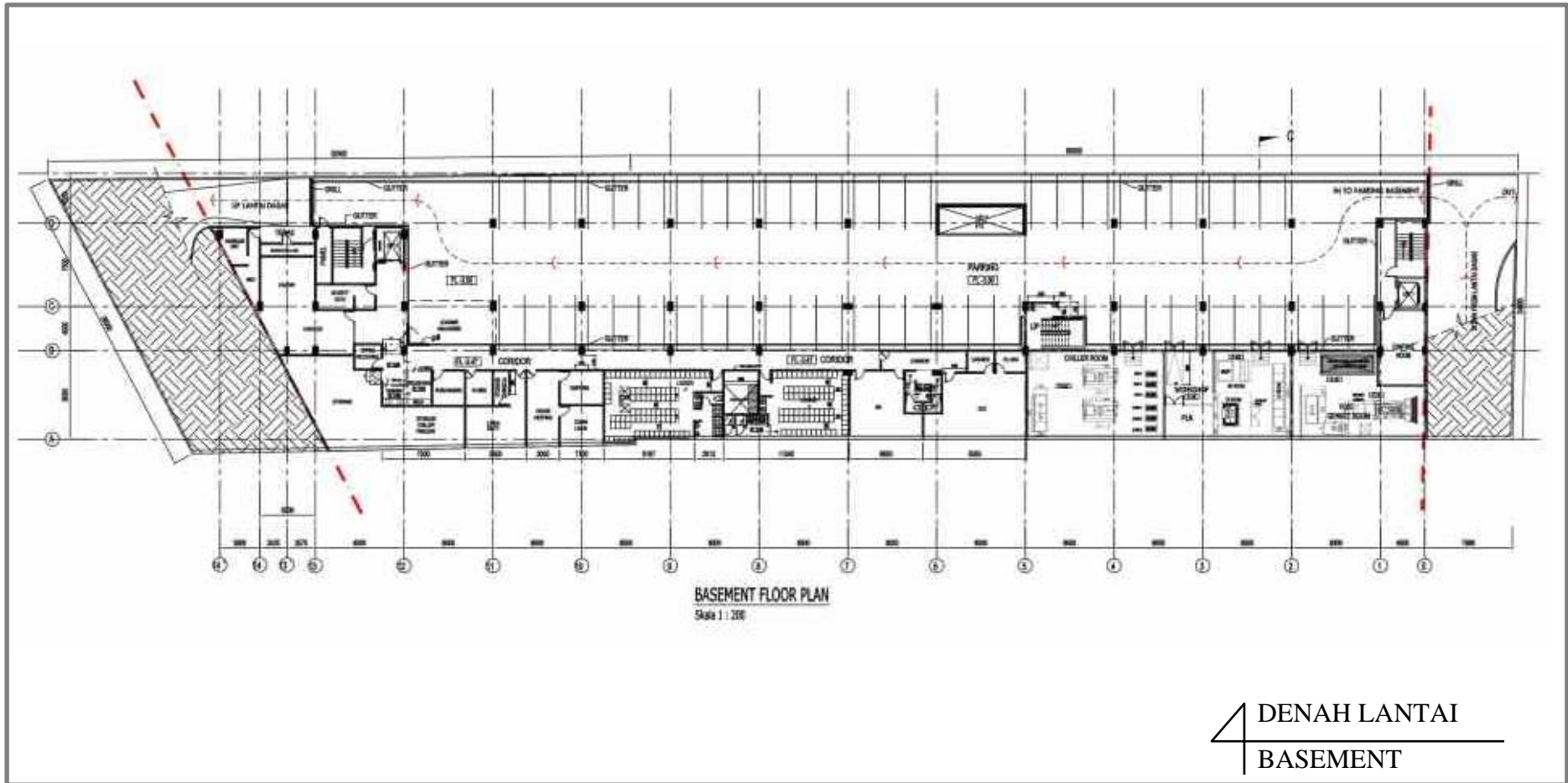
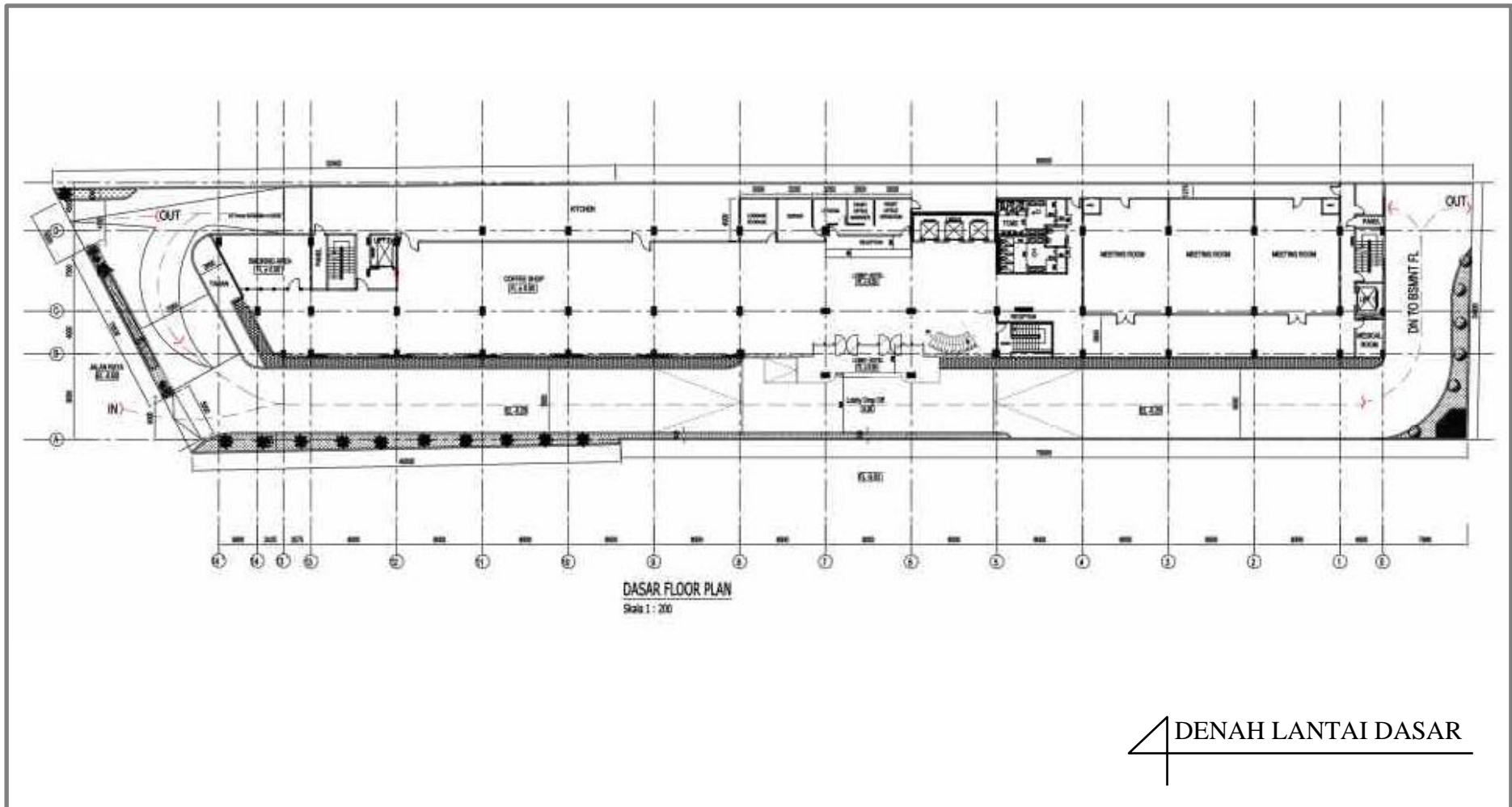
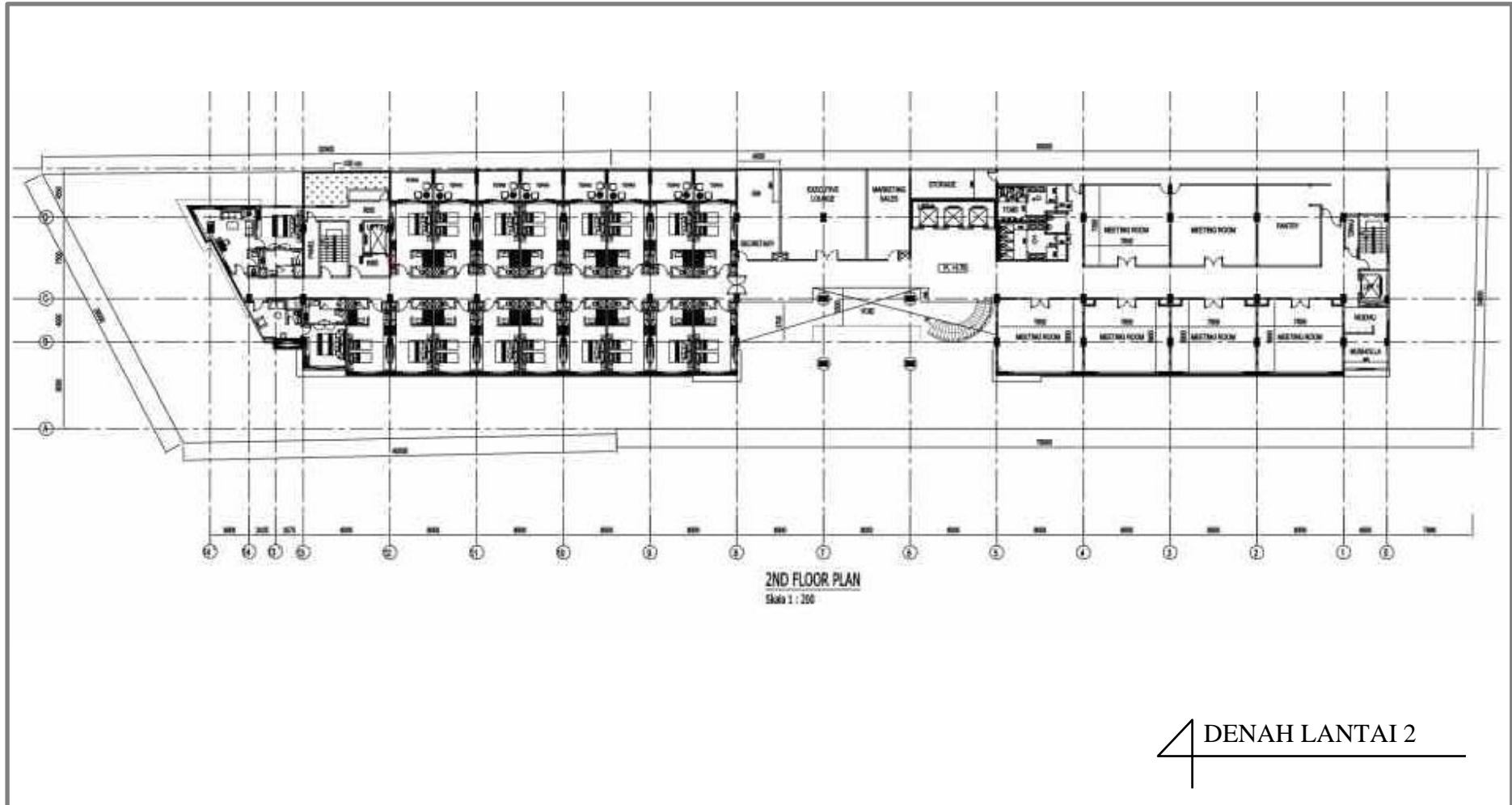


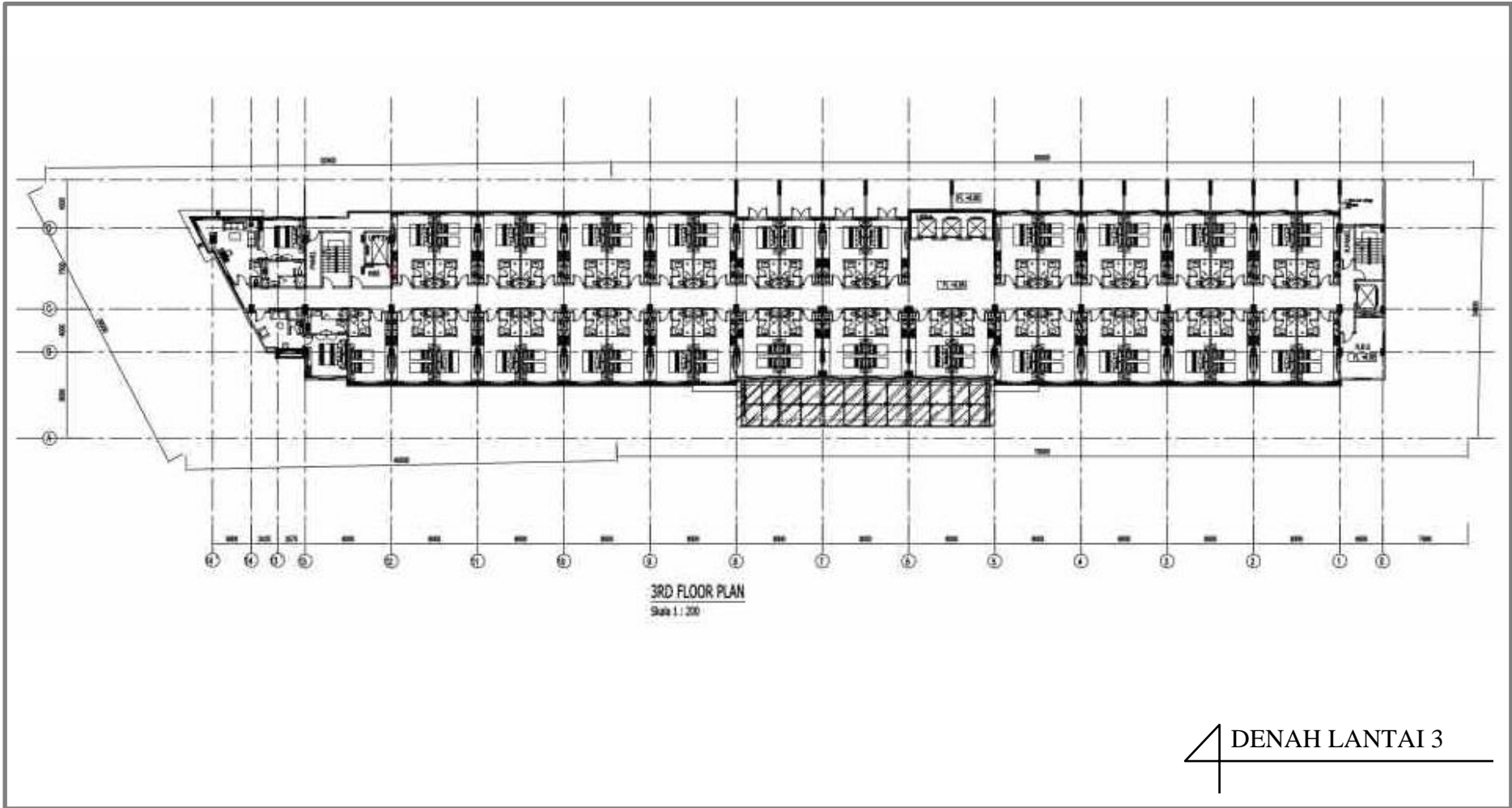
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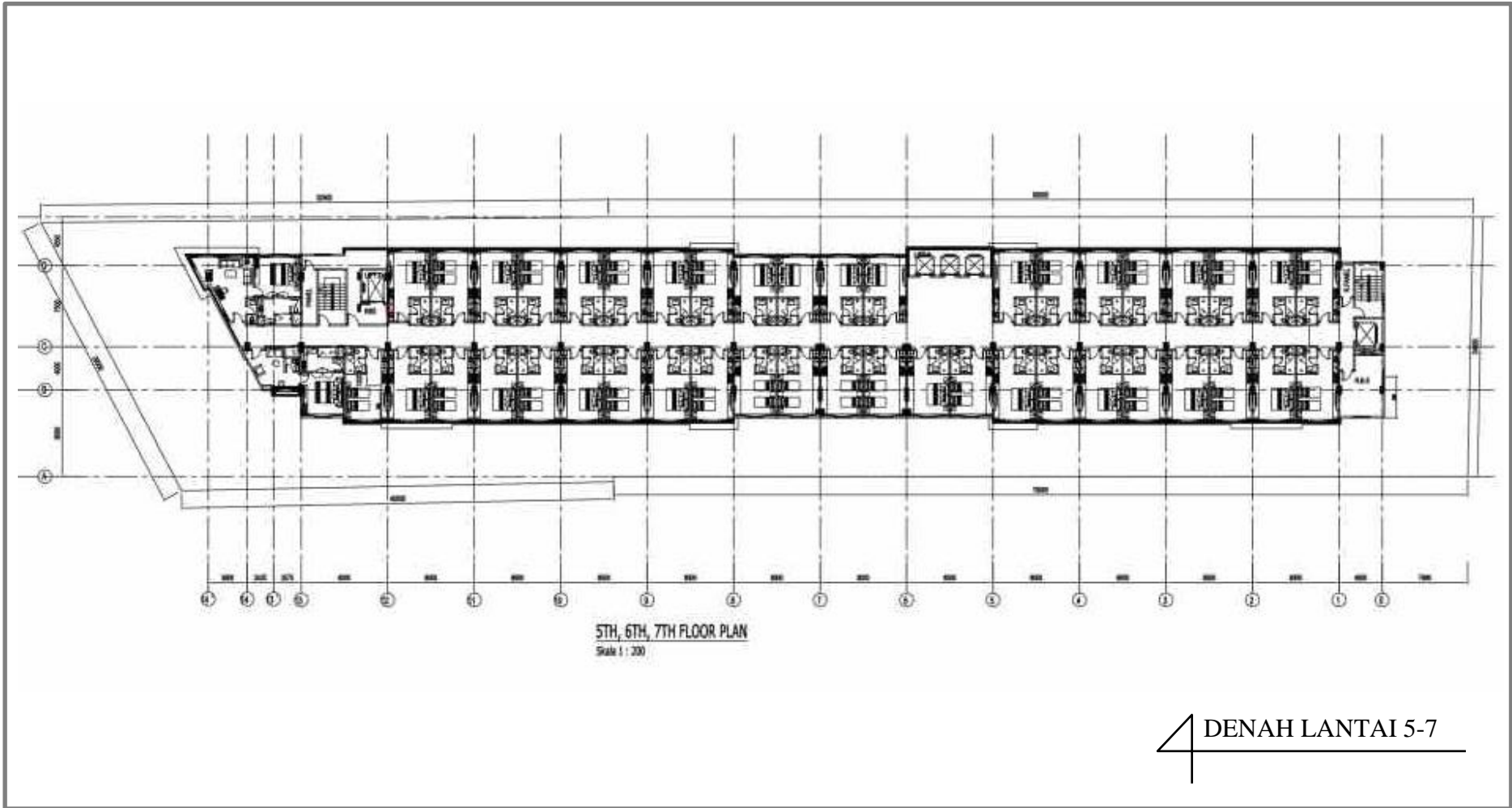
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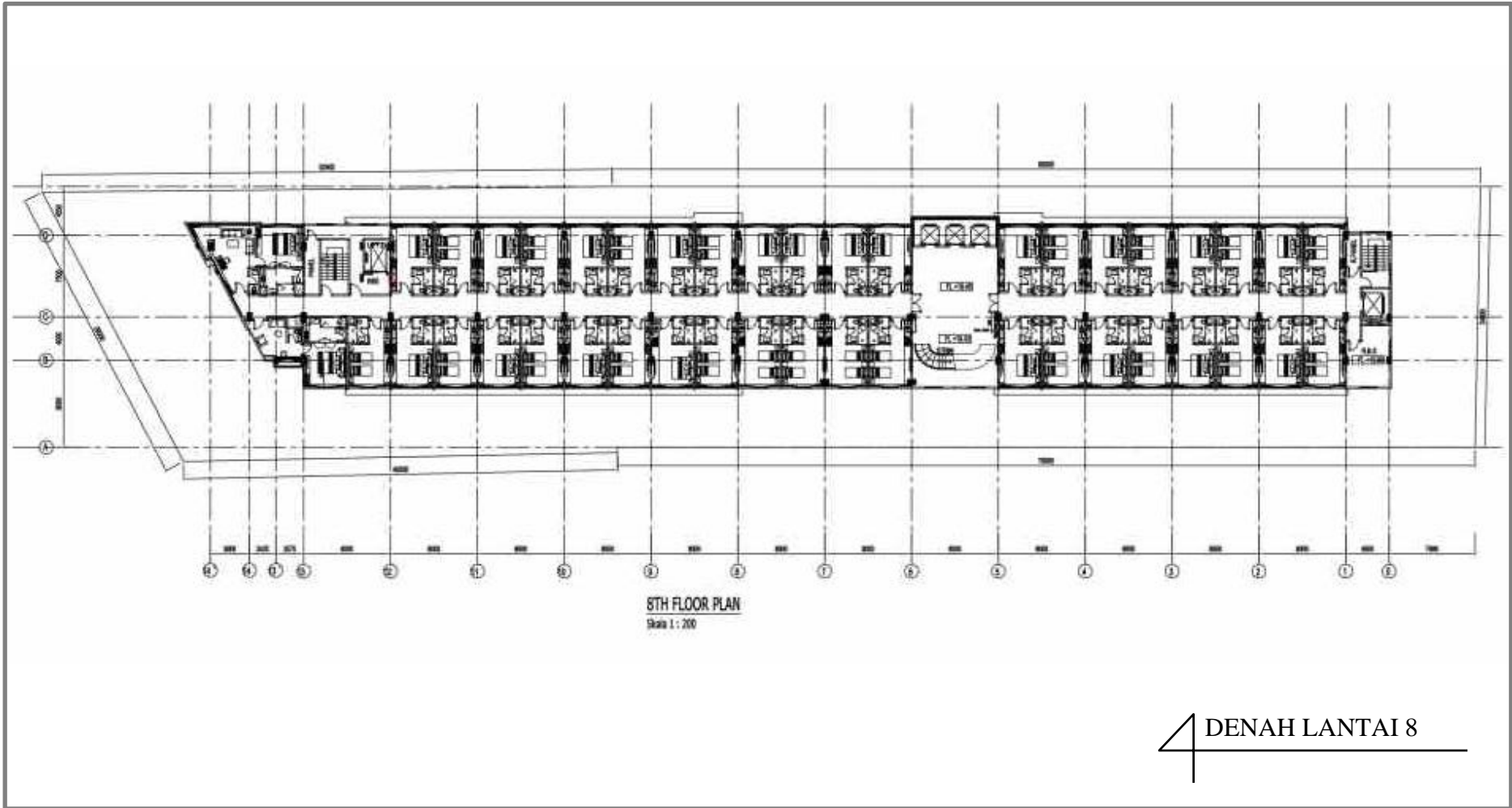


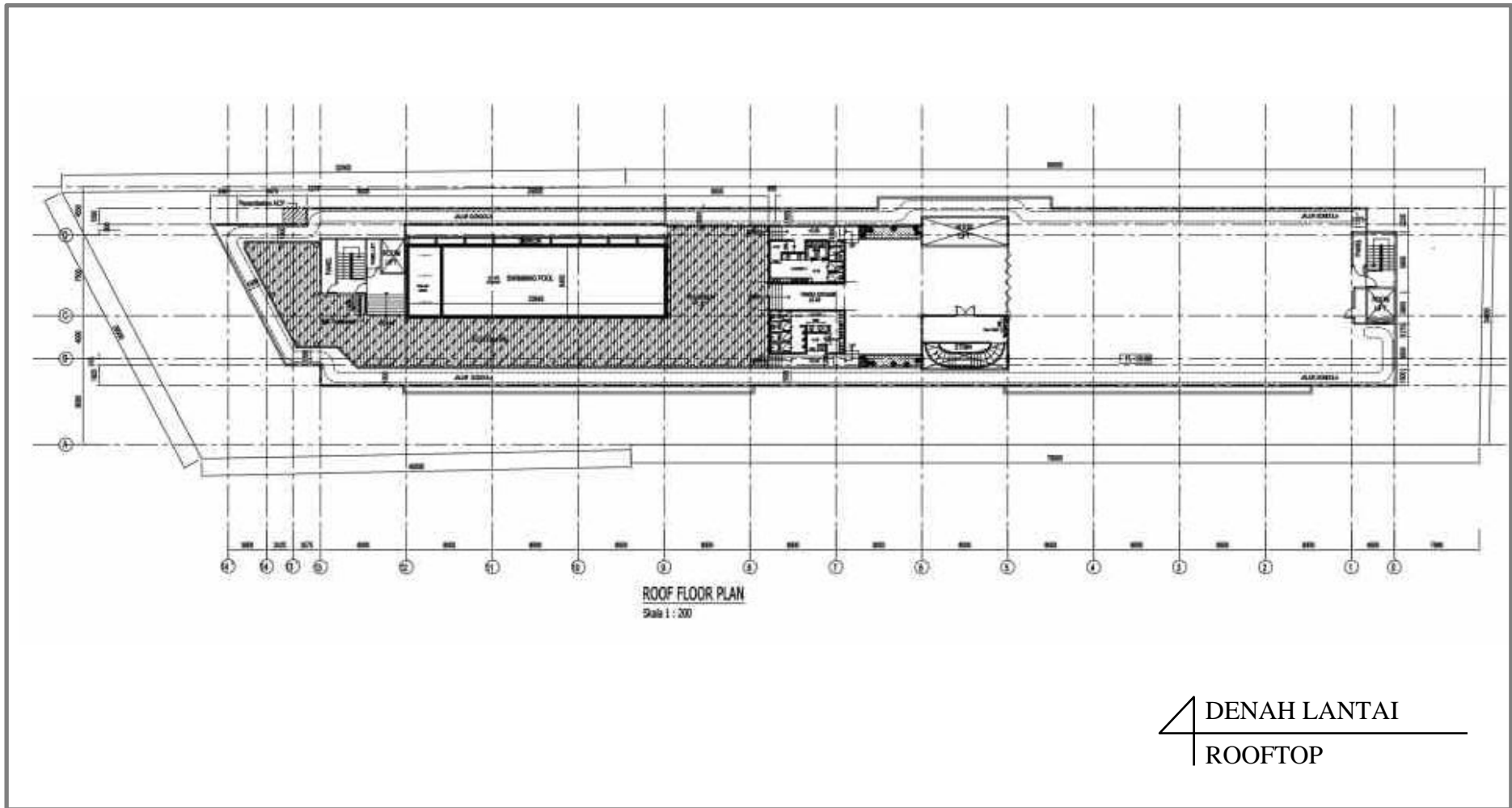


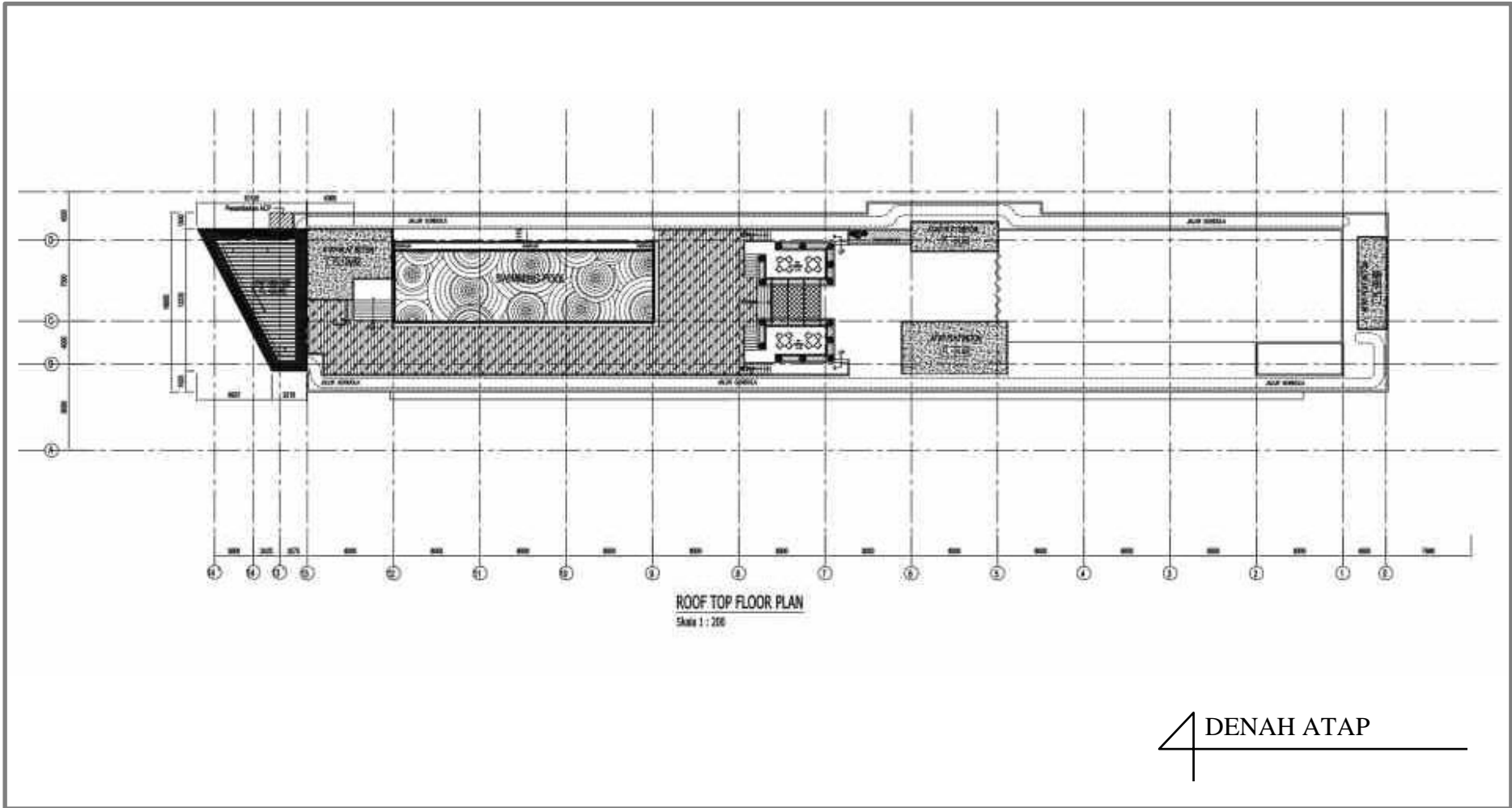




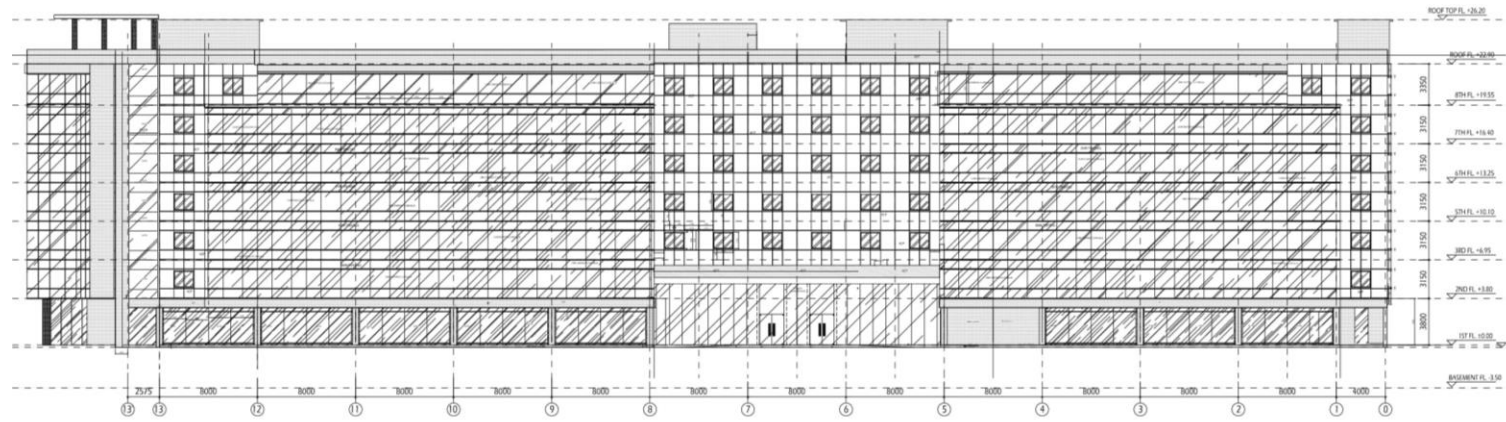




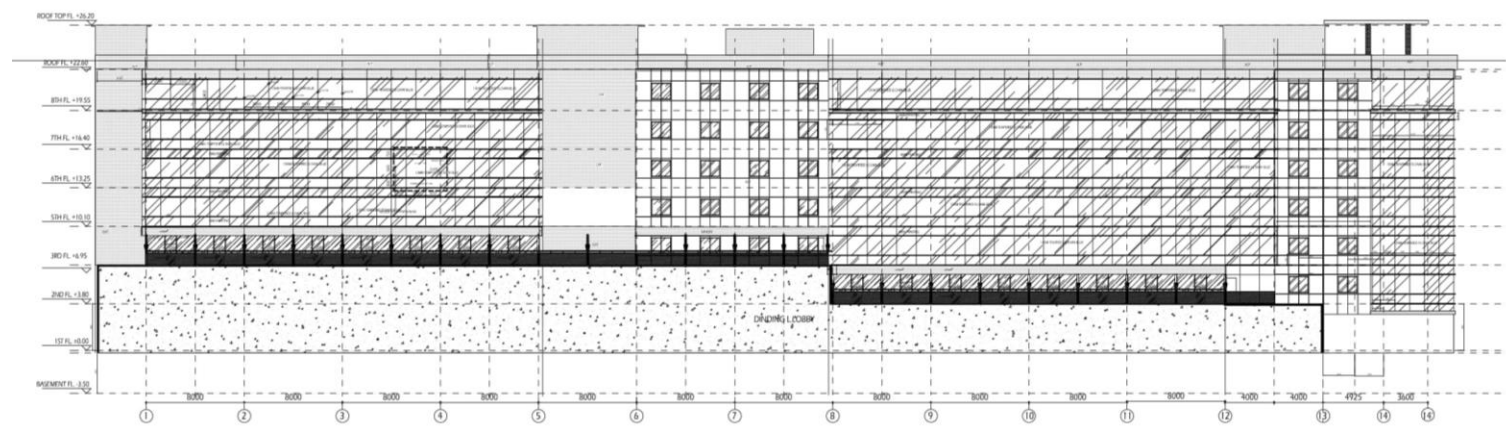




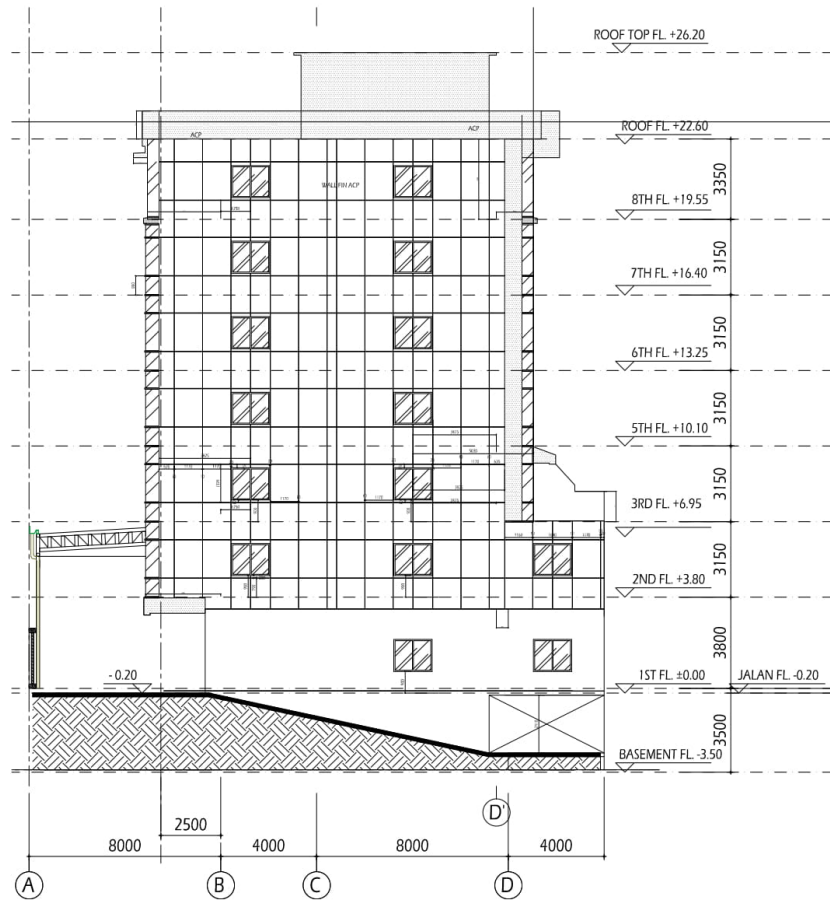
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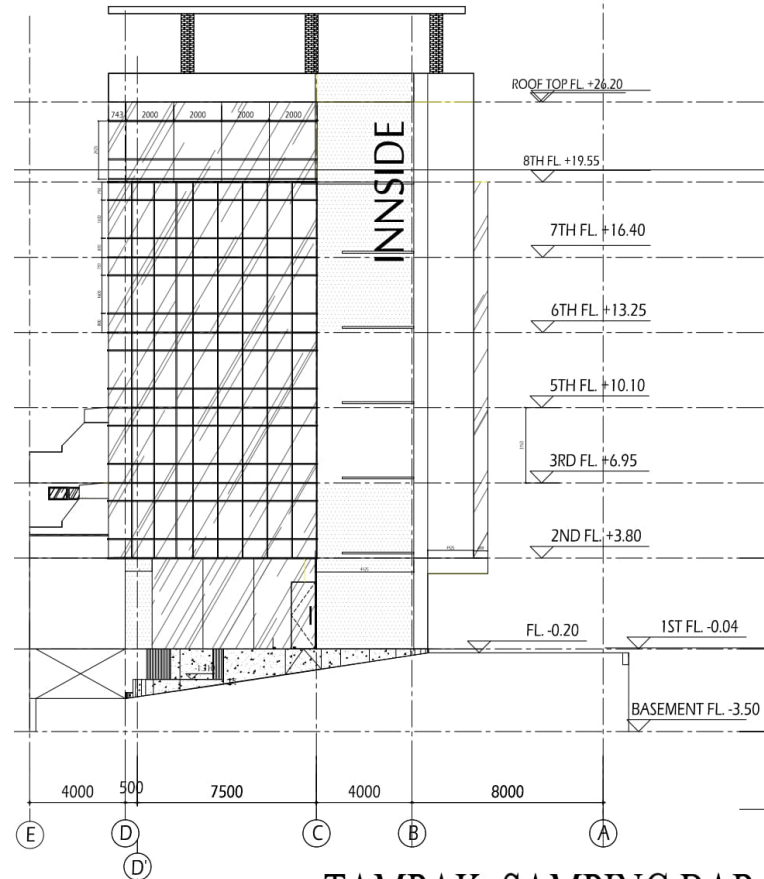
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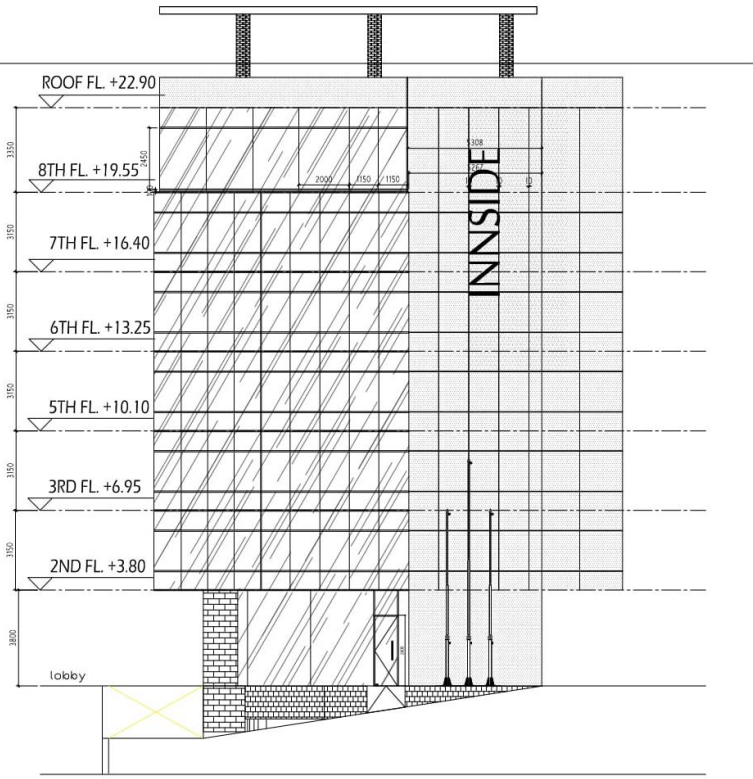
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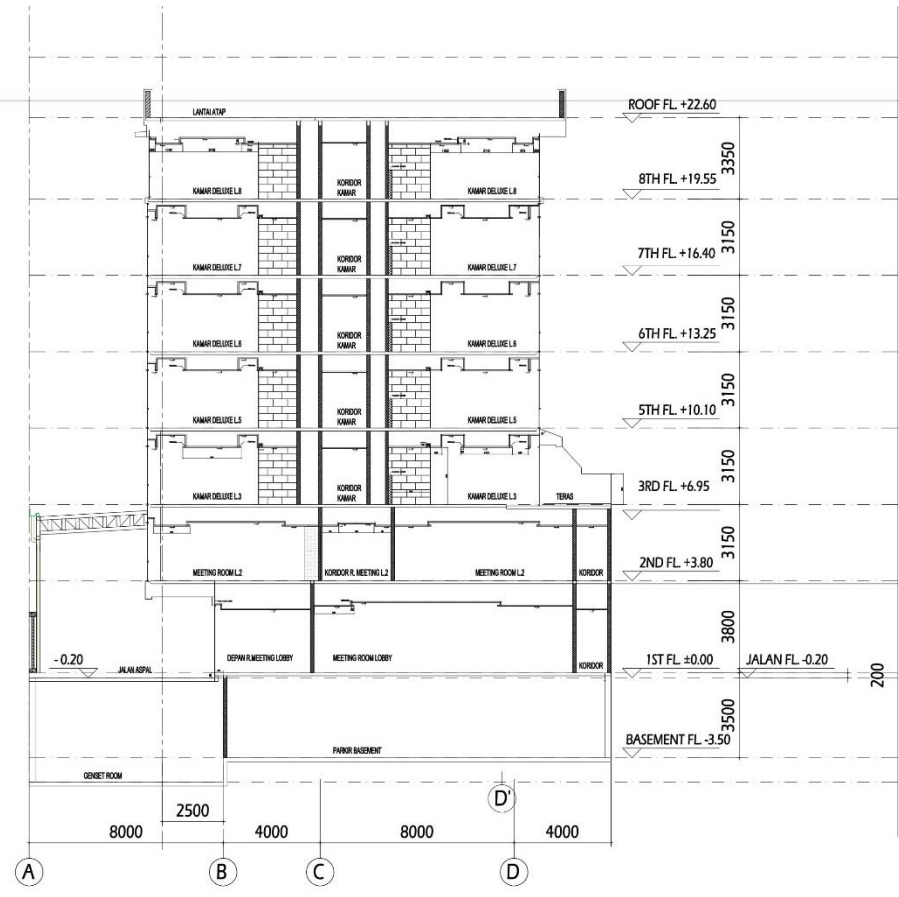
TAMPAK SAMPING TIMUR



TAMPAK SAMPING BARAT



TAMPAK BARAT



Lampiran 2 Tabel Hasil Pengukuran Suhu Eksisting Kamar

SUITE ROOM

LANTAI	HARI 1				HARI 2				HARI 3			
	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15
2	27,30	28,50	29,50	29,00	26,30	28,00	28,40	27,00	26,20	28,30	31,40	32,60
3												
5	27,50	29,20	30,70	29,90	28,00	28,20	29,40		26,50	28,20	31,80	32,50
6	26,40	29,50	30,70	29,50	27,30	28,20	30,20	28,00	26,60	28,90	31,90	31,70
7	25,50	28,60	31,00	30,10	26,70	28,50	30,20		26,60	29,50	32,20	31,30
8	27,90	29,10	30,40	29,30	25,90	28,80	30,00		27,00	29,90	32,20	30,70
RATA-RATA	26,92	28,98	30,46	29,56	26,84	28,34	29,64	27,50	26,58	28,96	31,90	31,76
SUHU LUAR	28,00	29,20	31,80	27,90	28,50	29,00	29,50	27,90	28,10	30,00	36,00	33,00

NORTH ROOM

LANTAI	HARI 1				HARI 2				HARI 3			
	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15
2												
3	26,70	28,00	26,50	27,30	27,50	27,20	26,00	26,50	25,90	26,00	28,30	27,90
5	27,00	28,00	28,20	26,10	26,10	26,00	28,10		25,20	28,10	29,40	28,00
6	26,60	29,20	27,30	26,20	26,40	26,70	27,90		25,60	28,30	29,80	27,90
7	27,10	29,10	28,20	26,00	26,20	27,00	27,20		26,00	27,50	28,00	28,50
8	27,40	28,60	28,00	27,20	26,10	27,20	27,90		26,00	28,00	28,20	29,00
RATA-RATA	26,96	28,58	27,64	26,56	26,46	26,82	27,42	26,50	25,74	27,58	28,74	28,26
SUHU LUAR	28,00	29,20	31,80	27,90	28,50	29,00	29,50	27,90	28,10	30,00	36,00	33,00

SOUTH ROOM

LANTAI	HARI 1				HARI 2				HARI 3			
	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15	JAM 6	JAM 9	JAM 12	JAM 15
2	26,10	28,10	26,90	27,10	26,00	26,30	25,90	24,00	24,90	25,60	27,20	27,40
3	27,20	28,10	27,10	27,00	26,00	26,30	26,00		25,40	25,70	27,60	27,20
5												
6	27,40	28,70	27,10	26,70	26,10	26,40	26,50	25,50	25,10	26,90	28,00	28,00
7	27,00	28,60	27,50	27,50	26,00	27,00	27,40		25,90	26,40	27,80	28,30
8	27,30	28,70	27,10	26,90	25,50	27,10	27,90		26,20	27,00	28,00	29,00
RATA-RATA	27,00	28,44	27,14	27,04	25,92	26,62	26,74	24,75	25,50	26,32	27,72	27,98
SUHU LUAR	28,00	29,20	31,80	27,90	28,50	29,00	29,50	27,90	28,10	30,00	36,00	33,00

Lampiran 3 Analisis Kamar Suite Room

3.1 Tabel Perbandingan Suhu Nyaman Dan Ruangan Pada Suite Room Hari Ke 1 & 3

HARI 1	T ₁ (°C)	T (°C)	ΔT	HARI 3	T ₁ (°C)	T (°C)	ΔT
Jam 6	23,50	26,92	-3,42	Jam 6	23,50	26,58	-3,08
Jam 9	23,50	28,98	-5,48	Jam 9	23,50	28,96	-5,47
Jam 12	23,50	30,46	-6,96	Jam 12	23,50	31,90	-8,40
Jam 15	23,50	29,56	-6,06	Jam 15	23,50	31,76	-8,26

Keterangan :

T₁ (°C) : suhu nyaman optimal ΔT : selisih suhu (T₁ – T)

T (°C) : suhu dalam kamar

*nilai minus menunjukkan suhu yang ingin dicapai lebih rendah dari suhu awal, tidak berpengaruh pada perhitungan

3.2 Perhitungan Energi Eksisting Suite Room

$$c \text{ udara} = 1005 \text{ J/kg}^\circ\text{C}$$

$$\begin{aligned} \text{Volume} &= L \times \text{tinggi} \\ &= 44 \times 3,15 \\ &= 138,6 \text{ m}^2 \end{aligned}$$

$$\text{Massa} = v \times \text{berat jenis}$$

$$\begin{aligned} \text{Jenis} &= 138,6 \times 1,2 \\ &= 166,32 \text{ kg} \end{aligned}$$

$$Q \text{ (Joule)} = m \times c \times \Delta T$$

$$1 \text{ Joule} = 2,778 \times 10^{-4} \text{ Wh}$$

Hari ke 1

Jam 6

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,42^\circ\text{C} \\ &= 571.658,47 \text{ J} \end{aligned}$$

Jam 9

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 5,48^\circ\text{C} \\ &= 915.990,77 \text{ J} \end{aligned}$$

Jam 12

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 6,96^\circ\text{C} \\ &= 1.163.375,14 \text{ J} \end{aligned}$$

Jam 15

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 6,06^\circ\text{C} \\ &= 1.012.938,70 \text{ J} \end{aligned}$$

Hari ke 3

Jam 6

$$\begin{aligned}
 Q &= m \cdot c \cdot \Delta T \\
 &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,08^\circ\text{C} \\
 &= 514.826,93 \text{ J}
 \end{aligned}$$

Jam 9

$$\begin{aligned}
 Q &= m \cdot c \cdot \Delta T \\
 &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 5,46^\circ\text{C} \\
 &= 912,647,74 \text{ J}
 \end{aligned}$$

Jam 12

$$\begin{aligned}
 Q &= m \cdot c \cdot \Delta T \\
 &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 8,40^\circ\text{C} \\
 &= 1.404.073,44 \text{ J}
 \end{aligned}$$

Jam 15

$$\begin{aligned}
 Q &= m \cdot c \cdot \Delta T \\
 &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 8,26^\circ\text{C} \\
 &= 1.380.672,22 \text{ J}
 \end{aligned}$$

3.3 Perhitungan Integral Energi Eksisting Suite Room

Diketahui: $y = -3,5339x^2 + 95,787x - 302,92$

$$L = \int_a^b f(x) dx$$

$$L = \int_6^{15} -3,5339x^2 + 95,787x + 302,92 dx$$

$$= \left[-\frac{x(35.339x^2 - 957.870x + 3.029.200)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(35.339 \cdot 15^2 - 957.870 \cdot 15 + 3.029.200)}{10.000} \right] + \left[-\frac{6(35.339 \cdot 6^2 - 957.870 \cdot 6 + 3.029.200)}{10.000} \right]$$

$$= \frac{26.043.948}{10.000}$$

$$= 2.604,395 \text{ satuan luas}$$

Lampiran 4 Analisis Kamar North Room

4.1 Tabel Perbandingan Suhu Nyaman Dan Ruangan Pada North Room Hari Ke 1 & 3

HARI 1	T ₁ (°C)	T (°C)	ΔT
Jam 6	23,50	26,96	-3,46
Jam 9	23,50	28,58	-5,08
Jam 12	23,50	27,64	-4,14
Jam 15	23,50	26,56	-3,06

HARI 3	T ₁ (°C)	T (°C)	ΔT
Jam 6	23,50	25,74	-2,24
Jam 9	23,50	27,58	-4,08
Jam 12	23,50	28,74	-5,24
Jam 15	23,50	28,26	-4,76

4.2 Perhitungan Energi Eksisting North Room

c udara = 1005 J/kg°C

$$\begin{aligned} \text{Volume} &= L \times \text{tinggi} \\ &= 23 \times 3,15 \\ &= 72,45 \text{ m}^2 \end{aligned}$$

Massa = $v \times$ berat jenis

$$\begin{aligned} \text{Jenis} &= 72,45 \times 1,2 \\ &= 86,94 \text{ kg} \end{aligned}$$

$$Q \text{ (Joule)} = m \times c \times \Delta T$$

$$1 \text{ Joule} = 2,778 \times 10^{-4} \text{ Wh}$$

Hari ke 1

Jam 6

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,46^\circ\text{C} \\ &= 302.316,46 \text{ J} \end{aligned}$$

Jam 9

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 5,08^\circ\text{C} \\ &= 443.863,48 \text{ J} \end{aligned}$$

Jam 12

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,14^\circ\text{C} \\ &= 361.731,26 \text{ J} \end{aligned}$$

Jam 15

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,06^\circ\text{C} \\ &= 267.366,58 \text{ J} \end{aligned}$$

Hari ke 3

Jam 6

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 2,24^\circ\text{C} \\ &= 195.719,33 \text{ J} \end{aligned}$$

Jam 9

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,08^\circ\text{C} \\ &= 356.488,78 \text{ J} \end{aligned}$$

Jam 12

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 5,24^\circ\text{C} \\ &= 457.843,43 \text{ J} \end{aligned}$$

Jam 15

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,76^\circ\text{C} \\ &= 415.903,57 \text{ J} \end{aligned}$$

4.3 Perhitungan Integral Energi Eksisting North Room

Diketahui: $y = -1,6922x^2 + 38,199x - 98,216$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -1,6922x^2 + 38,199x - 98,216 dx$$

$$= \left[-\frac{x(8.461x^2 - 190.995x + 491.080)}{5.000} \right]_6^{15}$$

$$= \left[-\frac{15(8.461 \cdot 15^2 - 190.995 \cdot 15 + 491.080)}{5.000} \right] + \left[-\frac{6(8.461 \cdot 6^2 - 190.995 \cdot 6 + 491.080)}{5.000} \right]$$

$$= \frac{4.719.874,50}{5.000}$$

$$= 943,975 \text{ satuan luas}$$

Lampiran 5 Analisis Kamar South Room

5.1 Tabel Perbandingan Suhu Nyaman Dan Ruangan Pada South Room Hari Ke 1 & 3

HARI 1	T ₁ (°C)	T (°C)	ΔT
Jam 6	23,50	25,50	-2,00
Jam 9	23,50	26,32	-2,82
Jam 12	23,50	27,72	-4,22
Jam 15	23,50	27,98	-4,28

HARI 3	T ₁ (°C)	T (°C)	ΔT
Jam 6	23,50	25,50	-2,00
Jam 9	23,50	26,32	-2,82
Jam 12	23,50	27,72	-4,22
Jam 15	23,50	27,98	-4,28

5.2 Perhitungan Energi Eksisting South Room

$$c \text{ udara} = 1005 \text{ J/kg}^\circ\text{C}$$

$$\begin{aligned} \text{Volume} &= L \times \text{tinggi} \\ &= 30 \times 3,15 \\ &= 94,50 \text{ m}^2 \end{aligned}$$

$$\text{Massa} = v \times \text{berat jenis}$$

$$\begin{aligned} \text{Jenis} &= 94,50 \times 1,2 \\ &= 113,40 \text{ kg} \end{aligned}$$

$$Q \text{ (Joule)} = m \times c \times \Delta T$$

Hari ke 1

Jam 6

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,50^\circ\text{C} \\ &= 398.884,50 \text{ J} \end{aligned}$$

Jam 9

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,94^\circ\text{C} \\ &= 562.996,98 \text{ J} \end{aligned}$$

Hari ke 3

Jam 6

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 2,00^\circ\text{C} \\ &= 227.934,00 \text{ J} \end{aligned}$$

Jam 9

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 2,82^\circ\text{C} \\ &= 321,386,94 \text{ J} \end{aligned}$$

Jam 12

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,64^\circ\text{C} \\ &= 414.839,88 \text{ J} \end{aligned}$$

Jam 15

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 3,54^\circ\text{C} \\ &= 403.443,18 \text{ J} \end{aligned}$$

Jam 12

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,22^\circ\text{C} \\ &= 480.940,74 \text{ J} \end{aligned}$$

Jam 15

$$\begin{aligned} Q &= m \cdot c \cdot \Delta T \\ &= 166,32 \text{ kg} \cdot 1005 \text{ J/kg}^\circ\text{C} \cdot 4,22^\circ\text{C} \\ &= 510.572,16 \text{ J} \end{aligned}$$

5.3 Perhitungan Integral Energi Eksisting South Room

$$\text{Diketahui: } y = -0,9231x^2 + 23,426x - 18,507$$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,9231x^2 + 23,426x - 18,507 dx$$

$$= \left[-\frac{x(9.231x^2 - 234.260x + 185.070)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(9.231 \cdot 15^2 - 234.260 \cdot 15 + 185.070)}{10.000} \right] + \left[-\frac{6(9.231 \cdot 6^2 - 234.260 \cdot 6 + 185.070)}{10.000} \right]$$

$$= \frac{10.751.697}{10.000} = 1.075,170 \text{ satuan luas}$$

Lampiran 6 Analisis Simulasi Eksisting

6.1 Tabel Suhu Hasil Simulasi Tiap Kamar

KAMAR HARI 1	SUITE	NORTH	SOUTH	LUAR
06:00	27,90	29,50	29,70	25,60°C
09:00	31,00	30,50	30,40	30,00°C
12:00	31,40	31,70	31,00	33,20°C
15:00	33,20	30,50	31,20	31,10°C

KAMAR HARI 3	SUITE	NORTH	SOUTH	LUAR
06:00	28,00	28,70	29,60	24,30°C
09:00	30,00	29,40	29,20	28,80°C
12:00	31,50	29,90	30,10	32,20°C
15:00	30,00	29,60	30,00	29,30°C

SUITE ROOM

6.2 Tabel Selisih Suhu *Suite Room* Dengan Suhu Ideal

Waktu	Hari 1		Hari 3	
	T (°C)	ΔT	T (°C)	ΔT
Jam 6	27,90	-4,40	28,00	-4,50
Jam 9	31,00	-7,50	30,00	-6,50
Jam 12	31,40	-7,90	31,50	-8,00
Jam 15	33,20	-9,70	30,00	-6,50

Keterangan :

T (°C) : suhu dalam kamar

ΔT : selisih suhu ($T_1 - T$)

6.3 Tabel Hasil Energi *suite room* Simulasi Hari 1 & 3

Menggunakan rumus $Q = m \cdot c \cdot \Delta T$

Hari 1	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)	Wh	BTU
06:00	166,32	1.005,00	-4,40	735.467,04	204,30	697,09
09:00	166,32	1.005,00	-7,50	1.253.637,00	348,23	1.188,22
12:00	166,32	1.005,00	-7,90	1.320.497,64	366,80	1.251,59
15:00	166,32	1.005,00	-9,70	1.621.370,52	450,38	1.536,76

Hari 3	<i>m</i> (kg)	<i>c</i> (J/kg°C)	Δ <i>T</i> (°C)	<i>Q</i> (Joule)	Wh	BTU
06:00	166,32	1.005,00	-4,50	752.182,20	208,94	712,93
09:00	166,32	1.005,00	-6,50	1.086.485,40	301,80	1.029,79
12:00	166,32	1.005,00	-8,00	1.337.212,80	371,45	1.267,43
15:00	166,32	1.005,00	-6,50	1.086.485,40	301,80	1.029,79

6.4 Perhitungan Integral Energi Simulasi Suite Room

Diketahui: $y = -3,0954x^2 + 83,421x - 180,62$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -3,0954x^2 + 83,421x - 180,62 \, dx$$

$$= \left[-\frac{x(10.318x^2 - 417.105x + 1.806.200)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(10.318 \cdot 15^2 - 417.105 \cdot 15 + 1.806.200)}{10.000} \right] + \left[-\frac{6(10.318 \cdot 6^2 - 417.105 \cdot 6 + 1.806.200)}{10.000} \right]$$

$$= \frac{29.982.483}{10.000}$$

$$= 2.998,248 \text{ satuan luas}$$

NORTH ROOM

6.5 Tabel Selisih Suhu *North Room* Dengan Suhu Ideal

Waktu	Hari 1		Hari 3	
	T (°C)	ΔT	T (°C)	ΔT
Jam 6	29,50	-6,00	28,70	-5,20
Jam 9	30,50	-7,00	29,40	-5,90
Jam 12	31,70	-8,20	29,90	-6,40
Jam 15	30,50	-7,00	29,60	-6,10

Keterangan :

T (°C) : suhu dalam kamar

ΔT : selisih suhu (T₁ – T)

6.6 Tabel Hasil Energi *north room* Simulasi Hari 1 & 3

Menggunakan rumus $Q = m \cdot c \cdot \Delta T$

Hari 1	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)	Wh	BTU
06:00	86,94	1.005,00	-6,00	524.248,20	145,62	496,89
09:00	86,94	1.005,00	-7,00	611.622,90	169,90	579,71
12:00	86,94	1.005,00	-8,20	716.472,54	199,02	679,08
15:00	86,94	1.005,00	-7,00	611.622,90	169,90	579,71

Hari 3	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)	Wh	BTU
06:00	86,94	1.005,00	-5,20	454.348,44	126,21	430,64
09:00	86,94	1.005,00	-5,90	515.510,73	143,20	488,61
12:00	86,94	1.005,00	-6,40	559.198,08	155,33	530,02
15:00	86,94	1.005,00	-6,10	532.985,67	148,05	505,17

6.7 Perhitungan Integral Energi Simulasi North Room

Diketahui: $y = -1.0787x^2 + 25.646x + 18.931$

$$L = \int_a^b f(x)dx$$

$$\begin{aligned}
 L &= \int_6^{15} -1.0787x^2 + 25.646x + 18.931 \, dx \\
 &= \left[-\frac{x(10.787x^2 - 384.690x - 597.930)}{30.000} \right]_6^{15} \\
 &= \left[-\frac{15(10.787 \cdot 15^2 - 384.690 \cdot 15 - 597.930)}{30.000} \right] + \left[-\frac{6(10.787 \cdot 6^2 - 384.690 \cdot 6 - 597.930)}{30.000} \right] \\
 &= \frac{14.580.549}{10.000} \\
 &= 1.458,055 \text{ satuan luas}
 \end{aligned}$$

SOUTH ROOM

6.8 Tabel Selisih Suhu *South Room* Dengan Suhu Ideal

Waktu	Hari 1		Hari 3	
	T (°C)	ΔT	T (°C)	ΔT
Jam 6	29,70	-6,20	29,60	-6,10
Jam 9	30,40	-6,90	29,20	-5,70
Jam 12	31,00	-7,50	30,10	-6,60
Jam 15	31,20	-7,70	30,00	-6,50

Keterangan :

T (°C) : suhu dalam kamar

ΔT : selisih suhu (T₁ - T)

6.9 Tabel Hasil Energi *south room* Simulasi Hari 1 & 3

Menggunakan rumus $Q = m \cdot c \cdot \Delta T$

Hari 1	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)	Wh	BTU
0,25	113,40	1.005,00	-6,20	706.595,40	196,28	669,72
0,38	113,40	1.005,00	-6,90	786.372,30	218,44	745,34
0,50	113,40	1.005,00	-7,50	854.752,50	237,43	810,15
0,63	113,40	1.005,00	-7,70	877.545,90	243,76	831,75

Hari 3	<i>m</i> (kg)	<i>c</i> (J/kg°C)	Δ <i>T</i> (°C)	<i>Q</i> (Joule)	Wh	BTU
0,25	113,40	1.005,00	-6,10	695.198,70	193,11	658,92
0,38	113,40	1.005,00	-5,70	649.611,90	180,45	615,71
0,50	113,40	1.005,00	-6,60	752.182,20	208,94	712,93
0,63	113,40	1.005,00	-6,50	740.785,50	205,77	702,13

6.10 Perhitungan Integral Energi Simulasi South Room

Diketahui: $y = -0,0879x^2 + 5,6456x + 161,93$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,0879x^2 + 5,6456x + 161,93 dx$$

$$= \left[-\frac{x(293x^2 - 28.228x - 1.619.300)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(293 \cdot 15^2 - 28.228 \cdot 15 - 1.619.300)}{10.000} \right] + \left[-\frac{6(293 \cdot 6^2 - 28.228 \cdot 6 - 1.619.300)}{10.000} \right]$$

$$= \frac{3.796.641}{2.000}$$

$$= 1.898,321 \text{ satuan luas}$$

Lampiran 7 Analisis Rekomendasi 1

HARI 1	SUITE	NORTH	SOUTH	LUAR
JAM 6	27,50	29,60	29,70	25,60
JAM 9	29,30	30,20	30,30	30,00
JAM 12	30,80	30,70	31,00	33,20
JAM 15	33,70	30,50	31,10	31,10

HARI 3	SUITE	NORTH	SOUTH	LUAR
JAM 6	27,10	28,70	28,60	24,30
JAM 9	28,90	29,40	29,10	28,80
JAM 12	30,50	29,90	29,70	29,80
JAM 15	29,40	29,60	29,80	29,90

7.1 Q Rekomendasi 1– Suite Room

Waktu	<i>m</i> (kg)	<i>c</i> (J/kg°C)	Δ <i>T</i> (°C)	<i>Q</i> (Joule)
6:00	166,32	1.005,00	3,80	635.176,08
9:00	166,32	1.005,00	5,60	936.048,96
12:00	166,32	1.005,00	7,15	1.195.133,94
15:00	166,32	1.005,00	8,05	1.345.570,38

7.2 Perhitungan Integral Energi Rekomendasi 1 Suite Room

Diketahui: $y = -1,1608x^2 + 46,508x - 61,753$

$$L = \int_a^b f(x) dx$$

$$L = \int_6^{15} -1,1608x^2 + 46,508x - 61,75 dx$$

$$= \left[-\frac{x(5.804x^2 - 348.810x + 926.295)}{15.000} \right]_6^{15}$$

$$= \left[-\frac{15(5.804 \cdot 15^2 - 348.810 \cdot 15 + 926.295)}{15.000} \right] + \left[-\frac{6(5.804 \cdot 6^2 - 348.810 \cdot 6 + 926.295)}{15.000} \right]$$

$$= \frac{13.084.533}{5.000}$$

$$= 2.616,907 \text{ satuan luas}$$

7.3 Q Rekomendasi 1– North Room

Waktu	<i>m</i> (kg)	<i>c</i> (J/kg°C)	Δ <i>T</i> (°C)	<i>Q</i> (Joule)
6:00	86,94	1.005,00	5,65	493.667,06
9:00	86,94	1.005,00	6,30	550.460,61
12:00	86,94	1.005,00	6,80	594.147,96
15:00	86,94	1.005,00	6,55	572.304,29

7.4 Perhitungan Integral Energi Rekomendasi 1 North Room

Diketahui: $y = -0,6069x^2 + 15,334x + 66,248$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,6069x^2 + 15,334x + 66,248 dx$$

$$= \left[-\frac{x(2,023x^2 - 76,670x - 662,480)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(2,023 \cdot 15^2 - 76,670 \cdot 15 - 662,480)}{10.000} \right] + \left[-\frac{6(2,023 \cdot 6^2 - 76,670 \cdot 6 - 662,480)}{10.000} \right]$$

$$= \frac{14.062.293}{10.000}$$

$$= 1.406,229 \text{ satuan luas}$$

7.5 Q Rekomendasi 1–South Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	113,40	1.005,00	5,65	643.913,55
9:00	113,40	1.005,00	6,20	706.595,40
12:00	113,40	1.005,00	6,85	780.673,95
15:00	113,40	1.005,00	6,95	792.070,65

7.6 Perhitungan Integral Energi Rekomendasi 1 South Room

Diketahui: $y = -0,3958x^2 + 13,114x + 113,4$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,3958x^2 + 13,114x + 113,4 dx$$

$$= \left[-\frac{x(1,979x^2 - 98,355x - 1.701.000)}{15.000} \right]_6^{15}$$

$$= \left[-\frac{15(1,979 \cdot 15^2 - 98,355 \cdot 15 - 1.701.000)}{15.000} \right] + \left[-\frac{6(1,979 \cdot 6^2 - 98,355 \cdot 6 - 1.701.000)}{15.000} \right]$$

$$= \frac{4.607.739}{2.500}$$

$$= 1.843,096 \text{ satuan luas}$$

Lampiran 8 Analisis Rekomendasi 2

	SUITE	NORTH	SOUTH	LUAR
JAM 6	27,40	29,60	29,50	25,60
JAM 9	29,50	30,30	30,10	30,00
JAM 12	30,90	30,80	30,80	33,20
JAM 15	33,40	30,30	30,80	31,10

	SUITE	NORTH	SOUTH	LUAR
JAM 6	27,00	28,60	28,30	24,30
JAM 9	28,60	29,50	28,90	28,80
JAM 12	30,30	30,00	29,70	29,80
JAM 15	29,00	29,70	29,70	29,90

8.1 Q Rekomendasi 2– Suite Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	166,32	1.005,00	3,70	618.460,92
9:00	166,32	1.005,00	5,55	927.691,38
12:00	166,32	1.005,00	7,10	1.186.776,36
15:00	166,32	1.005,00	7,70	1.287.067,32

8.2 Perhitungan Integral Energi Rekomendasi 2 North Room

Diketahui: $y = -1.6122x^2 + 54.827x - 100.64$

$$L = \int_a^b f(x) dx$$

$$L = \int_6^{15} -1.6122x^2 + 54.827x - 100.64 dx$$

$$= \left[-\frac{x(5.374x^2 - 4274.135x + 1.006.400)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(5.374 \cdot 15^2 - 4274.135 \cdot 15 + 1.006.400)}{10.000} \right] + \left[-\frac{6(5.374 \cdot 6^2 - 4274.135 \cdot 6 + 1.006.400)}{10.000} \right]$$

$$= \frac{25.777.449}{10.000}$$

$$= 2.5777,745 \text{ satuan luas}$$

8.3 Q Rekomendasi 2– North Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	86,94	1.005,00	5,60	489.298,32
9:00	86,94	1.005,00	6,40	559.198,08
12:00	86,94	1.005,00	6,90	602.885,43
15:00	86,94	1.005,00	6,50	567.935,55

8.4 Perhitungan Integral Energi Rekomendasi 2 North Room

Diketahui: $y = -0,809x^2 + 19,578x + 46,843$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,809x^2 + 19,578x + 46,843 dx$$

$$= \left[-\frac{x(809x^2 - 29.367x - 140.529)}{3.000} \right]_6^{15}$$

$$= \left[-\frac{15(809 \cdot 15^2 - 29.367 \cdot 15 - 140.529)}{3.000} \right] + \left[-\frac{x(809 \cdot 6^2 - 29.367 \cdot 6 - 140.529)}{3.000} \right]$$

$$= \frac{1.419.831}{1.000}$$

= 1.419,831 satuan luas

8.5 Q Rekomendasi 2– South Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	113,40	1.005,00	5,40	615.421,80
9:00	113,40	1.005,00	6,00	683.802,00
12:00	113,40	1.005,00	6,75	769.277,25
15:00	113,40	1.005,00	6,75	769.277,25

8.6 Perhitungan Integral Energi Rekomendasi 2 South Room

Diketahui: $y = -0,5276x^2 + 16,145x + 91,648$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,5276x^2 + 16,145x + 91,648 dx$$

$$= \left[-\frac{x(5.276x^2 - 242.175x + 2.749.440)}{30.000} \right]_6^{15}$$

$$= \left[-\frac{15(5.276 \cdot 15^2 - 242.175 \cdot 15 + 2.749.440)}{30.000} \right] + \left[-\frac{6(5.276 \cdot 6^2 - 242.175 \cdot 6 + 2.749.440)}{30.000} \right]$$

$$= \frac{17.343.717}{10.000}$$

= 1.794,972 satuan luas

Lampiran 9 Analisis Rekomendasi 3

HARI 1	SUITE	NORTH	SOUTH	LUAR
JAM 6	27,60	29,10	29,50	25,60
JAM 9	29,80	30,00	30,10	30,00
JAM 12	31,00	30,50	30,80	33,20
JAM 15	32,50	30,10	31,10	31,10

HARI 3	SUITE	NORTH	SOUTH	LUAR
JAM 6	26,60	28,30	28,40	24,30
JAM 9	28,40	29,20	29,00	28,80
JAM 12	30,50	29,80	29,80	29,80
JAM 15	29,20	29,30	29,70	29,90

9.1 Q Rekomendasi 3– Suite Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	166,32	1.005,00	3,60	601.745,76
9:00	166,32	1.005,00	5,60	936.048,96
12:00	166,32	1.005,00	7,25	1.211.849,10
15:00	166,32	1.005,00	7,35	1.228.564,26

9.2 Perhitungan Integral Energi Rekomendasi 3 Suite Room

Diketahui: $y = -2.4505x^2 + 71.426x - 175.97$

$$L = \int_a^b f(x) dx$$

$$L = \int_6^{15} -2.4505x^2 + 71.426x - 175.97 dx$$

$$= \left[-\frac{x(4.901x^2 - 214.278x + 1.055.820)}{6.000} \right]_6^{15}$$

$$= \left[-\frac{15(4.901 \cdot 15^2 - 214.278 \cdot 15 + 1.055.820)}{6.000} \right] + \left[-\frac{6(4.901 \cdot 6^2 - 214.278 \cdot 6 + 1.055.820)}{6.000} \right]$$

$$= \frac{5.171.301}{2.000}$$

$$= 2.585,651 \text{ satuan luas}$$

9.3 Q Rekomendasi 3– North Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	86,94	1.005,00	5,20	454.348,44
9:00	86,94	1.005,00	6,10	532.985,67
12:00	86,94	1.005,00	6,65	581.041,76
15:00	86,94	1.005,00	6,20	541.723,14

9.4 Perhitungan Integral Energi Rekomendasi 3 North Room

Diketahui: $y = -0,9102x^2 + 21,985x + 26,273$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,9102x^2 + 21,985x + 26,273 dx$$

$$= \left[-\frac{x(3.034x^2 - 109.925x - 262.730)}{10.000} \right]_6^{15}$$

$$= \left[-\frac{15(3.034 \cdot 15^2 - 109.925 \cdot 15 - 262.730)}{10.000} \right] + \left[-\frac{6(3.034 \cdot 6^2 - 109.925 \cdot 6 - 262.730)}{30.000} \right]$$

$$= \frac{13.555.989}{10.000}$$

$$= 1.355,599 \text{ satuan luas}$$

9.5 Q Rekomendasi 1–South Room

Waktu	m (kg)	c (J/kg°C)	ΔT (°C)	Q (Joule)
6:00	113,40	1.005,00	5,45	621.120,15
9:00	113,40	1.005,00	6,05	689.500,35
12:00	113,40	1.005,00	6,80	774.975,60
15:00	113,40	1.005,00	6,90	786.372,30

9.6 Perhitungan Integral Energi Rekomendasi 1 South Room

Diketahui: $y = -0,4397x^2 + 14,6158x + 99,405$

$$L = \int_a^b f(x)dx$$

$$L = \int_6^{15} -0,4397x^2 + 14,6158x + 99,405 dx$$

$$= \left[-\frac{x(4.397x^2 - 219.225x - 2.982.150)}{30.000} \right]_6^{15}$$

$$= \left[-\frac{15(4.397 \cdot 15^2 - 219.225 \cdot 15 - 2.982.150)}{30.000} \right] + \left[-\frac{6(4.397 \cdot 6^2 - 219.225 \cdot 6 - 2.982.150)}{30.000} \right]$$

$$= \frac{1.132.974}{625}$$

$$= 1.812,758 \text{ satuan luas}$$

Lampiran 10 Hasil Perbandingan

10.1 Tabel Perbandingan Suhu Eksisting & Simulasi Hari Ke-1

T Eksisting (°C)			T Simulasi (°C)		
Suite	North	South	Suite	North	South
26,92	26,96	27,00	27,90	29,50	29,70
28,98	28,58	28,44	31,00	30,50	30,40
30,46	27,64	27,14	31,40	31,70	31,00
29,56	26,56	27,04	33,20	30,50	31,20

10.2 Tabel Perbandingan Suhu Eksisting & Simulasi Hari ke-3

T Eksisting (°C)			T Simulasi (°C)		
Suite	North	South	Suite	North	South
26,58	25,74	25,50	28,00	28,70	29,60
28,96	27,58	26,32	30,00	29,40	29,20
31,90	28,74	27,72	31,50	29,90	30,10
31,76	28,26	27,98	30,00	29,60	30,00

10.3 Perbandingan Suhu Rekomendasi Hari ke-1

T Rekomendasi 1 (°C)			T Rekomendasi 2 (°C)			T Rekomendasi 3 (°C)		
Suite	North	South	Suite	North	South	Suite	North	South
27,50	29,60	29,70	27,40	29,60	29,50	29,20	29,10	29,50
29,30	30,20	30,30	29,50	30,30	30,10	29,80	30,00	30,10
30,80	30,70	31,00	30,90	30,80	30,80	31,10	30,50	30,80
33,70	30,50	31,10	33,40	30,30	30,80	33,20	30,10	31,10

10.4 Perbandingan Suhu Rekomendasi Hari ke-3

T Rekomendasi 1 (°C)			T Rekomendasi 2 (°C)			T Rekomendasi 3 (°C)		
Suite	North	South	Suite	North	South	Suite	North	South
27,10	28,70	28,60	27,00	28,60	28,30	26,60	28,30	28,40
28,90	29,40	29,10	28,60	29,50	28,90	28,80	29,20	29,00
30,50	29,90	29,70	30,30	30,00	29,70	30,70	29,80	29,80
29,40	29,60	29,80	29,00	29,70	29,70	29,20	29,30	29,70

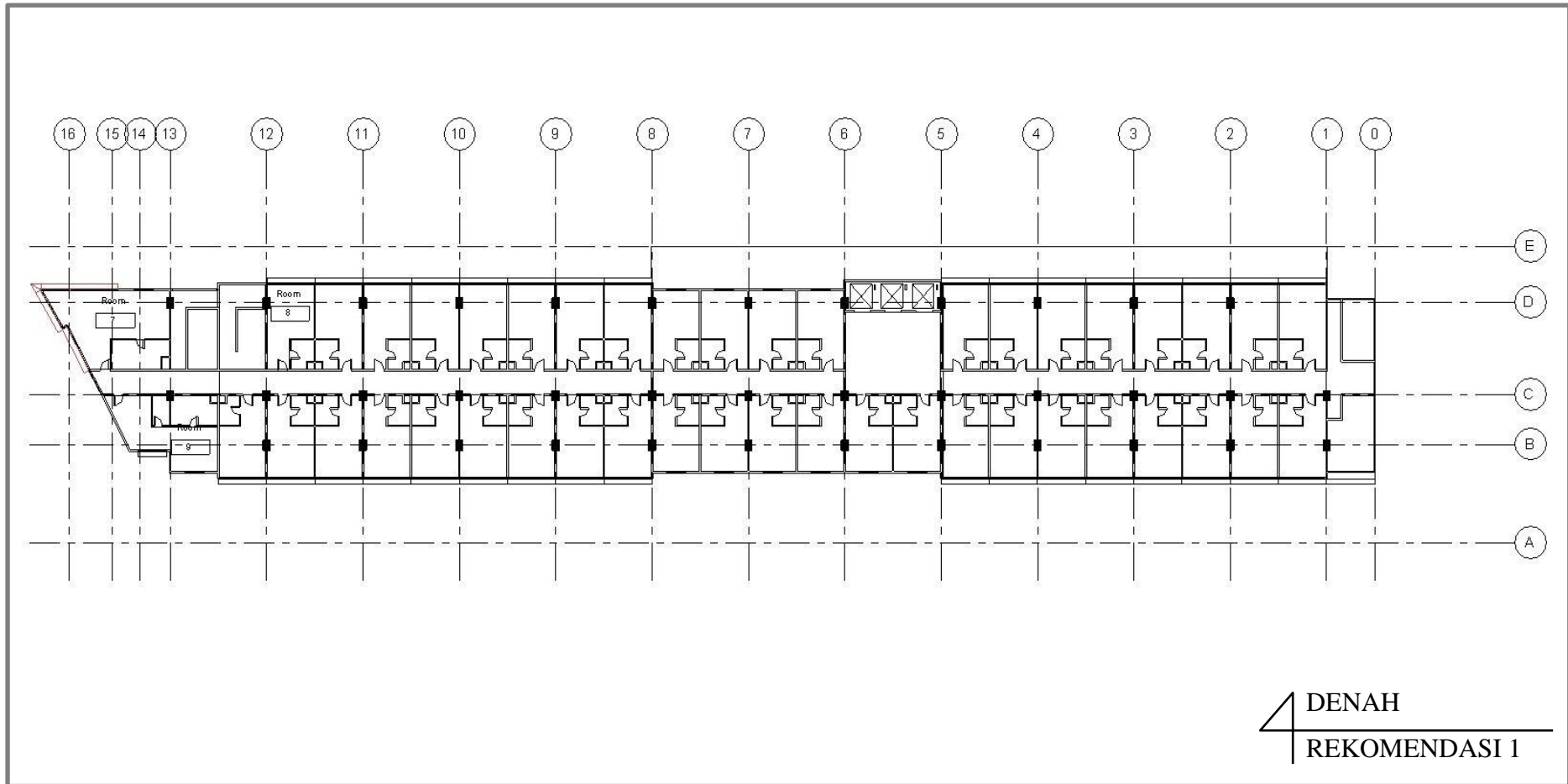
10.5 Tabel Perbandingan Suhu Rekomendasi Rata-rata

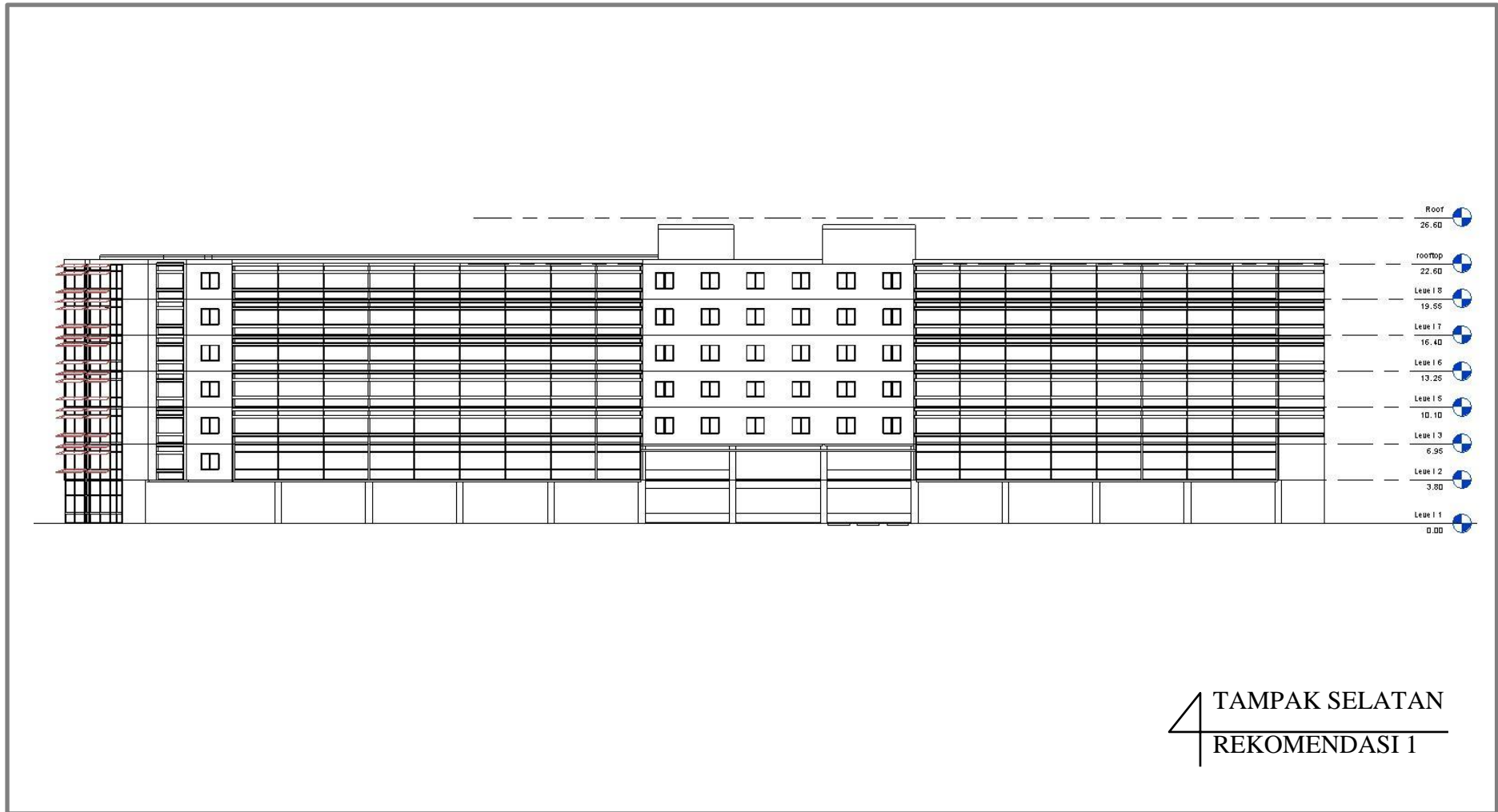
ENERGI KALOR (J)					
KAMAR	EKSISTING	SIMULASI	REK 1	REK 2	REK 3
SUITE	9.375.822,00	10.793.700,00	9.420.865,20	9.999.882,00	9.308.343,60
NORTH	3.398.310,00	5.249.016,00	5.062.424,40	5.111.391,60	4.880.156,40
SOUTH	3.870.612,00	6.833.955,60	6.635.145,60	6.461.899,20	6.525.928,80

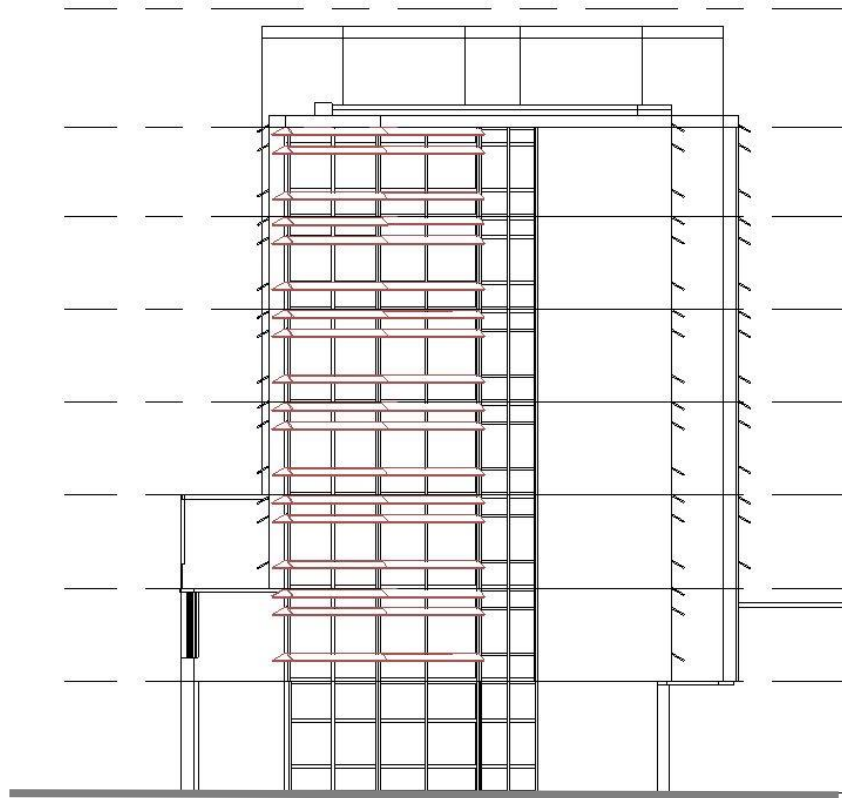
ENERGI KALOR (Wh)					
KAMAR	EKSISTING	SIMULASI	REK 1	REK 2	REK 3
SUITE	2.604,395	2.998,250	2.616,907	2.777,745	2.585,651
NORTH	943,975	1.458,060	1.406,229	1.419,831	1.355,599
SOUTH	1.075,170	1.898,321	1.843,096	1.794,972	1.812,758

Lampiran 11 Gambar Kerja Hasil Rekomendasi

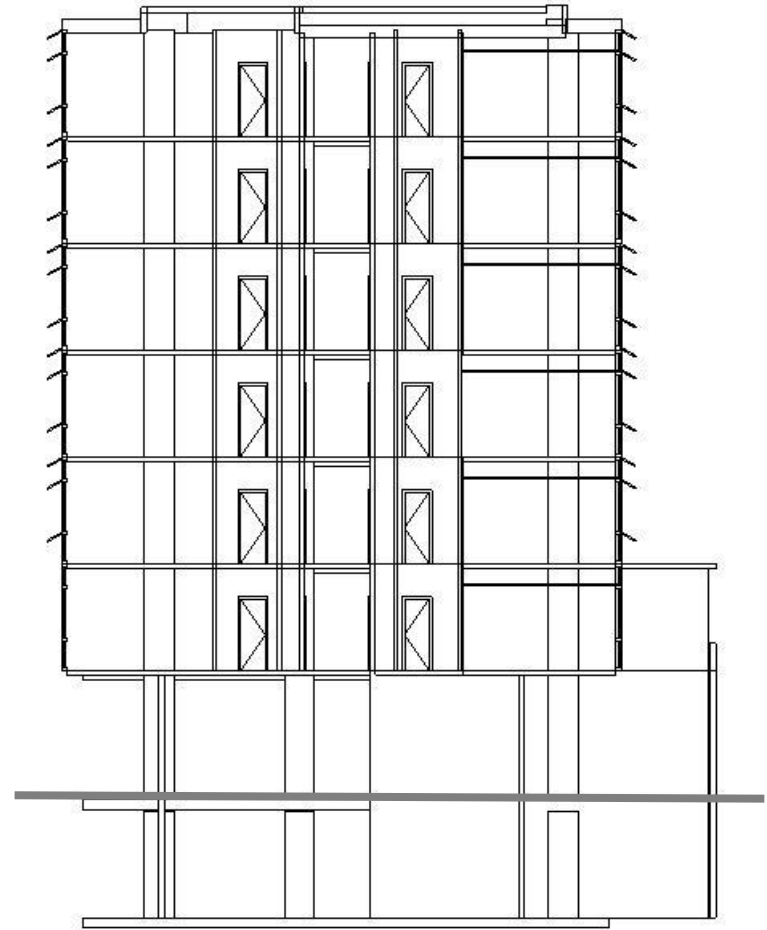
11.1 Rekomendasi 1





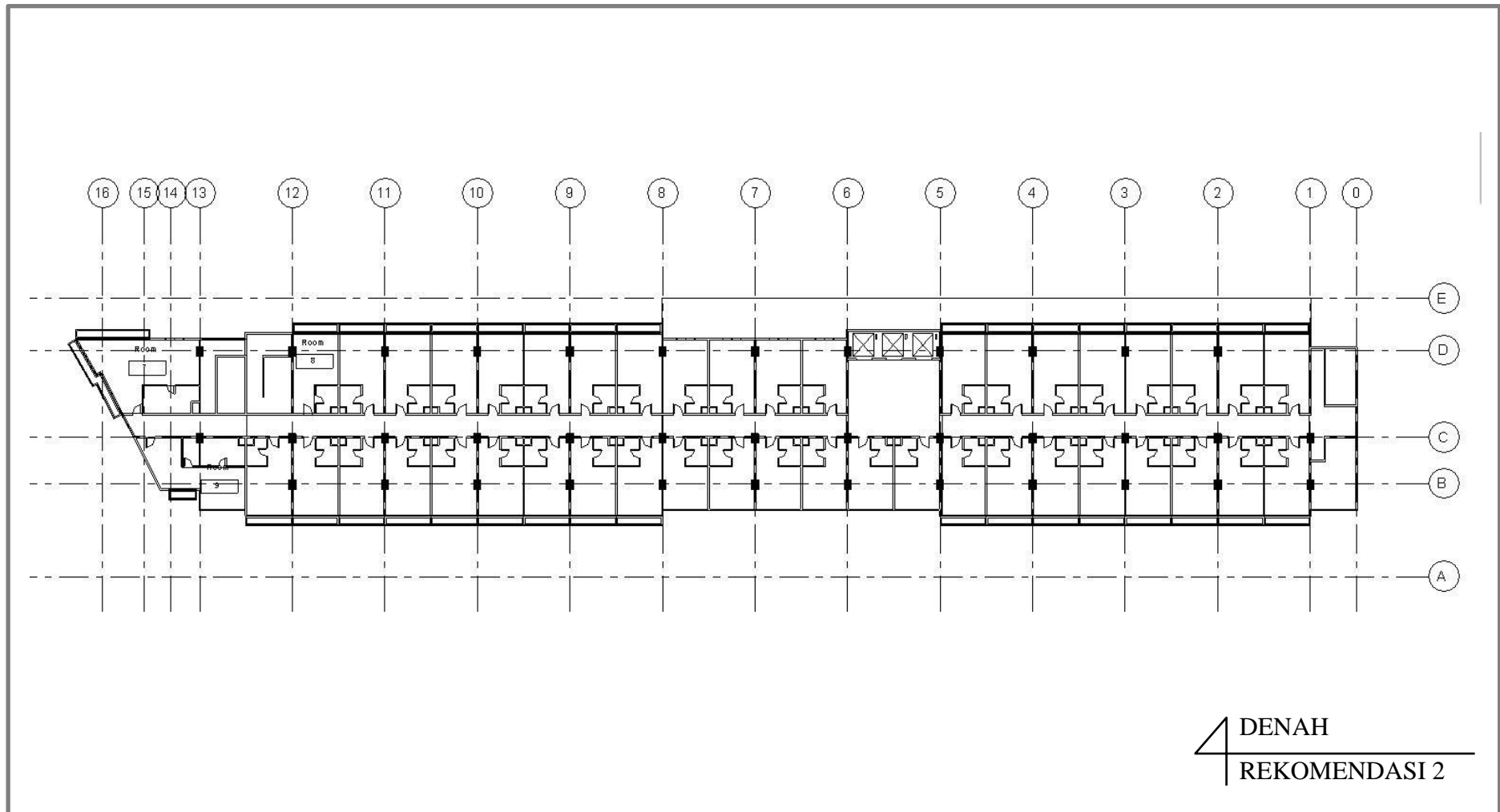


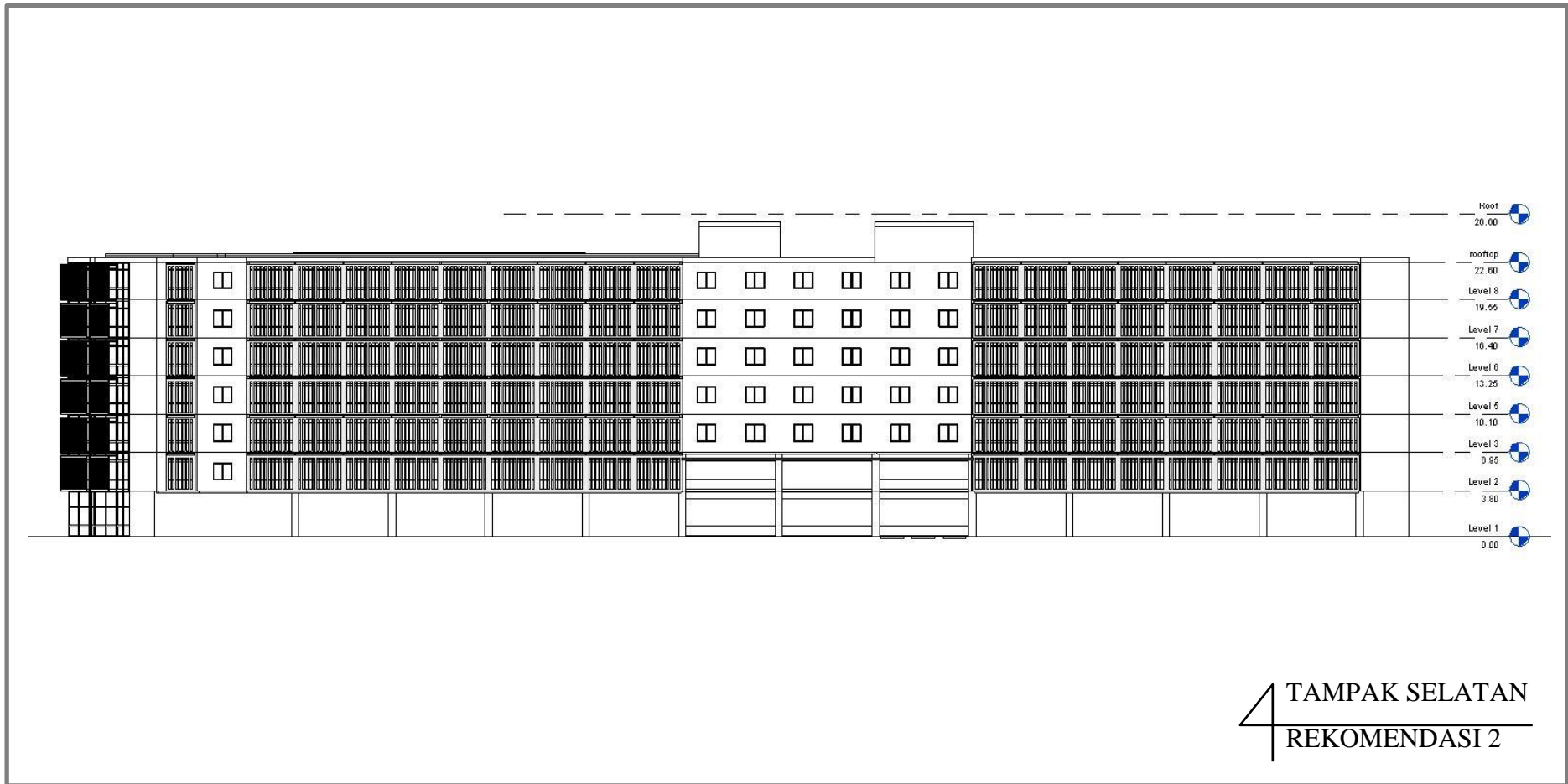
TAMPAK BARAT
REKOMENDASI 1

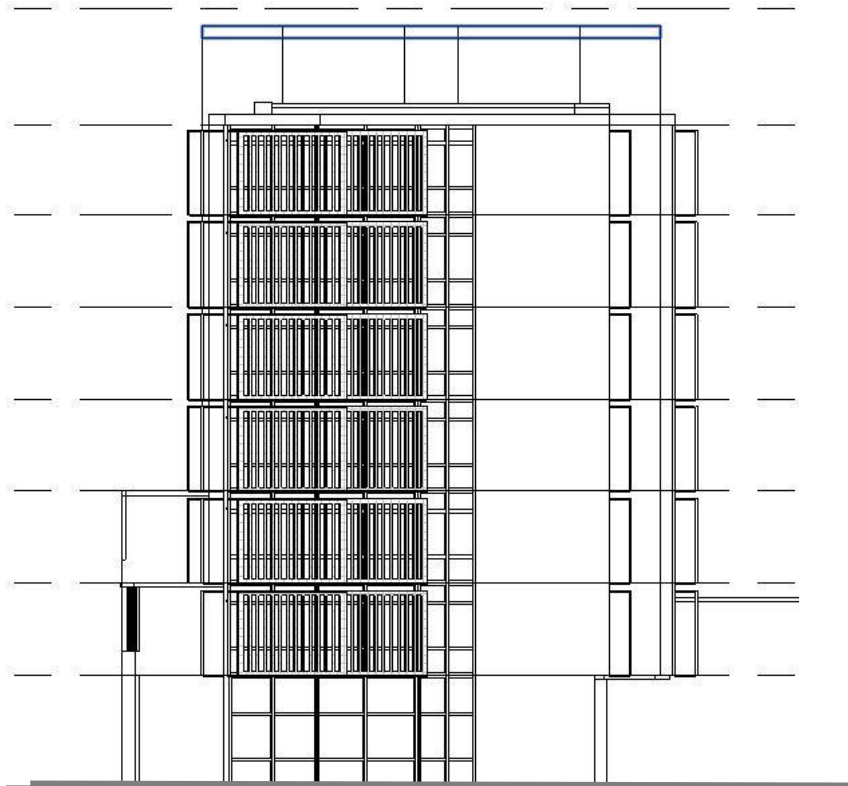


POTONGAN
REKOMENDASI 1

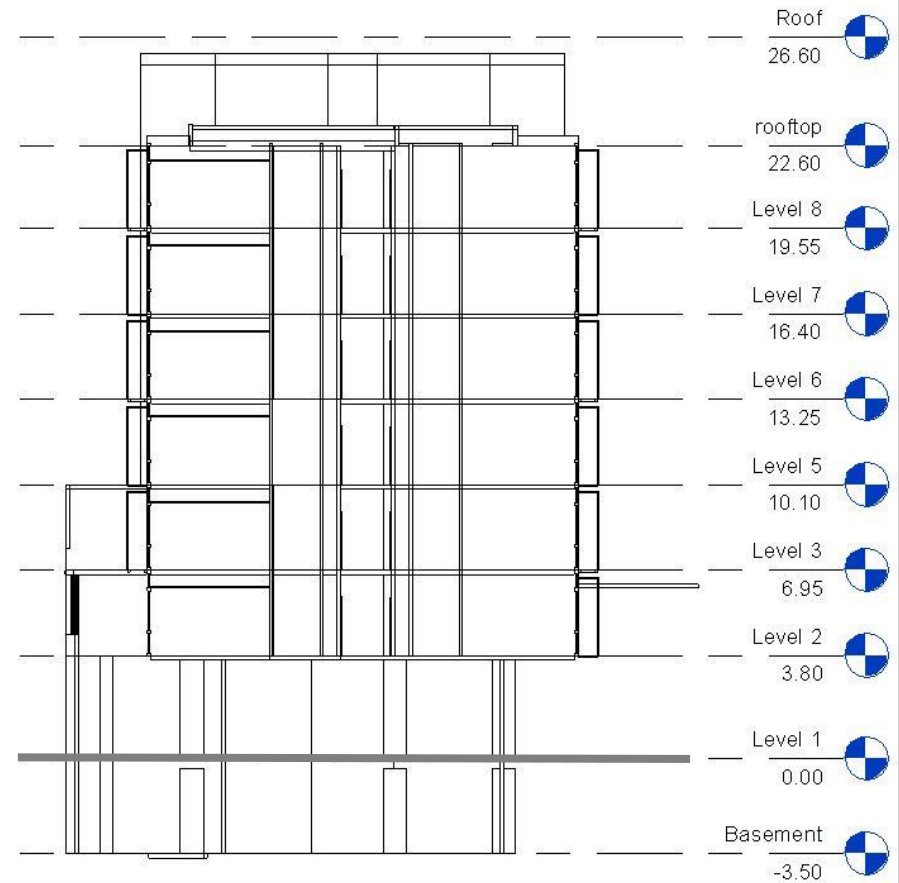
11.2 Rekomendasi 2





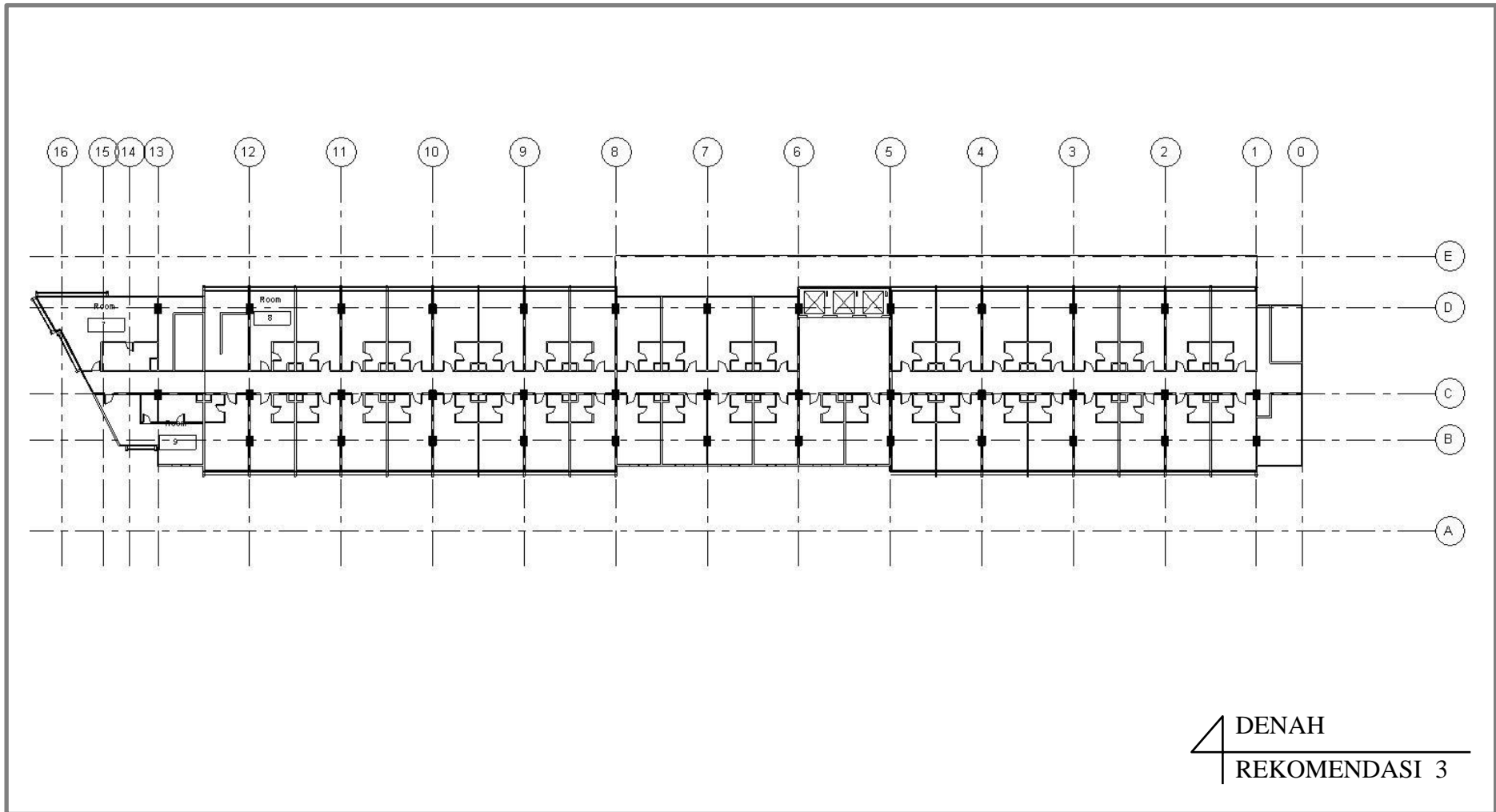


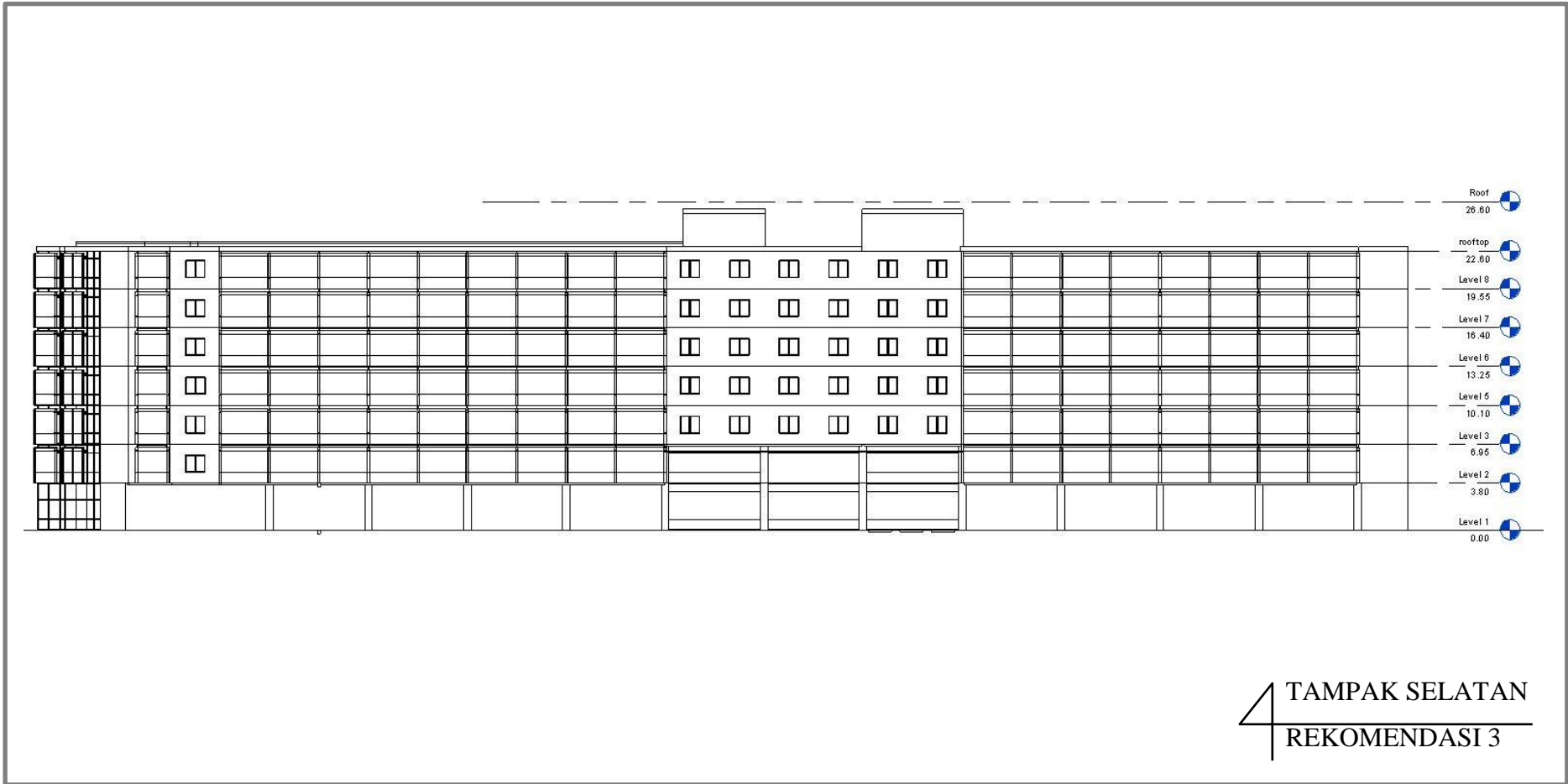
TAMPAK BARAT
REKOMENDASI 2

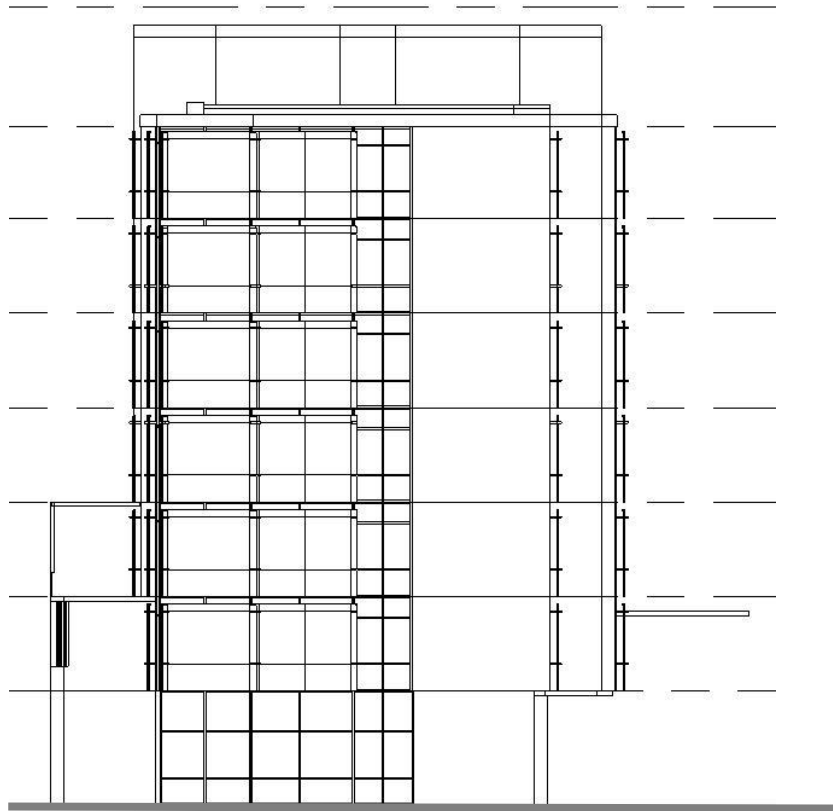


POTONGAN
REKOMENDASI 2

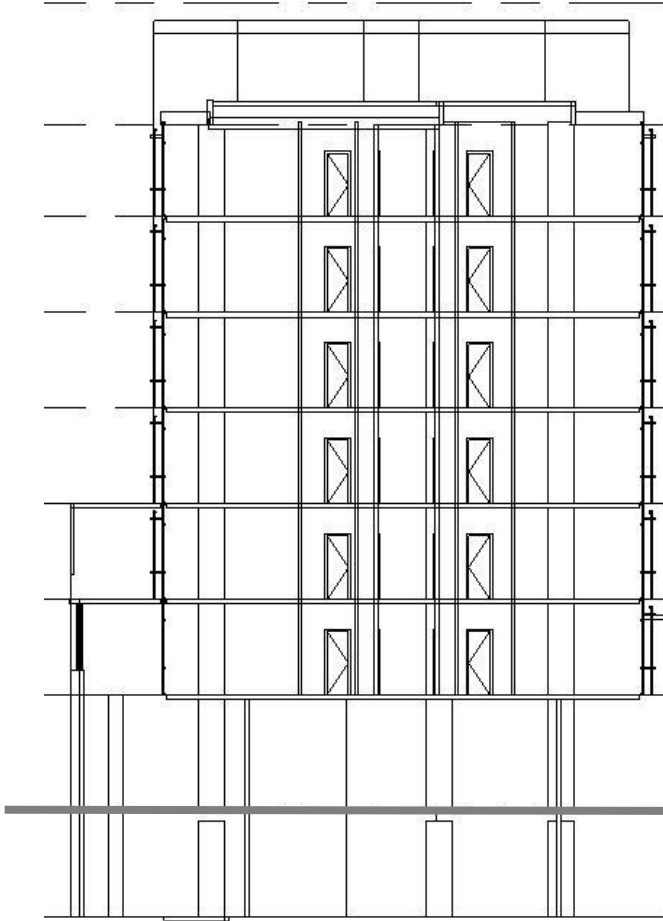
11.3 Rekomendasi 3







TAMPAK BARAT
REKOMENDASI 3



- Roof 26.60
- rooftop 22.60
- Level 8 19.55
- Level 7 16.40
- Level 6 13.25
- Level 5 10.10
- Level 3 6.95
- Level 2 3.80
- Level 1 0.00
- Basement -3.50

POTONGAN
REKOMENDASI 3