TUGAS AKHIR 146
PERANCANGAN BERBASIS EDGE

PUERTO PURWOKERTO RENTAL OFFICE

DIKERJAKAN OLEH:

DIANA KUSUMANING ARUM - 21020115120024

DOSEN PEMBIMBING:

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DEPARTEMEN ARSITEKTUR
FAKULTAS TEKNIK
UNIVERSITAS DIPONEGORO

Excellence In Design For Greater Efficiencies

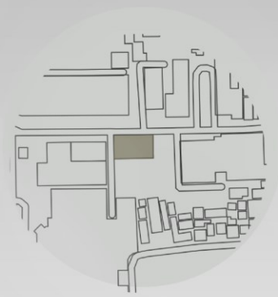
IFC International Finance Corporation
WORLD BANK GROUP
Creating Markets, Creating Opportunities

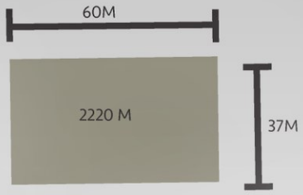
PUERTO RENTAL OFFICE

DIANA KUSUMANING ARUM. 21020115120024
TA 146. BERBASIS EDGE

PROLOG

Kota Purwokerto merupakan kota administrasi dari Kabupaten Banyumas. Pertumbuhan ekonomi yang terjadi di kota ini amatlah berkembang pesat yang didukung oleh berbagai faktor. Pertumbuhan yang pesat ini mendukung para investor dan start-up bisnis perusahaan untuk menancapkan cabangnya di Purwokerto. Keberadaan Rental Office di Purwokerto adalah dalam rangka memenuhi kebutuhan space bagi para branch startup maupun startup baru dan perusahaan kreatif lainnya.





Jalan Jenderal Soedirman. Purwokerto Timur, Banyumas, Jawa Tengah, 53116

KDB : 60 %
lahan terbangun
60% x 2220 = **1322 meter persegi**
lahan infiltran
40% x 2220 = **888 meter persegi**

KDH = 888 - (30%x888)
KDH = 621.6 meter persegi
KLB = 20 lantai
GSB = 11 m
Lebar jalan = 8 m

konsep fasad

instant-simple-efficient

konsep interior

work hard-play hard

KONSEP DESAIN DAN INTERIOR

terdapat sekitar 6 startup baru asal purwokerto yang terdaftar resmi. dan terdapat beberapa branch market startup yang didirikan di Purwokerto

start up yang banyak muncul adalah hasil karya para pemuda Indonesia dengan segala pemikiran yang maju. ciri khas dari fenomena ini adalah mengedepankan hal yang instan, mudah dalam artian simple dan tetntunya efisien.

para pelaku startup membutuhkan etos kerja yang tinggi dan pemikiran yang rumit agar dapat memenuhi kebutuhan para pengguna dan mengimbangi revolusi industri 4.0 yang sedang berlangsung. maka dibuat 1 lantai pada lantai 8 yang dikhususkan untuk menghibur dan melepas penat para pelaku startup agar dapat bekerja dengan fokus kembali.

GO-JEK Grab puskemedia Indonesia JENDERAL softworks | solutions AGUSDAR.COM

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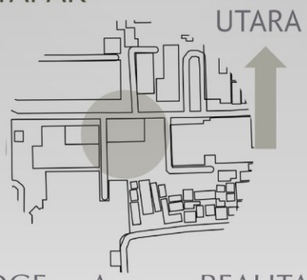
PUERTO RENTAL OFFICE

KONSEP GUBAHAN MASSA

1. based on ORIENTATION

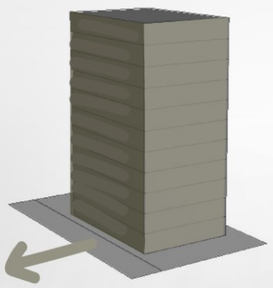
KEADAAN TAPAK



dalam EDGE App menunjukkan bahwa orientasi atau bukaan utama yang terbaik adalah menghadap **utara dan selatan**

REALITA
orientasi utama tapak menghadap ke utara. sehingga entrance dan bukaan maksimal dapat menghadap ke jalan utama

RESPON



sisi utara dan selatan dengan bukaan maksimum

sisi timur dan barat dengan bukaan paling minimum

2. based on BUILDING DEPTH

DATA

dalam EDGE App menunjukkan bahwa semakin tipis atau pendek tebal bangunan makan presentase saving energy akan meningkat.

RESPON

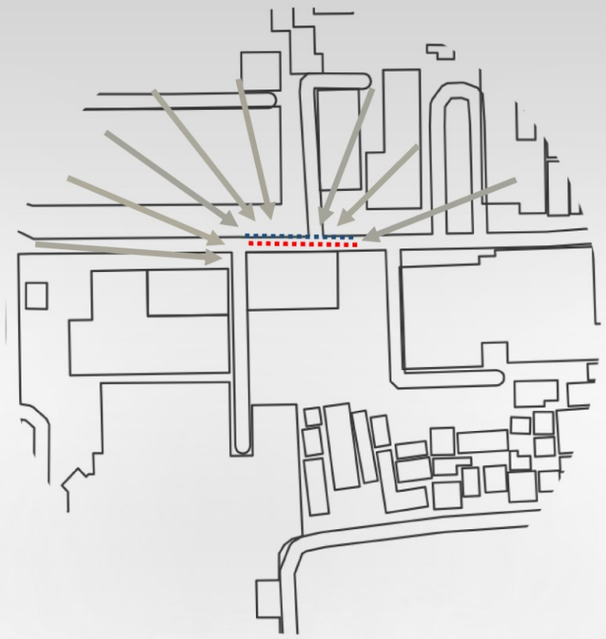
bagian yang diperlebar karena menghadap utara

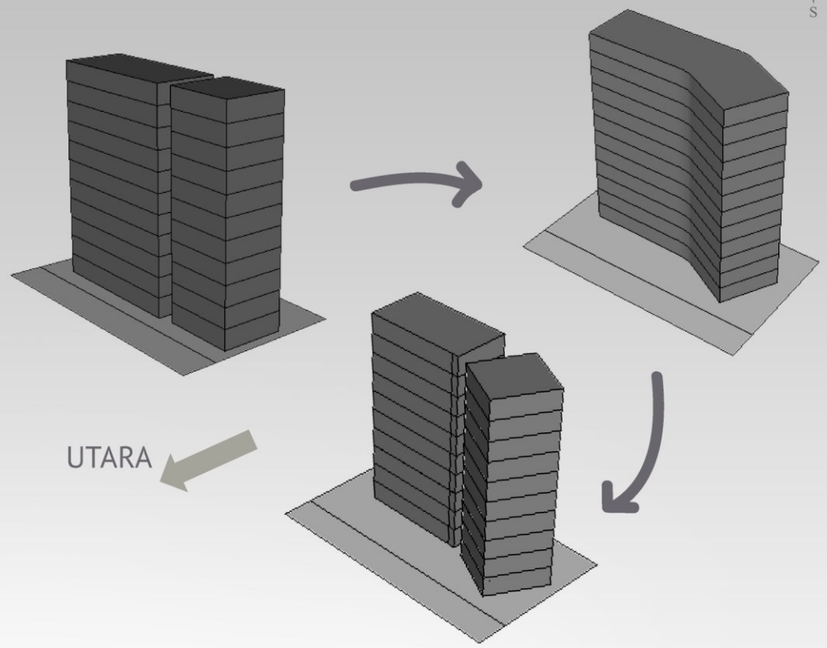
building dept dibuat tipis agar saving energy

3. based on VIEW TO SITE

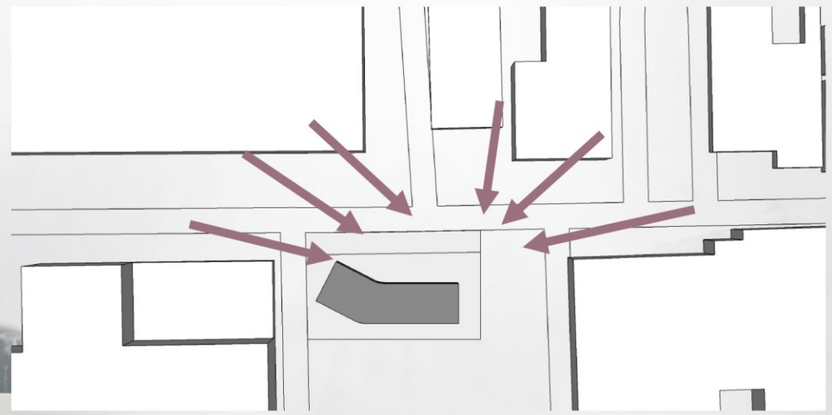
KEADAAN TAPAK

site berada di jalur jalan utama dengan lintasan kendaraan ke arah timur dan barat. oleh karena bangunan harus merespon dan menagkap dari dua arah uatama yaitu barat dan timur





Untuk merespon view to site, bangunan dipotong lalu putar menyerong ke arah barat laut. Pemutaran potongan bangunan dilakukan untuk menghindari pnambahan building depth.



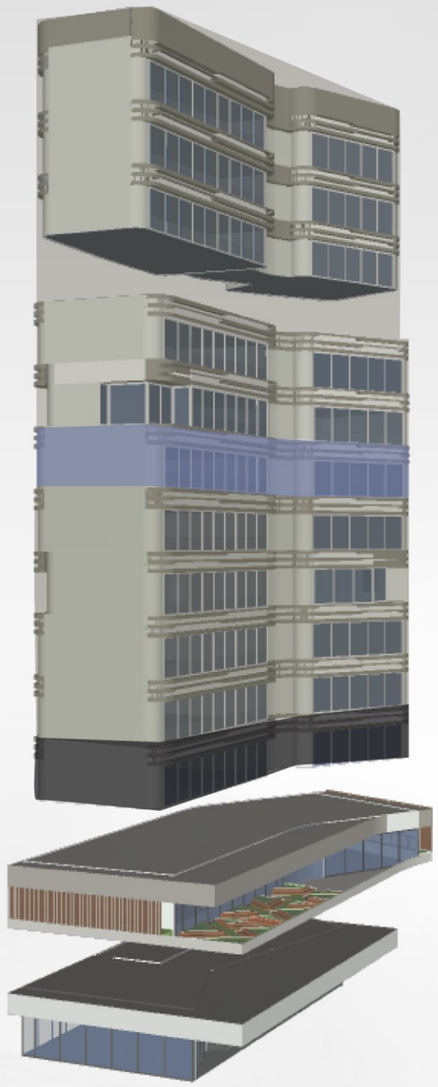
BUILDING DATA

Building Footprints : 443 meter persegi
Building Coverage : 1377 meter persegi
RTH : 843 meter persegi
Lantai Bangunan : 14 lantai
Luas Bangunan : 5800 meter persegi

PUERTO RENTAL OFFICE

ZONING, SIRKULASI, EDGEAPP

ZONING



open plan office

relaxing zone

open plan office

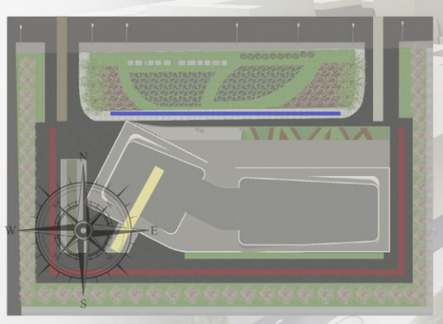
meeting room center

foodcourt. pray room. atm center. photocopy

lobby. employees office

SIRKULASI

- site entrance
- site exit
- pedestrian path
- fire path
- entry basement
- exit basement



1. edgeApp - ENERGY

OFE01 window to wall ratio

north: 448.17 mpersegi northeast: 305.55 mpersegi

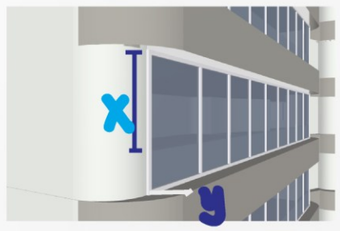
south: 226.42 mpersegi southwest: 240.58 mpersegi

WWR 25.06%

OFE04 external shading devices

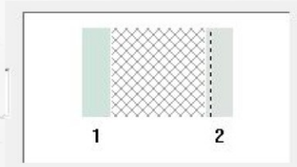
x --- tinggi jendela = 2 m

y --- lebar overhang = 60 cm



AASF 0.38

OFE07 low-e coated glass



U -factor 1.129

SHGC 0.34

OFE011 variable refrigerant flow (vrf) system)

OFE024 energy saving light bulbs- internal & eksternal spaces

OFE26 lighting control for staircases and corridors

OFE04 occupancy sensors in bathroom

total energy saving 46.97 %

2. edgeApp - WATER

OFEW01 low flow faucets in all bathroom

OFEW02 dual flush for water closets

OFEW03 water efficients urinals

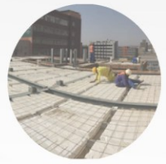
OFEW06 rain water harvesting system

OFEW07 grey water treatment and recycling system

OFEW08 black water treatment and recycling system

total water saving 72.17 %

2. edgeApp - MATERIAL



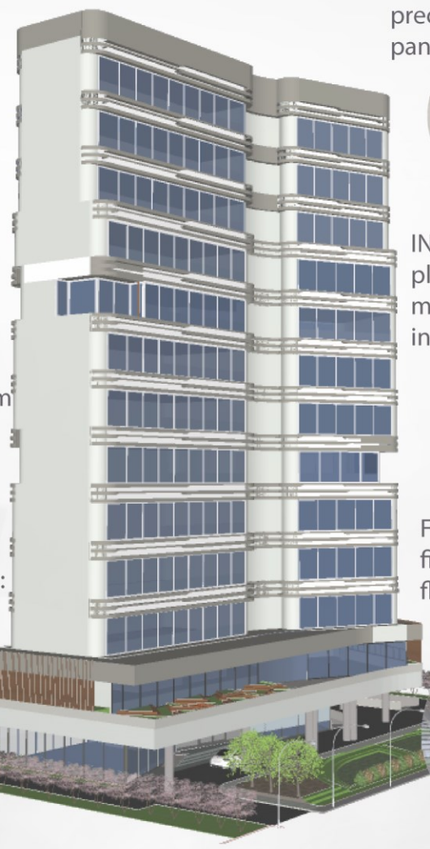
FLOOR SLABS & ROOF CONS: concrete filler slab with polystyrene

EXTERNAL WALL : precast concrete panel

WINDOWS : panasap blue dan low-e blue

OVERHANG : pvc cladding 60 cm

WINDOW FRAMING : aluminium



INTERNAL WALL : plasterboards on metal studs with insulation

FLOORING : finished concrete floor

total saving material 46.06 %

edge app
ENERGY SAVING

OFE01 window to wall ratio

north: 43.63 mpersegi

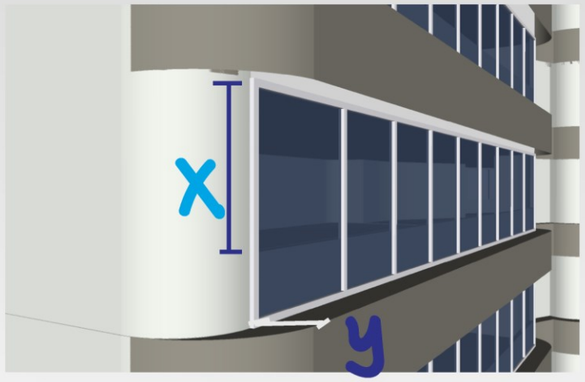
northeast: 299.51 mpersegi

south: 200.32 mpersegi

southwest: 221.19 mpersegi

WWR
25.06%

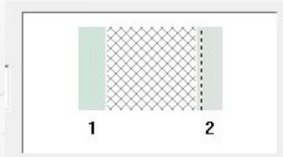
OFE04 external shading devices



x --- tinggi jendela = 2 m
y --- lebar overhang = 60 cm

AASF
0.38

OFE07 low-e coated glass



1 = panasap blue 5mm
grap = argon
2= low-e blue 5mm

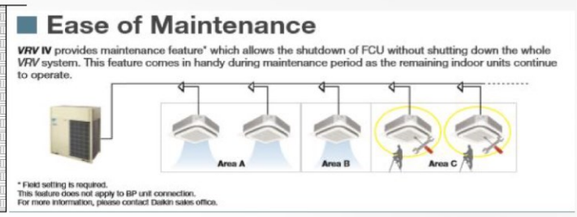
Center of Glass Results | Temperature Data | Optical Data | Angular Data | Color Properties | Radiance Results

Ufactor	SC	SHGC	Rel. Ht. Gain	Tvis	Keff	Layer 1 Keff	Gap 1 Keff	Layer 2 Keff
W/m2-K			W/m2		W/m-K	W/m-K	W/m-K	W/m-K
1.164	0.399	0.347	261	0.560	0.0389	1.0000	0.0246	1.0000

SHGC
0.34

U -factor
1.129

OFE011 variable refrigerant flow (vrf) system)

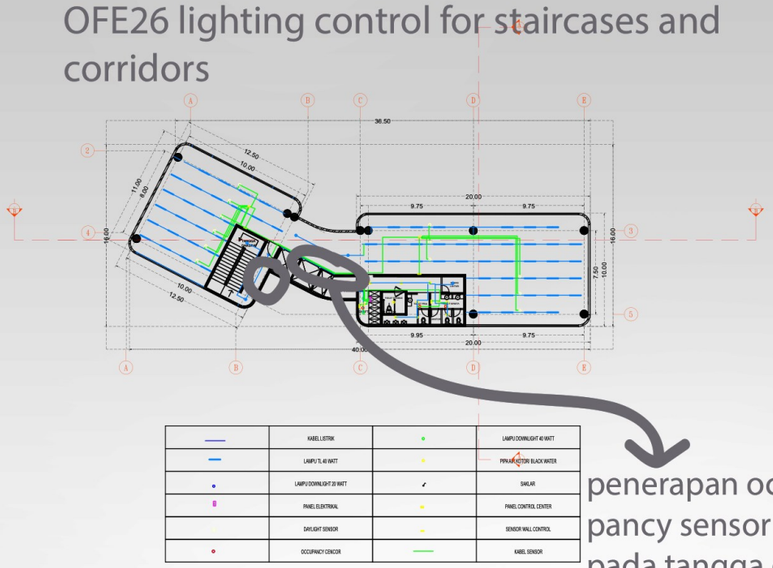


OFE024 energy saving light bulbs- internal & eksternal spaces

Lamp Type	Description
Compact fluorescent lamps (CFLs)	CFLs are available for most light fittings as a direct replacement for incandescent bulbs. CFLs use a fluorescent tube that has been folded into the shape of the incandescent bulb they have been designed to replace. In comparison to incandescent bulbs, CFLs can last as much as 15 times longer. It should be noted that the service life can be reduced by frequent switching, so CFLs are not always appropriate where lights will be turned on and off frequently. CFLs use only a fraction of the energy of their incandescent alternatives and therefore produce less heat. As with normal fluorescent lamps, CFLs require ballasts in order to operate. Older lamps use magnetic ballasts, but these have largely been replaced with electronic ballasts that operate at a high frequency. Although the efficacy is not affected, electronic ballasts have reduced warm-up times and flickering, which were issues with the earlier CFLs.
Light emitting diode (LED)	LED technology has evolved quickly and there are LED lamps available for most light fittings, and in different color temperatures ranging from warm white to daylight. The efficacy levels of LEDs are much higher than CFLs. The service life of LED lamps can be as much as two to three times the longest life of any available compact fluorescent lamp, and is not affected by frequent on/off cycles. Over the last few years, the performance of LED lamps has improved greatly while prices have dropped sharply, and they are now highly cost-effective.
T5 Lamps	The name of these fluorescent tubes refers to their shape (tubular) and diameter (5 units measured in 1/8s of an inch). T5s have a miniature G5 bi-pin base with 5mm spacing, while T8s and T12s have a G13 bi-pin base with 13mm spacing. Although T8/T12 to T5 conversion kits are available, dedicated T5 luminaires should be specified in new construction projects, as using ballasts designed for T8s and T12s could reduce the service life of T5s.

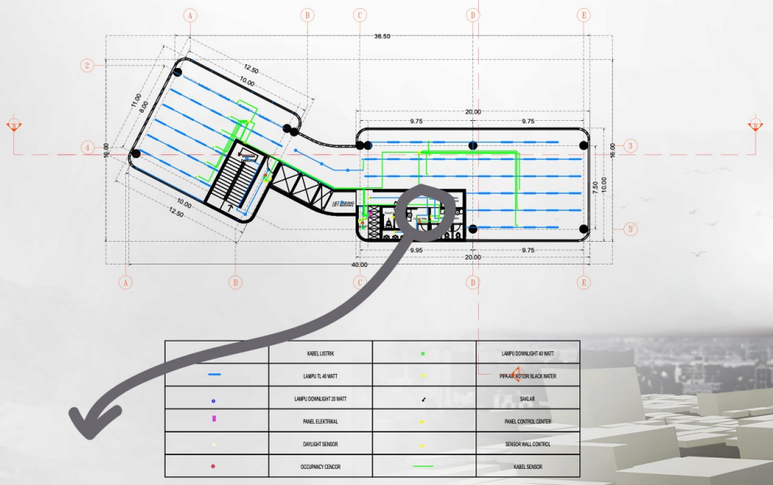
edge app
ENERGY SAVING

OFE26 lighting control for staircases and corridors



penerapan occupancy sensor pada tangga darurat dan koridor

OFE04 occupancy sensors in bathroom



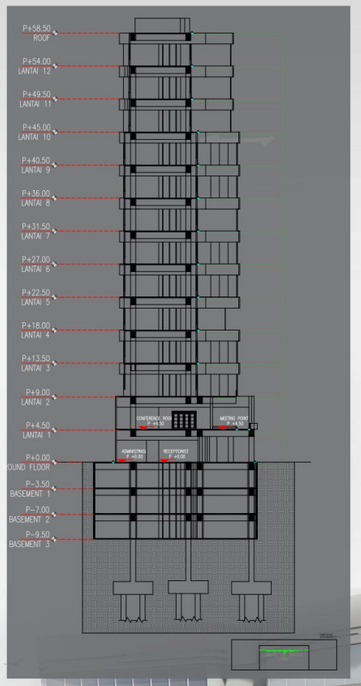
penerapan occupancy sensor pada kamar mandi

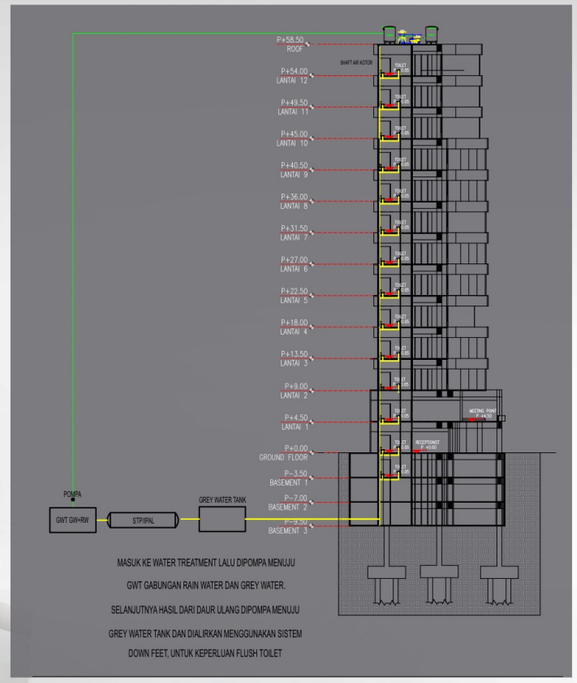
edge app
WATER SAVING

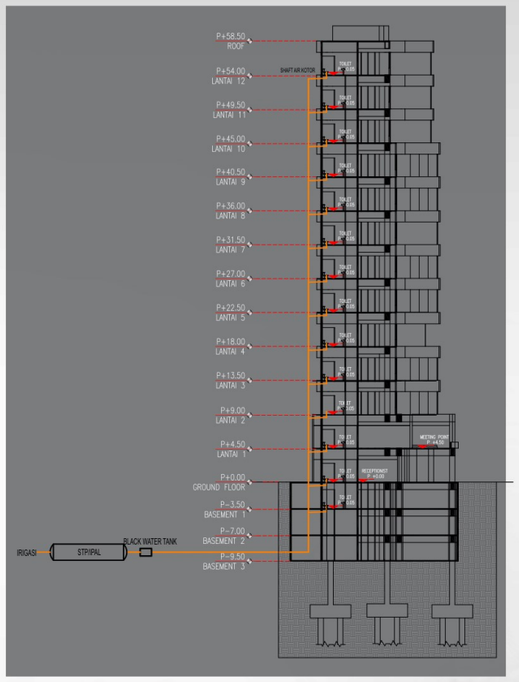
OFEW01 low flow faucets in all bathroom

OFEW02 dual flush for water closets

OFEW03 water efficients urinals







OFEW06 rain water harvesting system

OFEW07 grey water treatment and recycling system

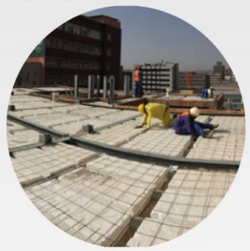
OFEW08 black water treatment and recycling system

total energy saving
46.97 %

total water saving
72.17 %

edge app
MATERIAL

FLOOR SLABS :
concrete filler slab with polystyrene



EXTERNAL WALL :
precast concrete panel

OVERHANG :
pvc cladding 60 cm

ROOF CONSTRUCTION :
concrete filler slab with polystyrene blocks

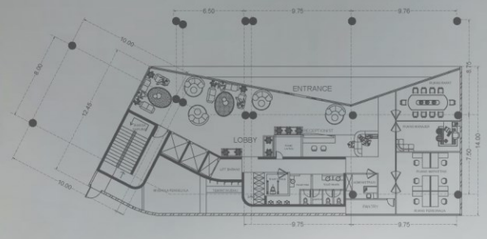
WINDOWS :
panasap blue dan low-e blue

INTERNAL WALL :
plasterboards on metal studs with insulation

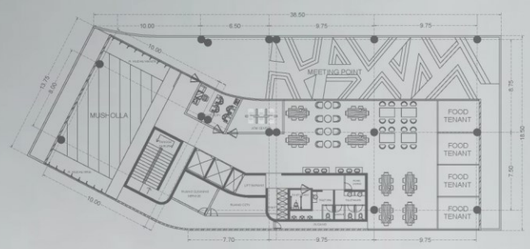
FLOORING :
finished concrete floor

WINDOW FRAMING :
aluminium

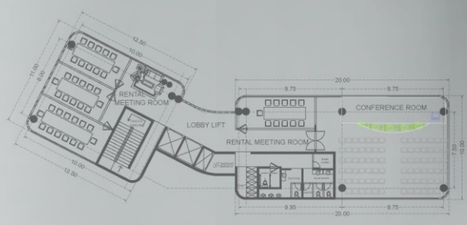
total saving material
46.06 %



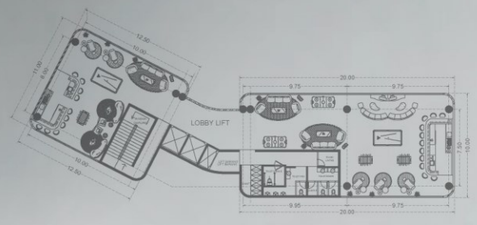
ground floor



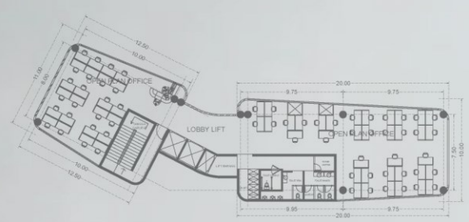
first floor



typical floor 2-9

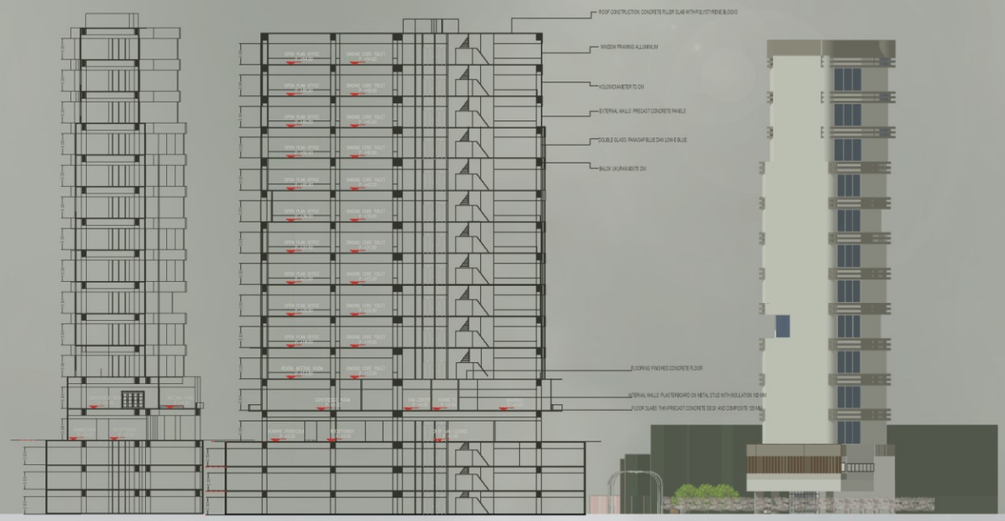


refresh zone at 8th floor



typical floor 10-12

left look

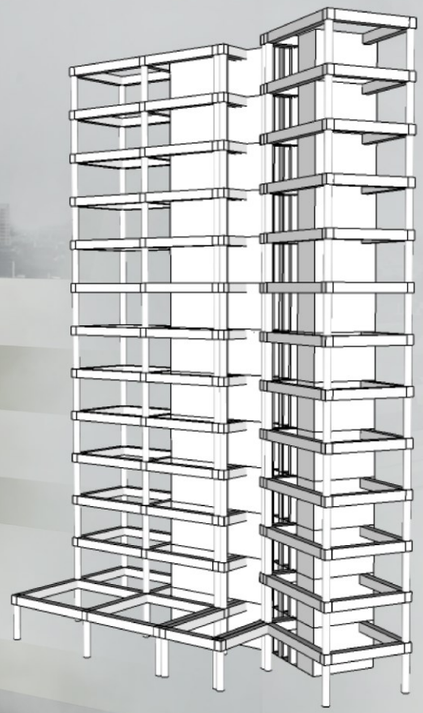


building section

right look

back look

front look



structure

INTERIOR

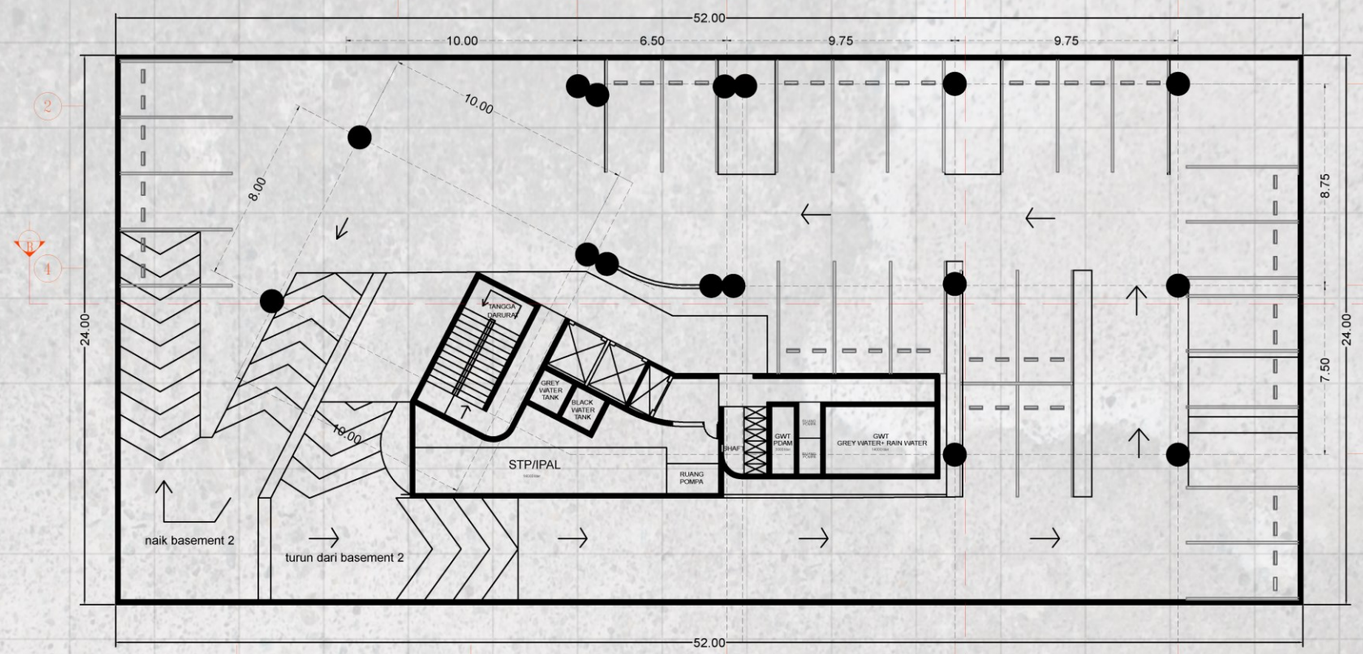
LOBBY-GROUND FLOOR

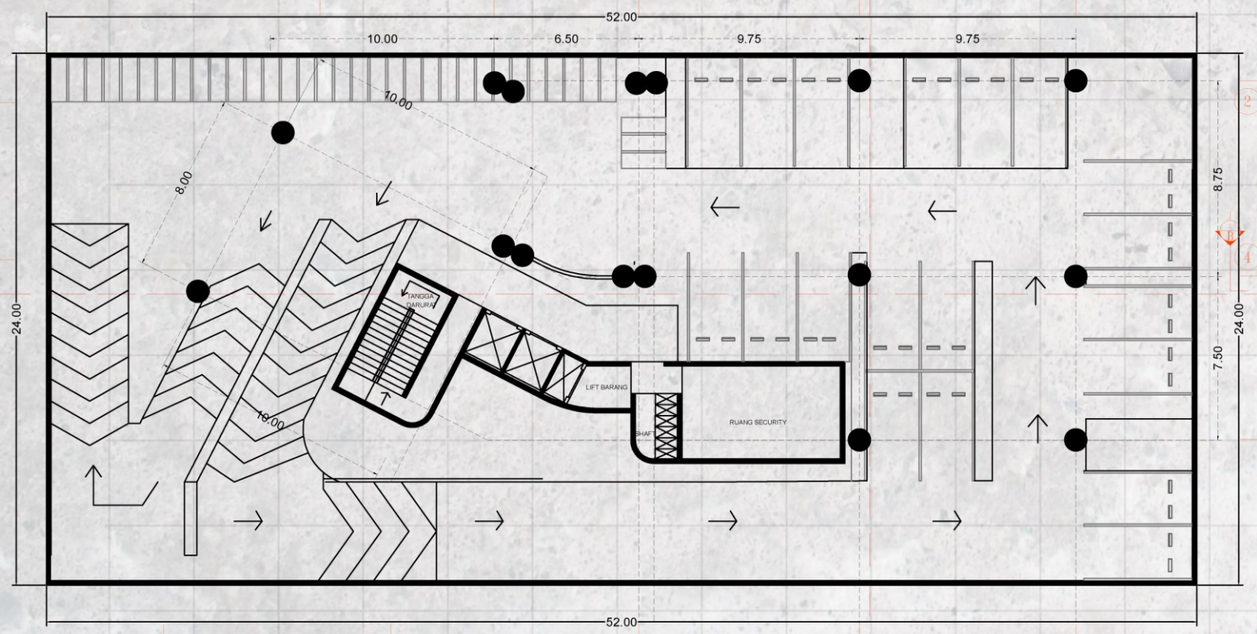
OPEN PLAN OFFICE

FOODCOURT-1st FLOOR

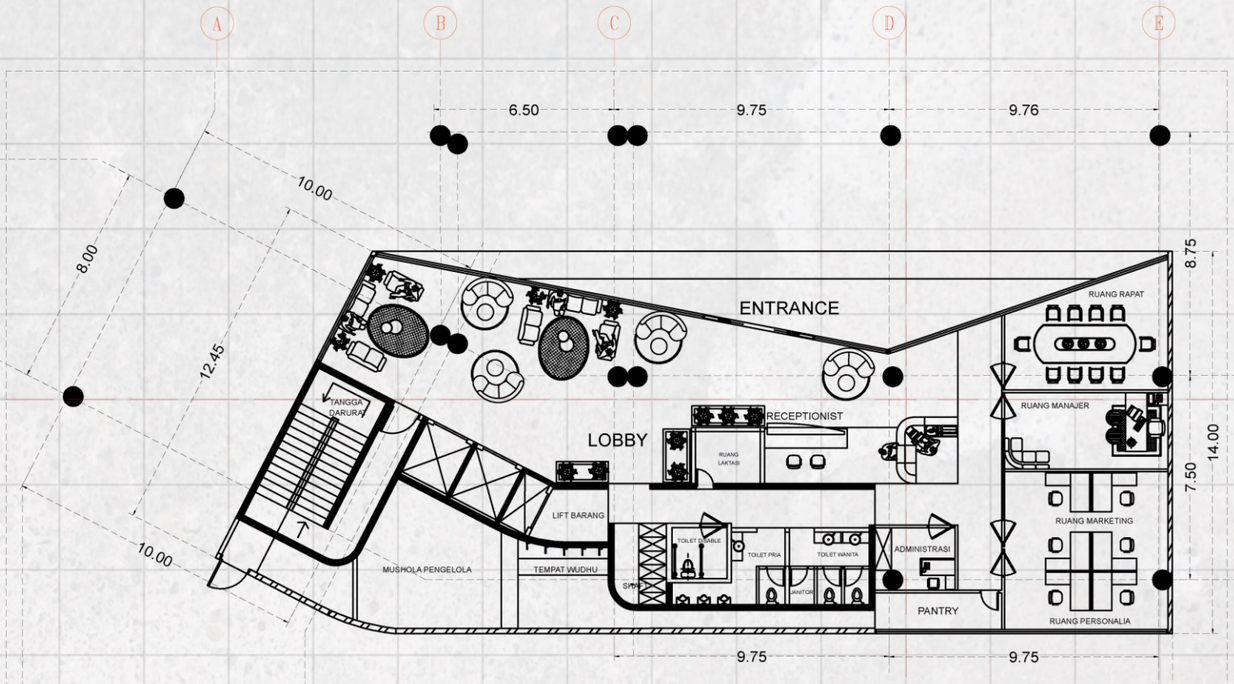
RELAXING SPACE-8th FLOOR

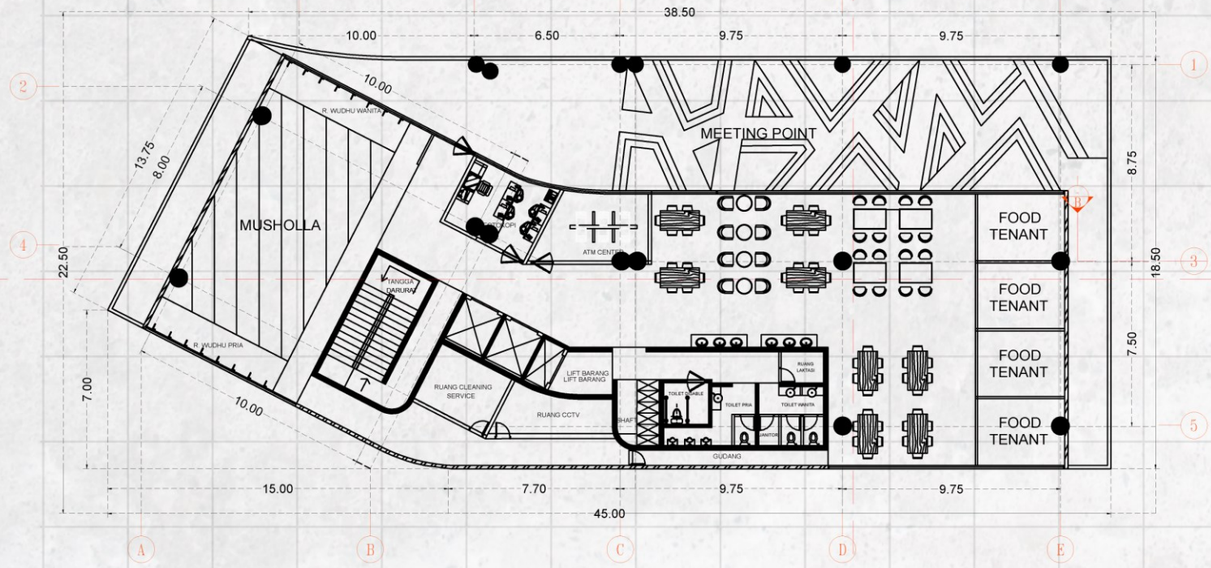
DENAH
BASEMENT 3
BASEMENET 2
BASEMENT 1

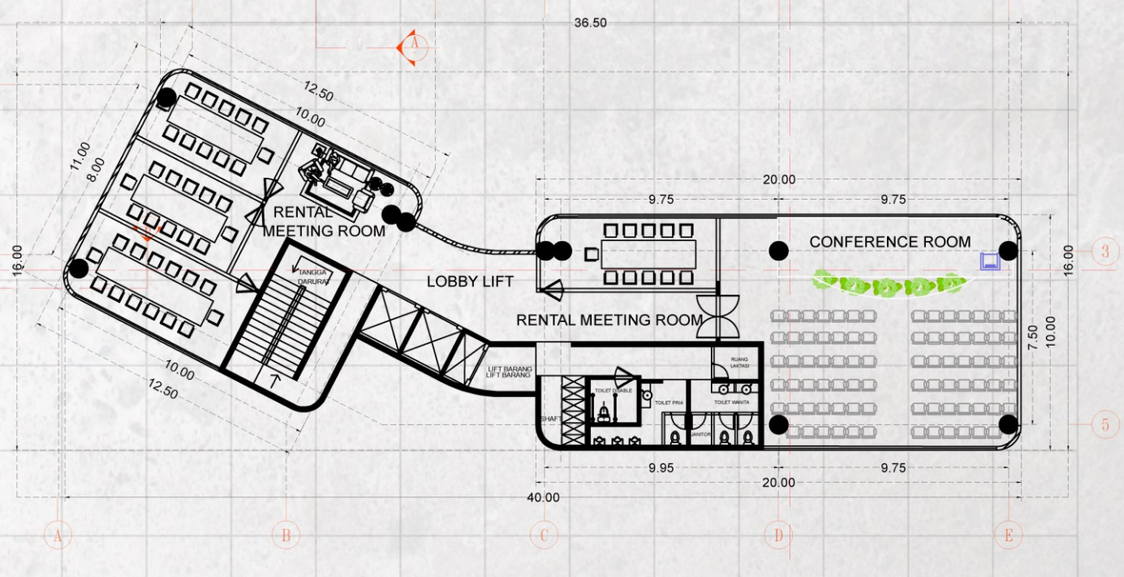




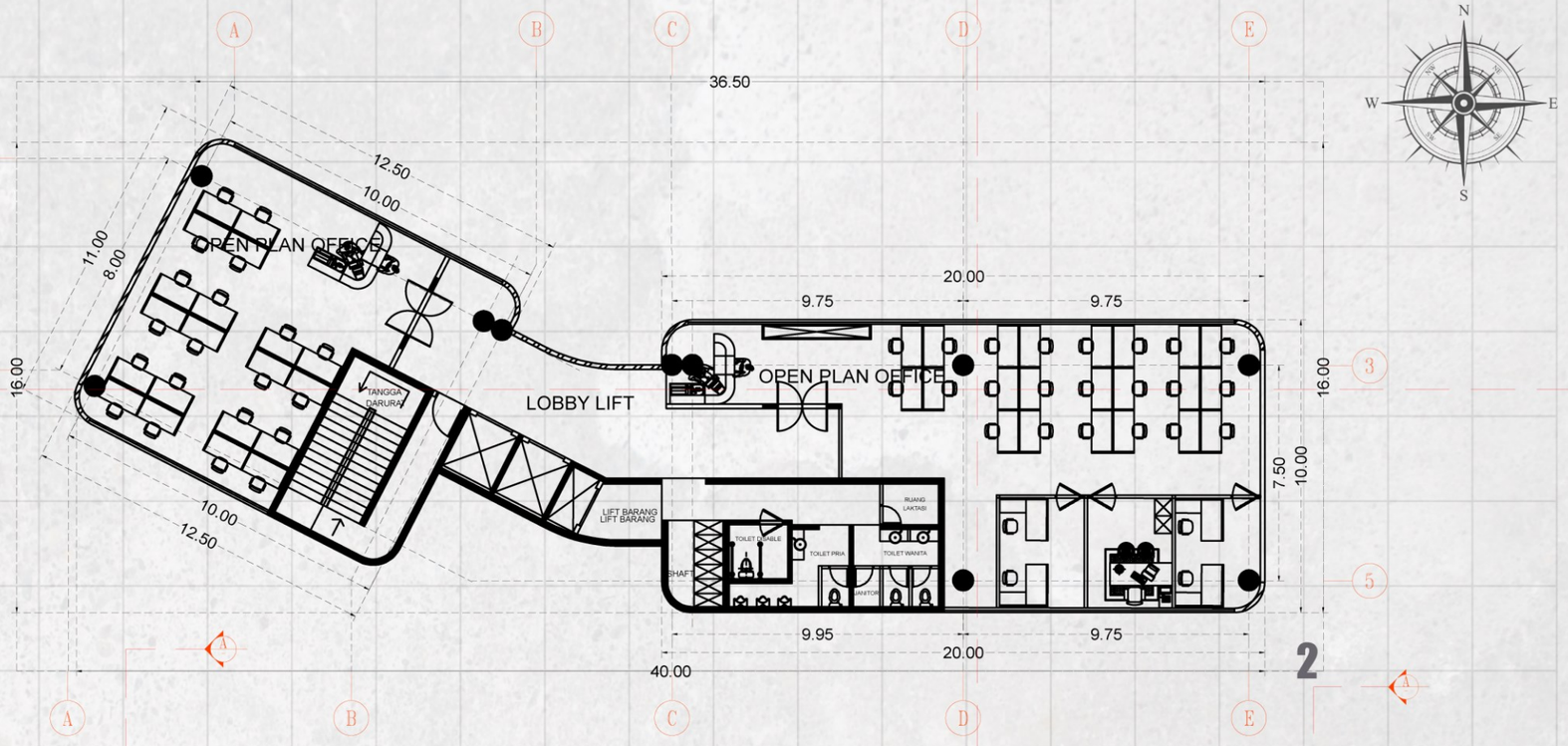
DENAH
LANTAI GROUND
LANTAI 1
LANTAI 2

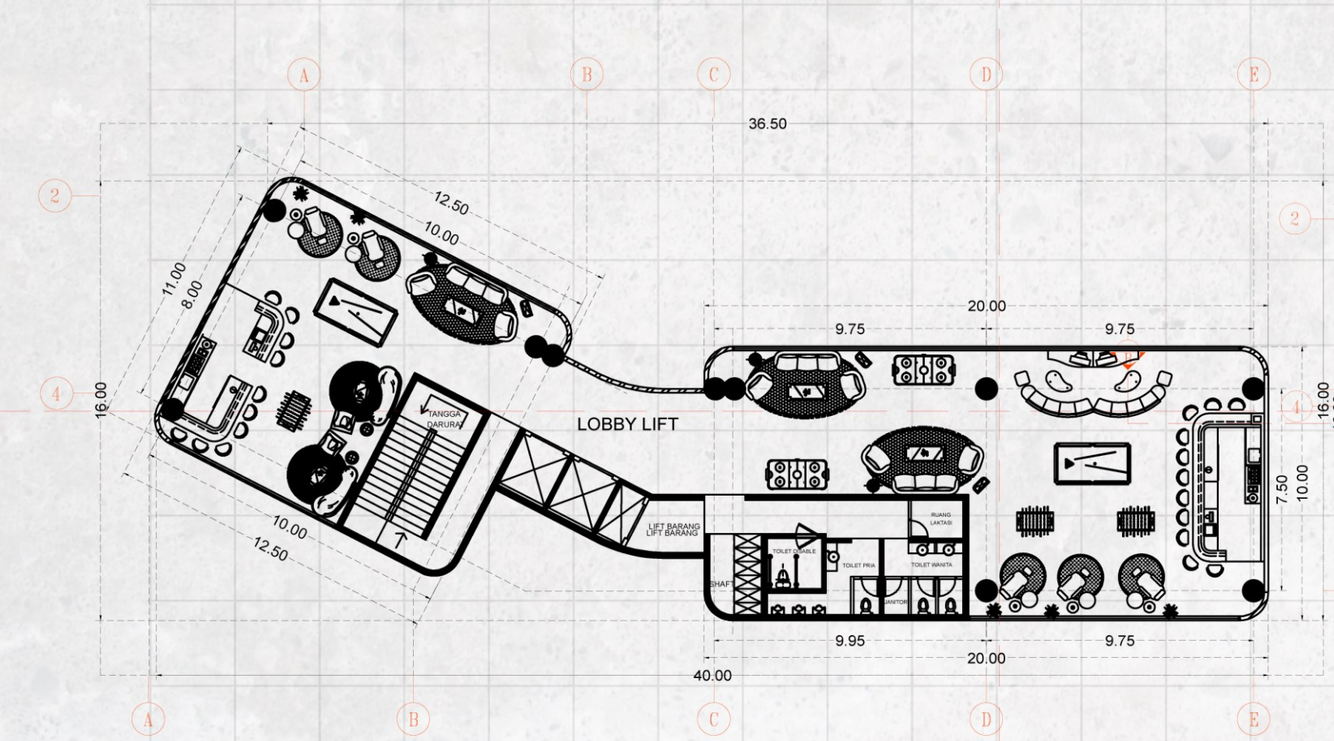


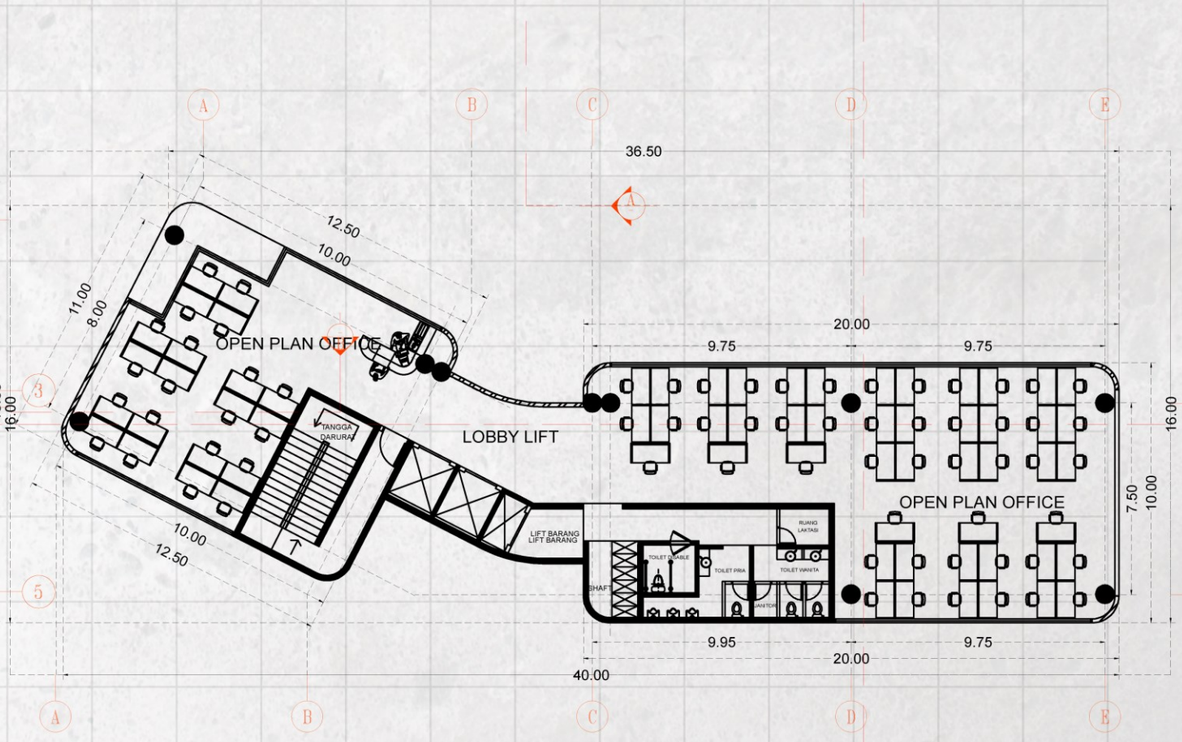




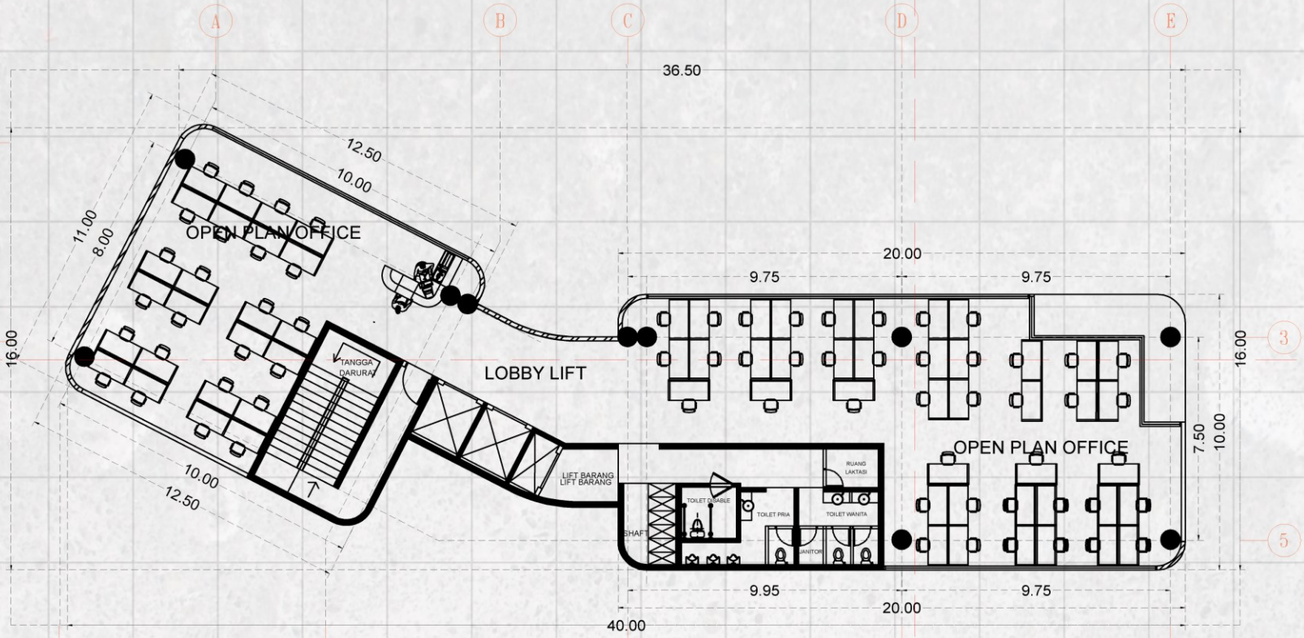
DENAH
TYPICAL LANTAI 3-4,6,9
LANTAI 7
LANTAI 5

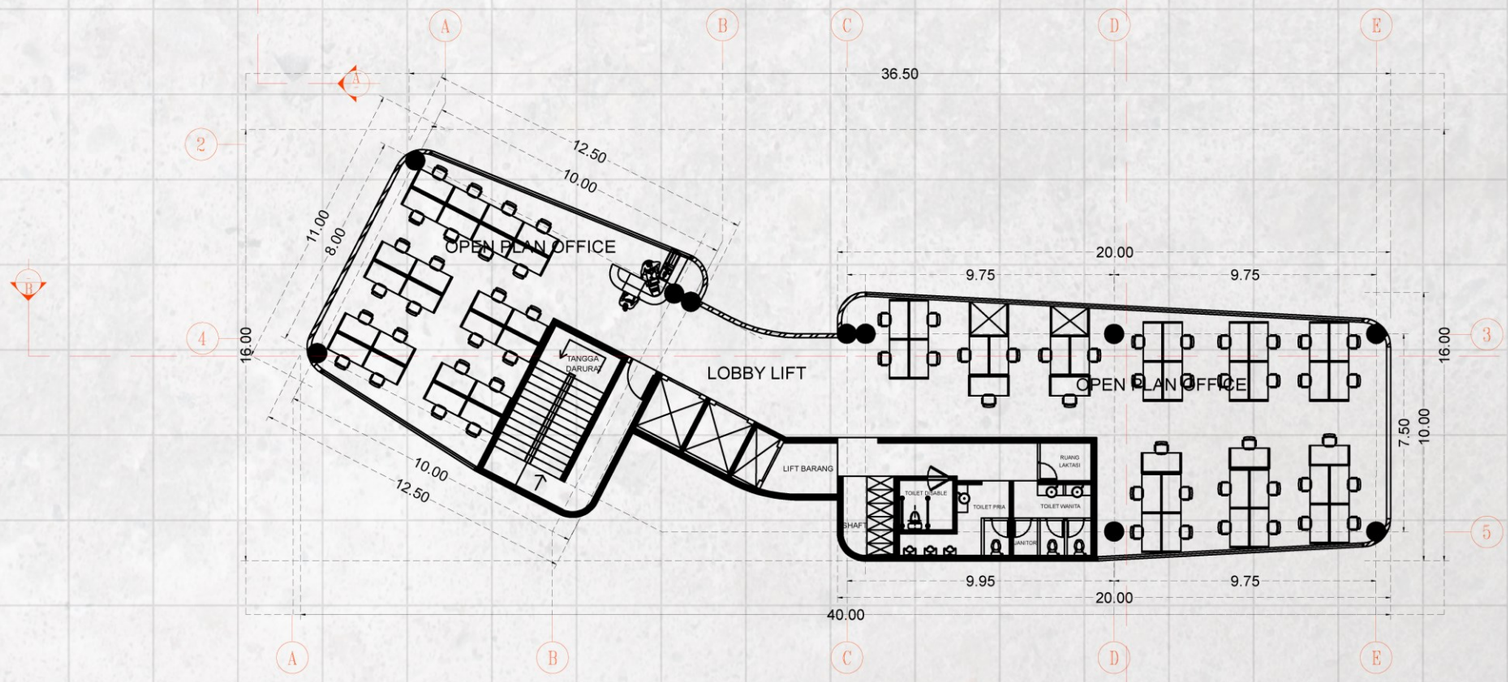


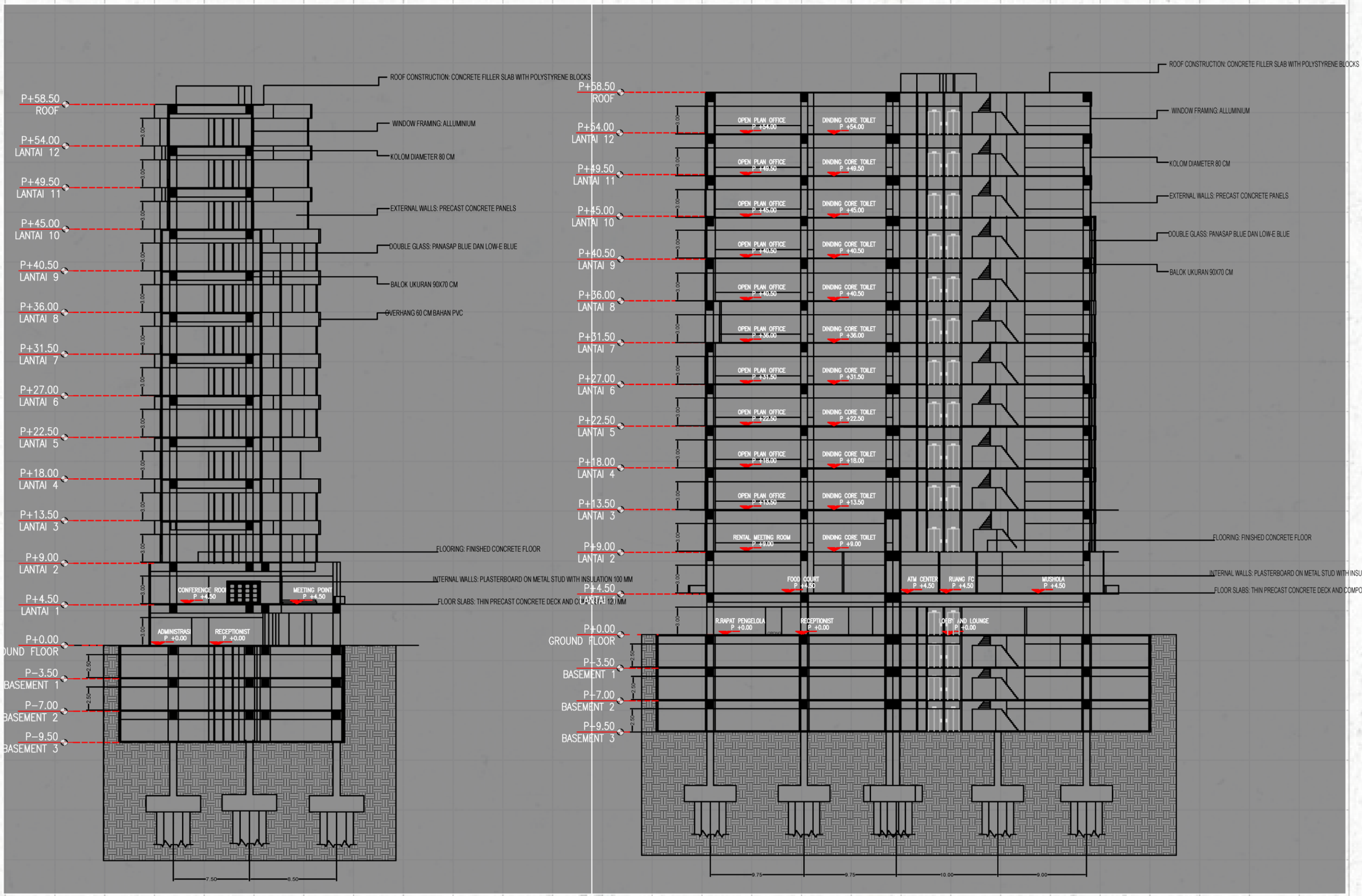




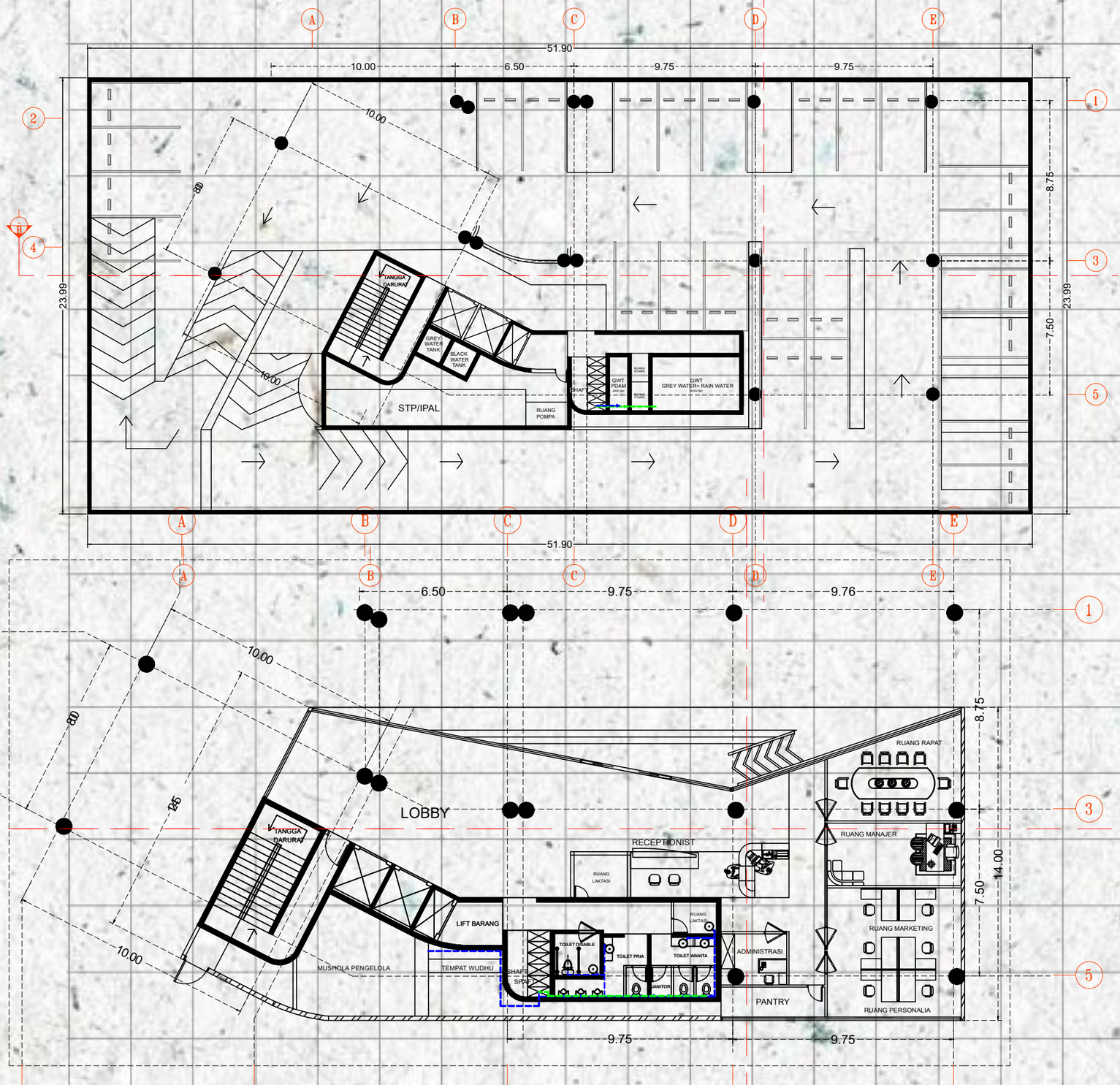
DENAH
LANTAI 8
TYPICAL LANTAI 10-12

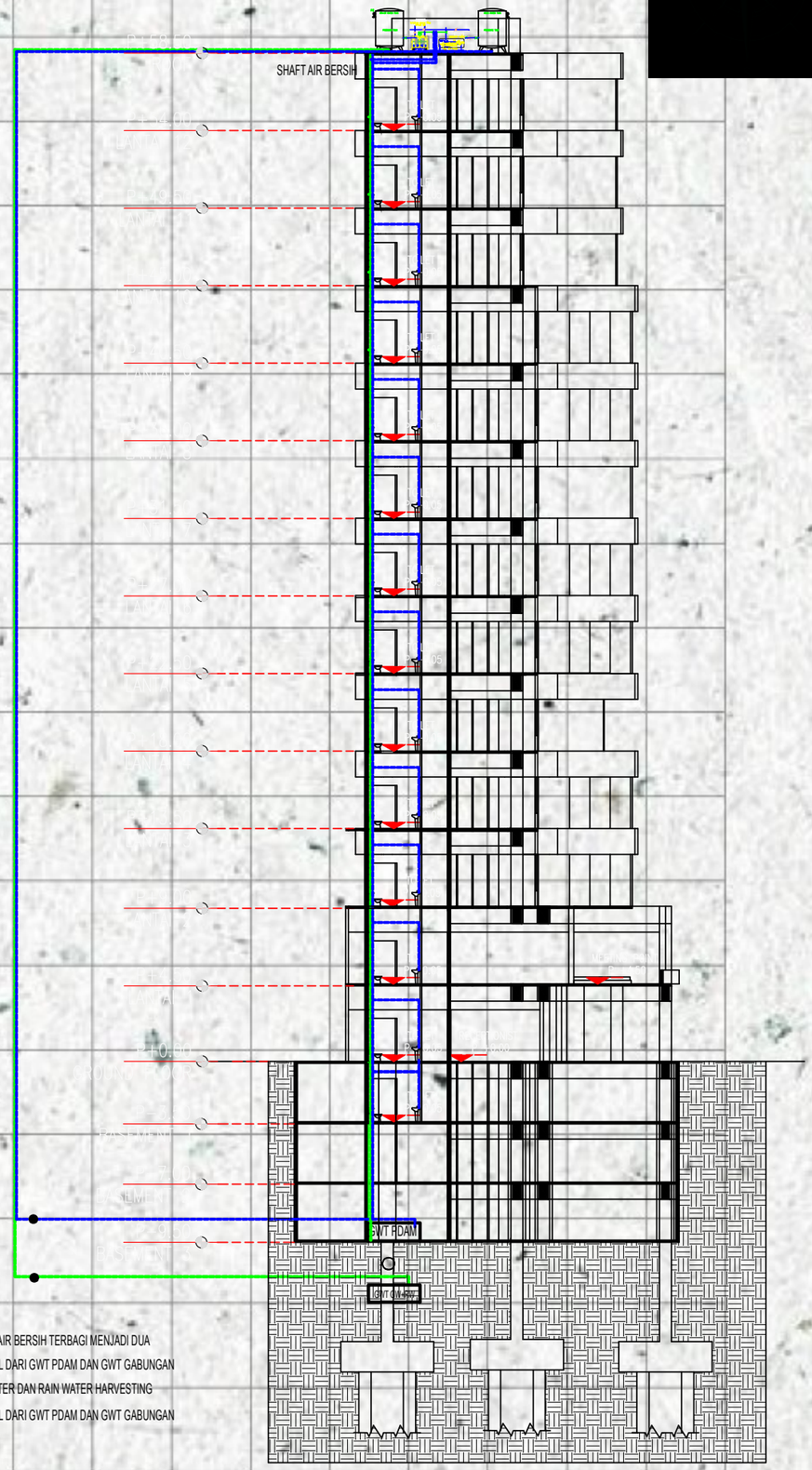





P+58.50
ROOF
P+54.00
LANTAI 12
P+49.50
LANTAI 11
P+45.00
LANTAI 10
P+40.50
LANTAI 9
P+36.00
LANTAI 8
P+31.50
LANTAI 7
P+27.00
LANTAI 6
P+22.50
LANTAI 5
P+18.00
LANTAI 4
P+13.50
LANTAI 3
P+9.00
LANTAI 2
P+4.50
LANTAI 1
P+0.00
GROUND FLOOR
P-3.50
BASEMENT 1
P-7.00
BASEMENT 2
P-9.50
BASEMENT 3
ROOF CONSTRUCTION: CONCRETE FILLER SLAB WITH POLYSTYRENE BLOCKS
WINDOW FRAMING: ALLUMINIUM
KOLOM DIAMETER 80 CM
EXTERNAL WALLS: PRECAST CONCRETE PANELS
DOUBLE GLASS: PANASAP BLUE DAN LOW-E BLUE
BALOK UKURAN 90X70 CM
OVERHANG 60 CM BAHAN PVC
FLOORING: FINISHED CONCRETE FLOOR
INTERNAL WALLS: PLASTERBOARD ON METAL STUD WITH INSULATION 100 MM
FLOOR SLABS: THIN PRECAST CONCRETE DECK AND COMPOSITE 120 MM
OPEN PLAN OFFICE
DINDING CORE TOILET
RENTAL MEETING ROOM
FOOD COURT
ATM CENTER
RUANG FC
MUSHOLA
R.RAPAT PENGELOLA
RECEPTIONIST
LOBBY AND LOUNGE
CONFERENCE ROOM
MEETING POINT
ADMINISTRASI
3.00
2.50
7.50
8.50
9.75
9.75
10.00
9.00

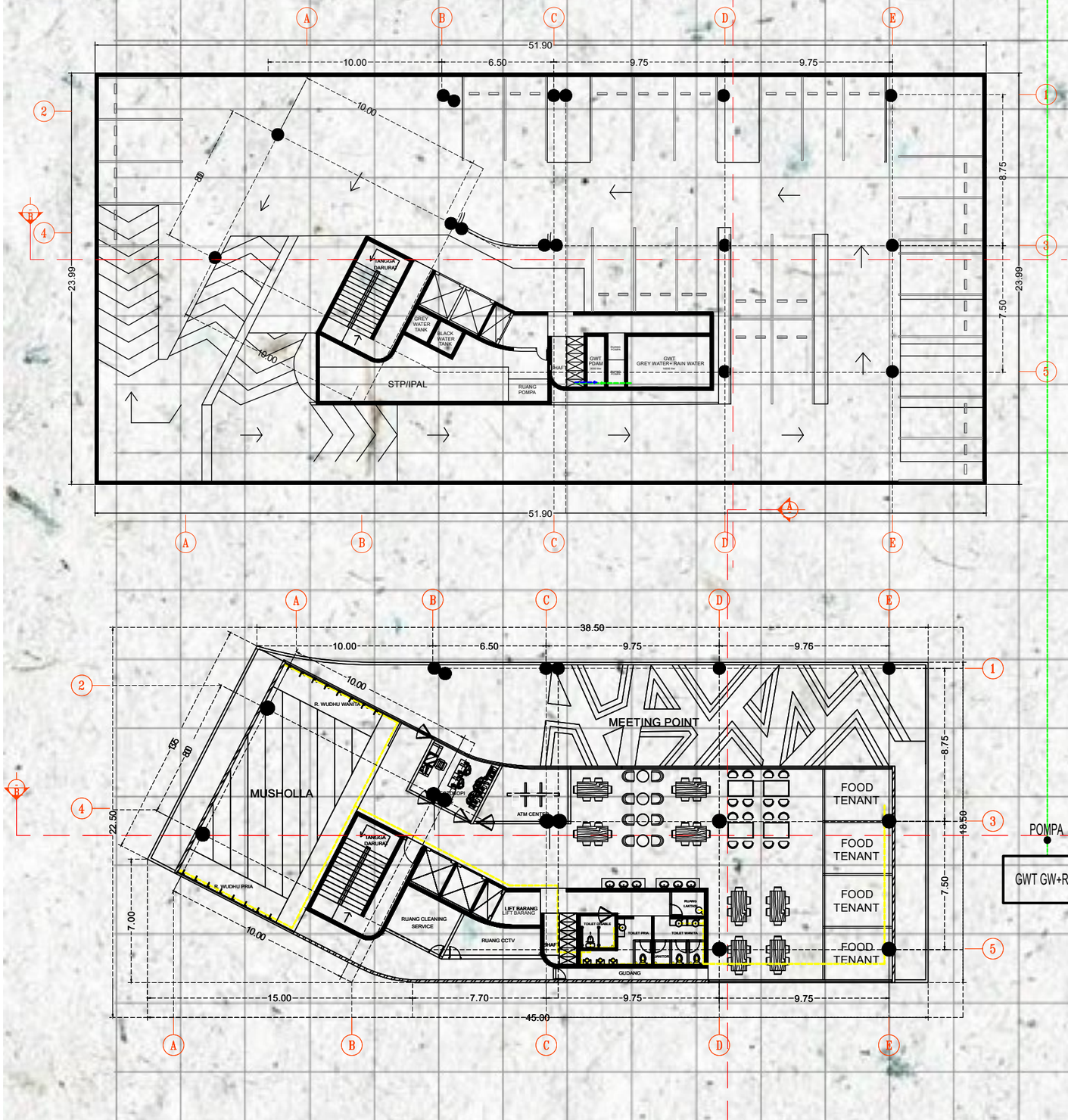
UTILITAS AIR BERSIH

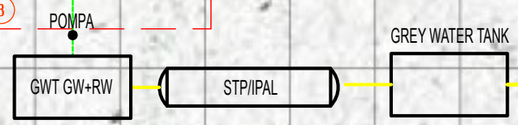




SUMBER AIR BERSIH TERBAGI MENJADI DUA
YAITU BERASAL DARI GWT PDAM DAN GWT GABUNGAN
GREY WATER DAN RAIN WATER HARVESTING
YAITU BERASAL DARI GWT PDAM DAN GWT GABUNGAN

UTILITAS GREY WATER

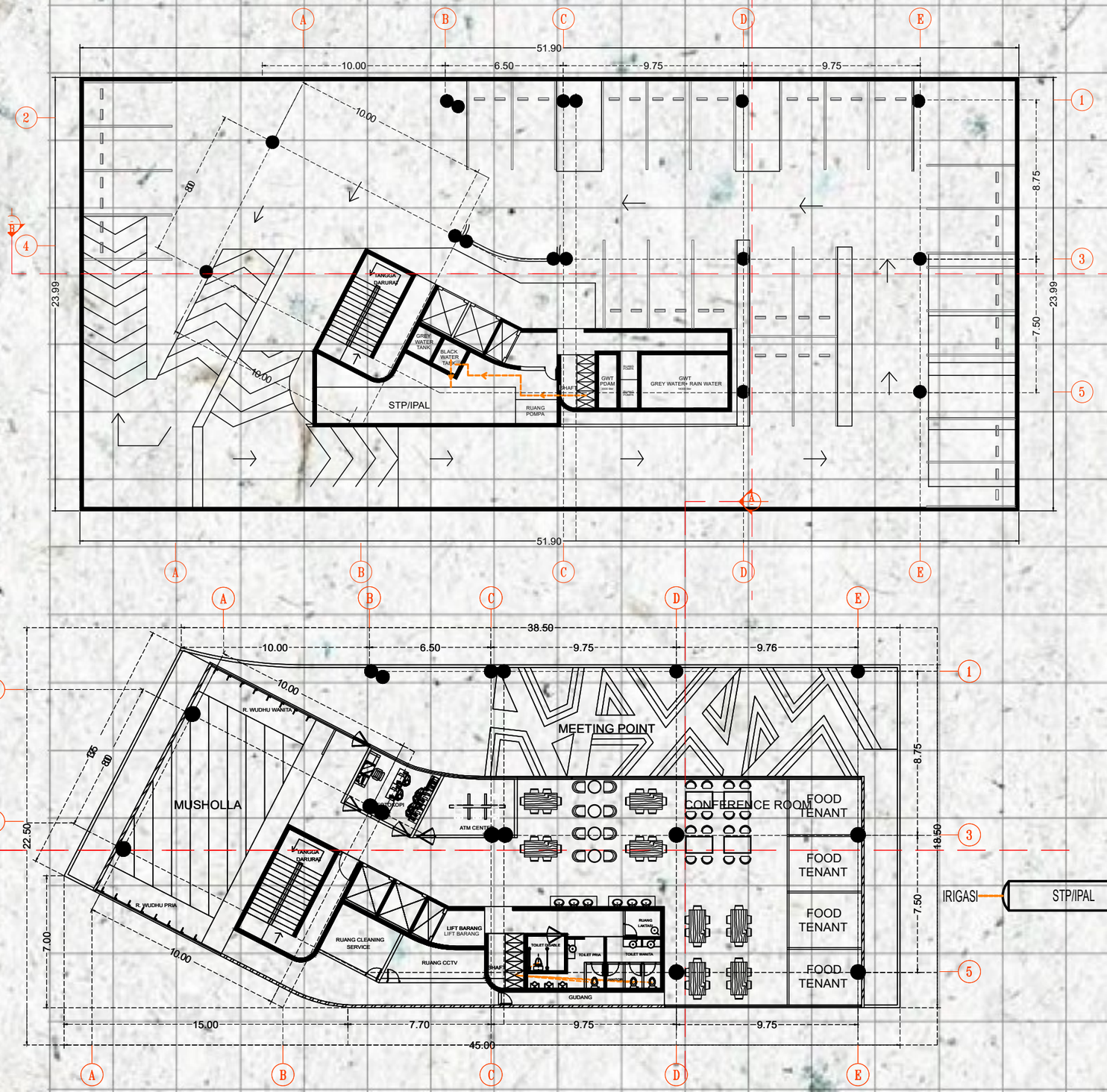


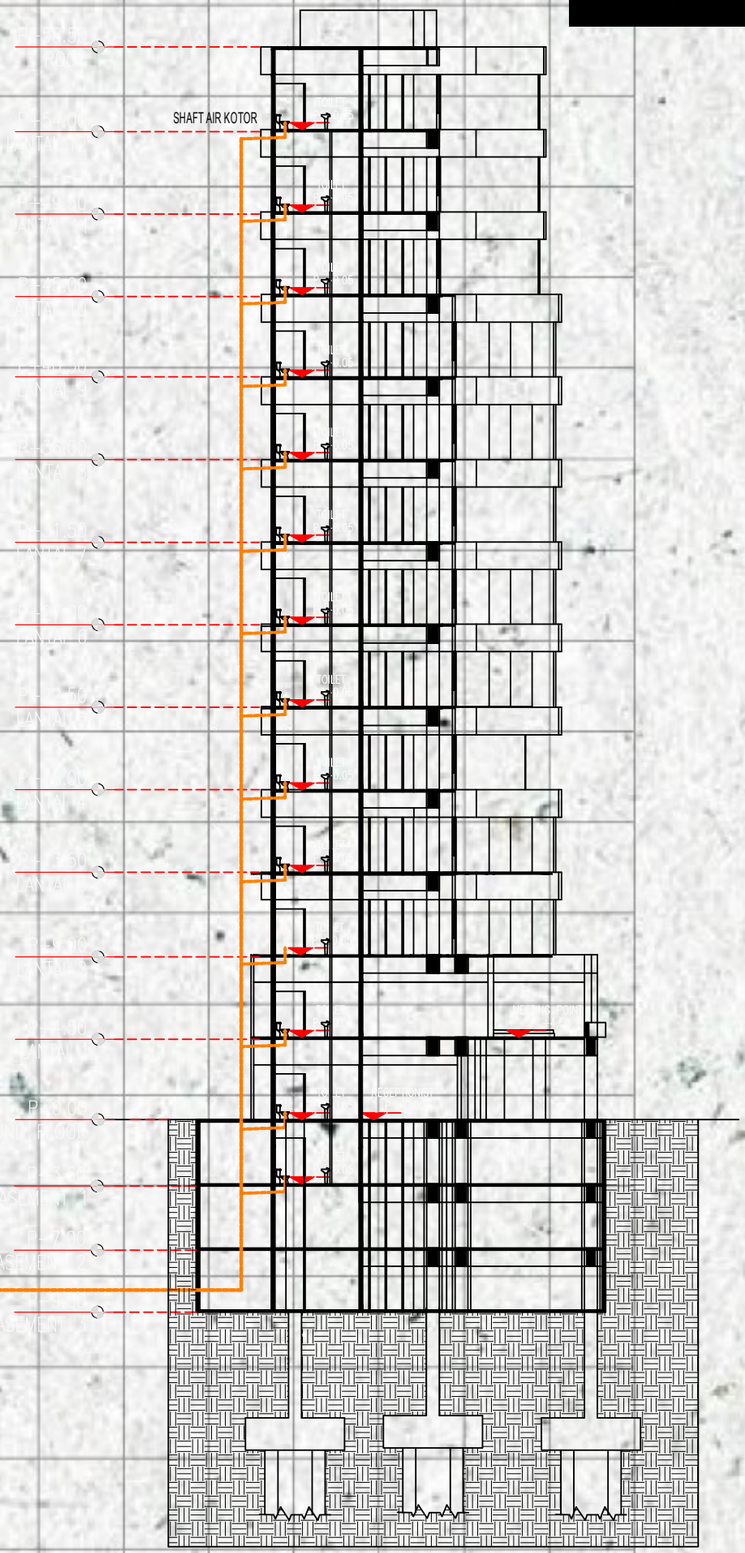


MASUK KE WATER TREATMENT LALU DIPOMPA MENUJU GWT GABUNGAN RAIN WATER DAN GREY WATER.

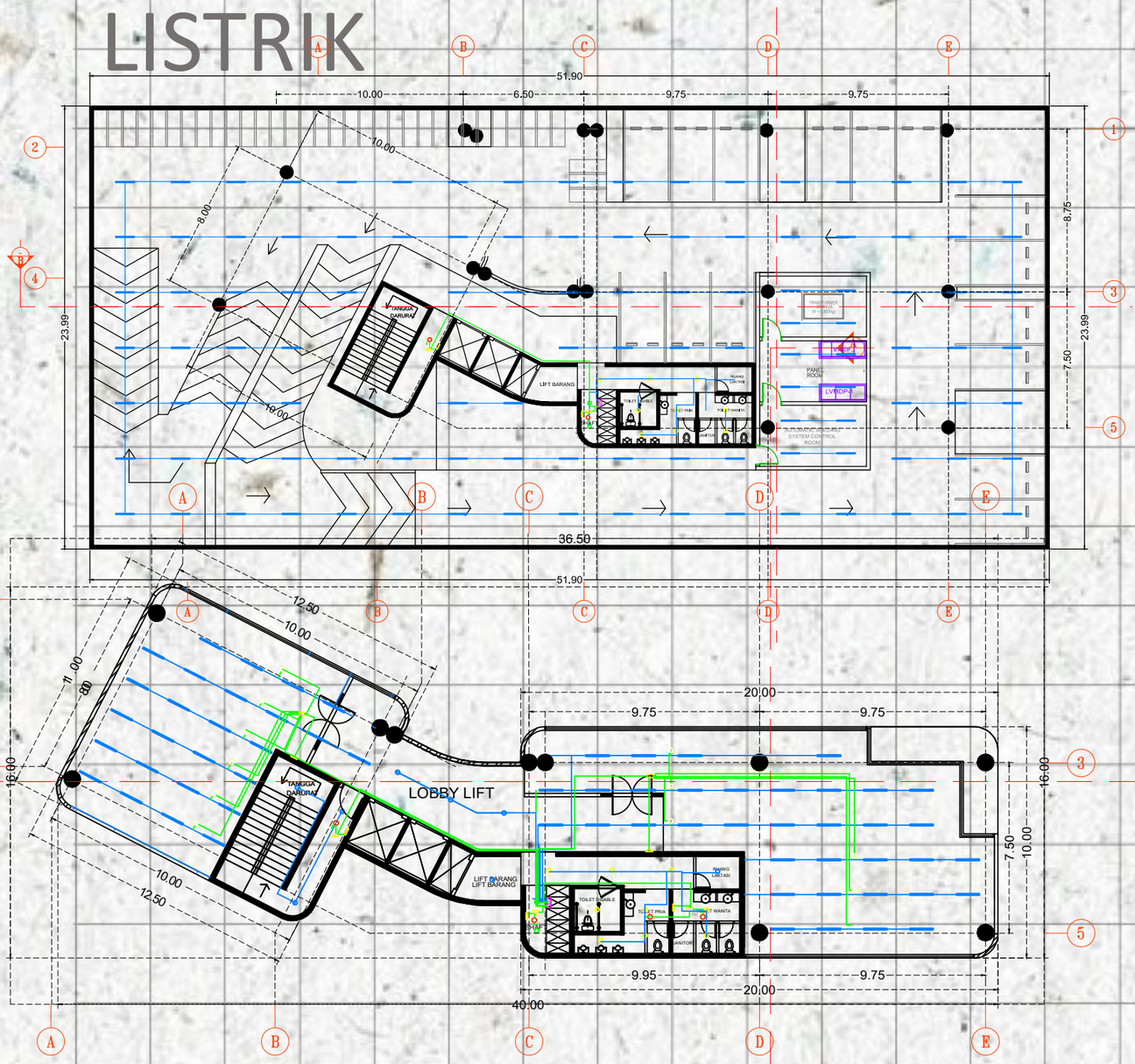
SELANJUTNYA HASIL DARI DAUR ULANG DIPOMPA MENUJU GREY WATER TANK DAN DIALIRKAN MENGGUNAKAN SISTEM DOWN FEET. UNTUK KEPERLUAN FLUSH TOILET

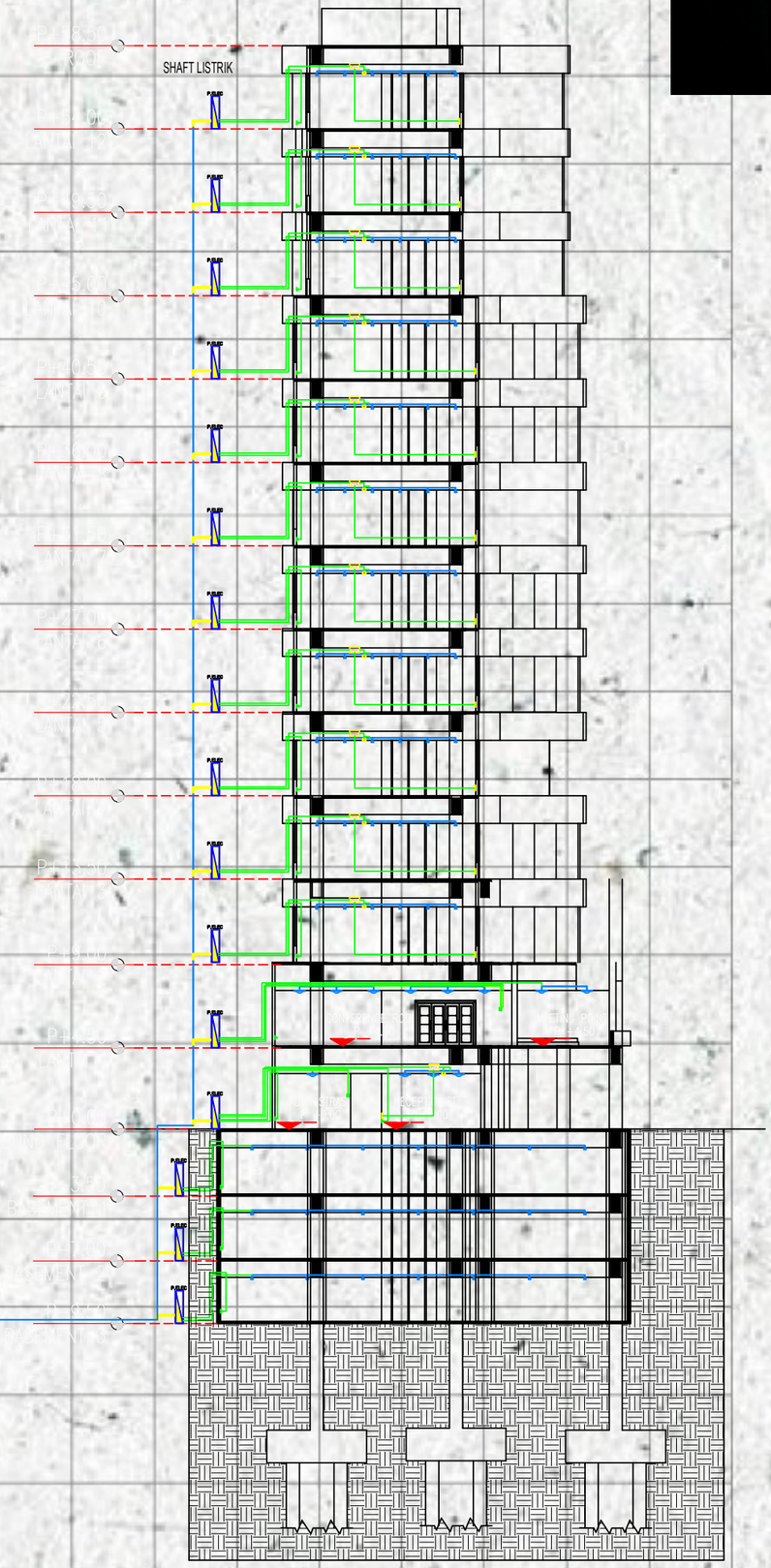
UTILITAS BLACK WATER

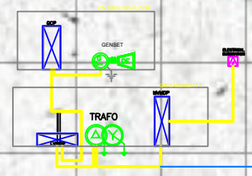




UTILITAS LAMPU DAN LISTRIK

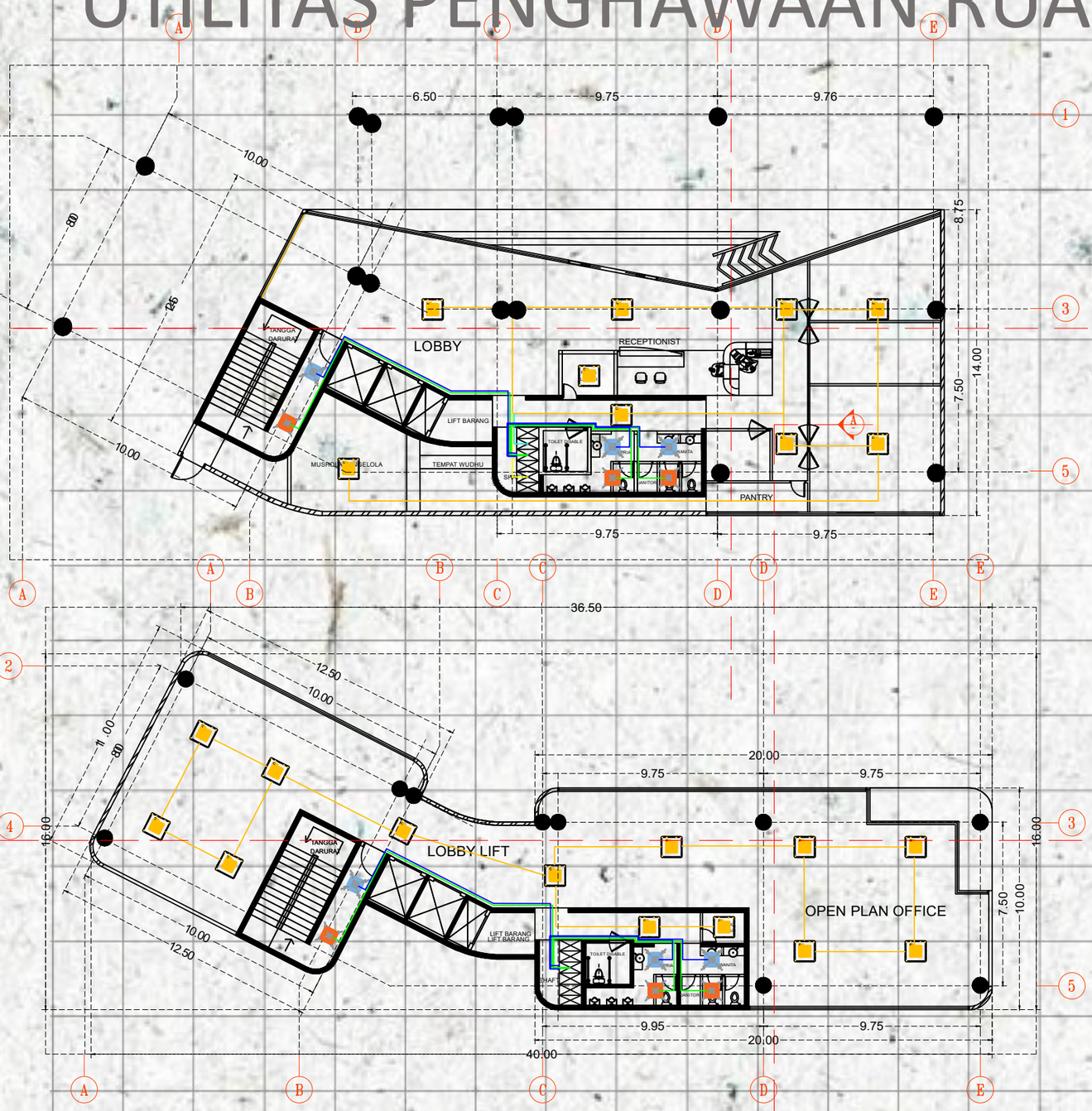




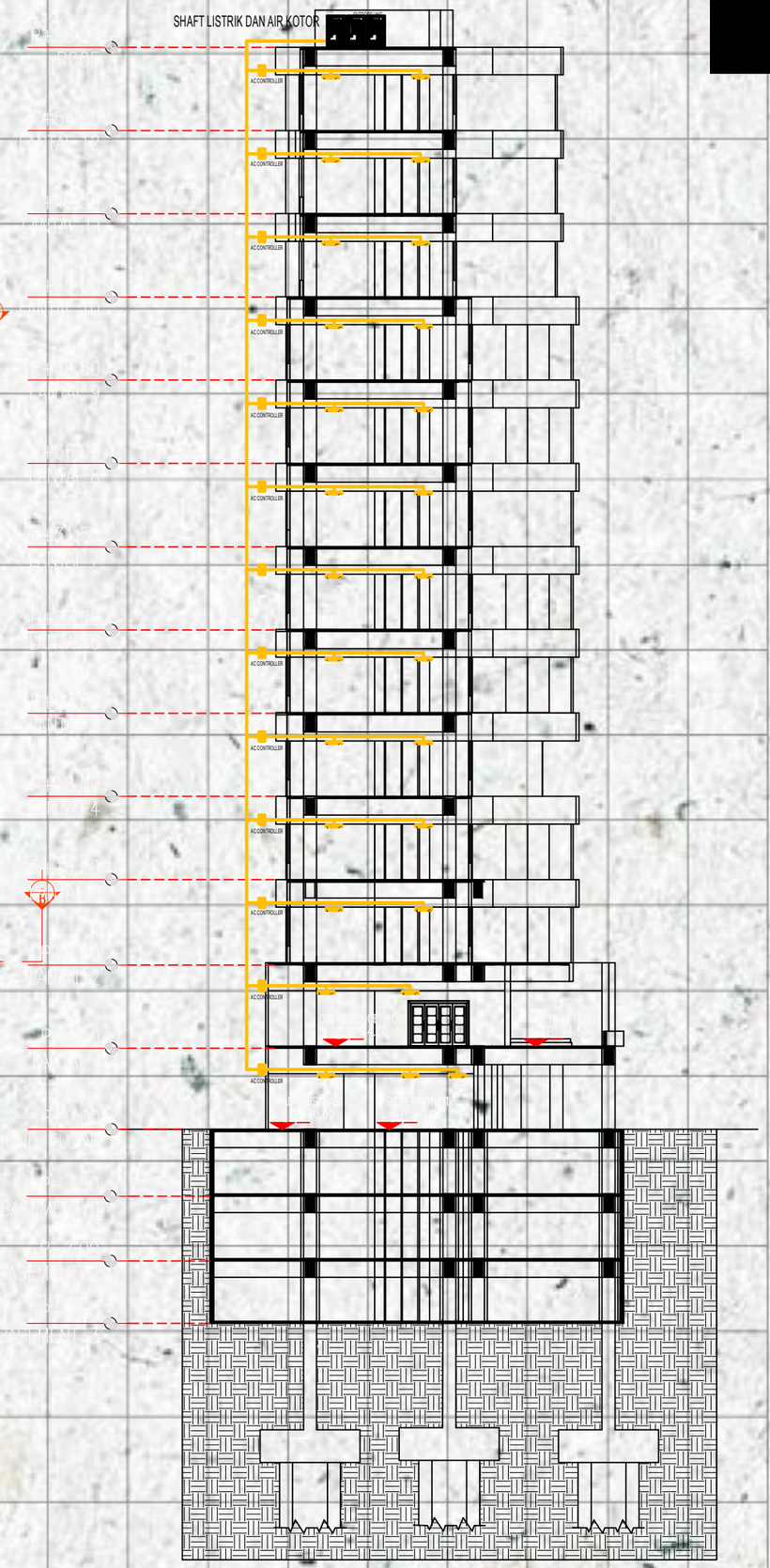


	KABEL LISTRIK		LAMPU DOWNLIGHT 40 WATT
	LAMPU TL 40 WATT		PIPA AIR KOTOR/ BLACK WATER
	LAMPU DOWNLIGHT 20 WATT		SAKLAR
	PANEL ELEKTRIKAL		PANEL CONTROL CENTER
	DAYLIGHT SENSOR		SENSOR WALL CONTROL
	OCCUPANCY CENCOR		KABEL SENSOR

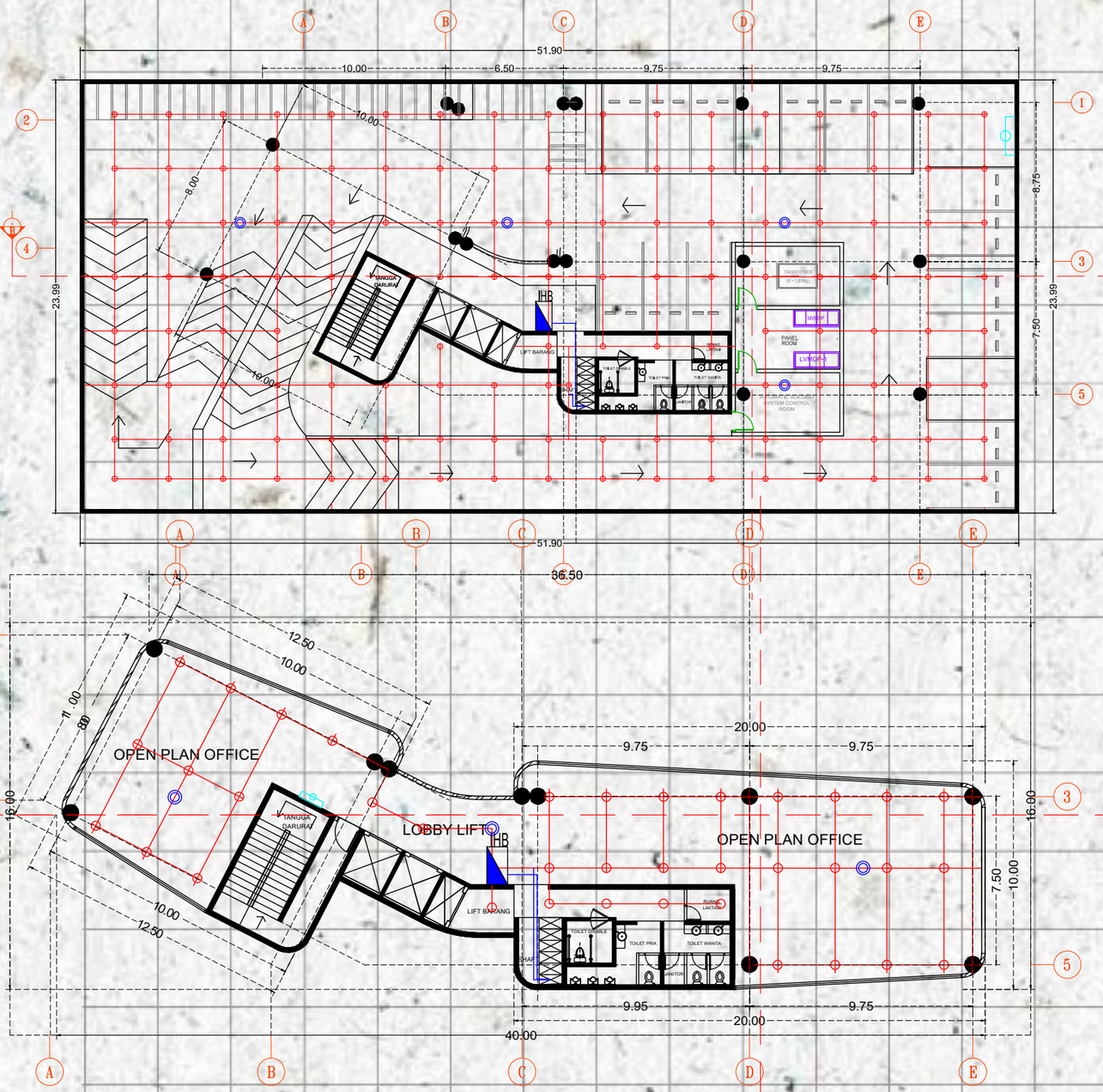
UTILITAS PENGHAWAAN RUANG



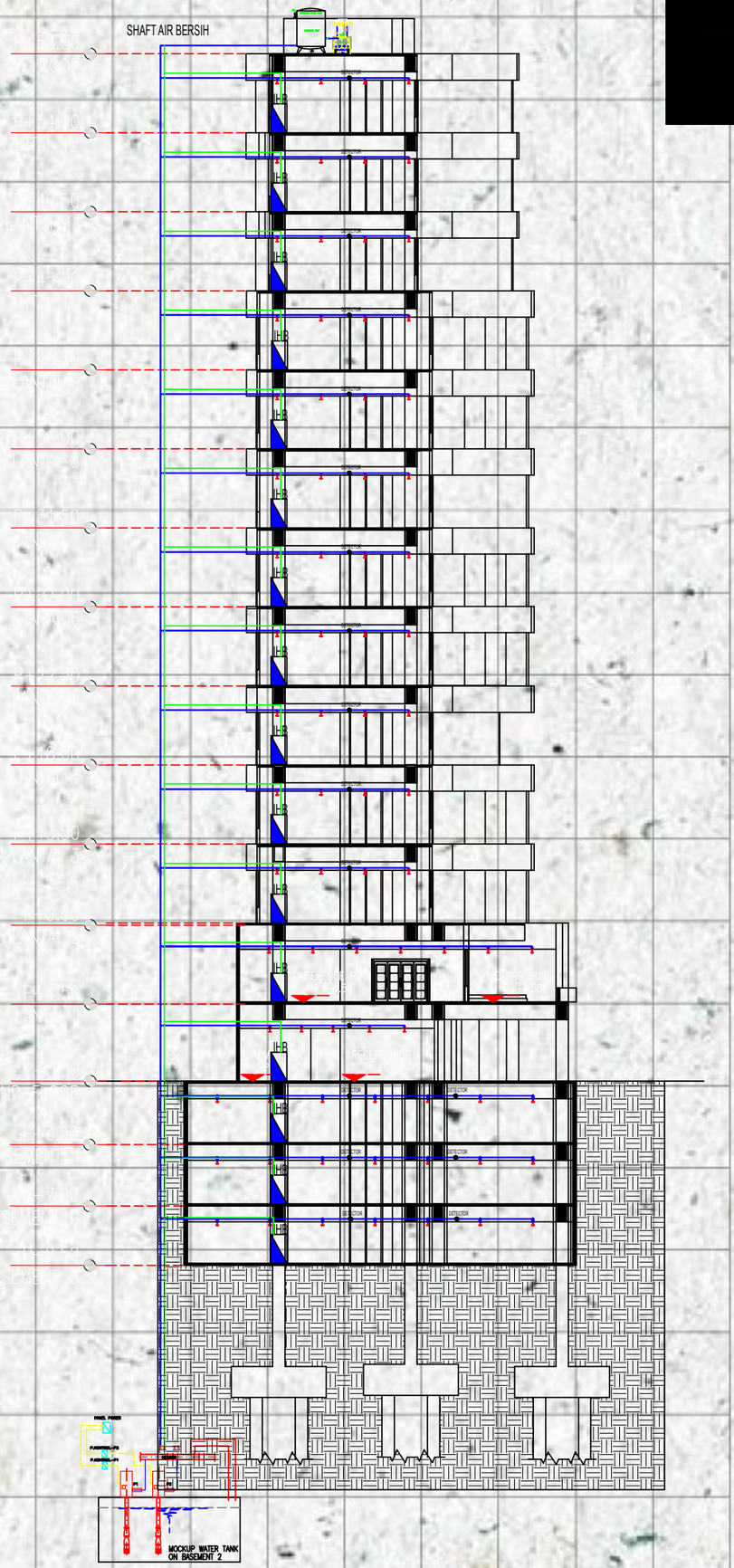
	DAIKIN VRV CEILLING CASSETTE		EXHAUST FAN
	PIPA CEILING CASSETTE		BLOWER FAN
	PIPA MENUJU SHAFT AIR KOTOR		PIPA BLOWER
	PIPA DARI SHAFT LISTRIK		PIPA EXHAUST



UTILITAS KEBAKARAN



○	SPRINKLER	IHB	INDOOR HYDRANT BOX
◎	FIRE DETECTORE	———	PIPA DARI SHAFT AIR BERSIH
———	PIPA ALIRAN SPRINKLER	⊖	FIRE EXTINGUISHER



UTILITAS CCTV