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CADANGAN KERJA NAIKTARAF ASRAMA BLOK C & D DI KOLEJ MARA KULIM, KEDAH.
UNTUK TETUAN : MAJLIS AMANAH RAKYAT (MARA)



TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL

JURUTERA PROFESIONAL
BERSERIKAP PERAKUAN
ELEKTRIKAL
Ir. MOHD ROESLI B. HASSAN
C111396
MALAYSIA

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PEMILIK BANGUNAN / TANAH:

MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21 JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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JURUTERA PERUNDING/CONSULTANT ENGINEER

RHA

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(692206-V)
(Mechanical & Electrical Consulting Engineers and Energy Manager)
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PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE

ELECTRICAL & MECHANICAL SERVICES

COVER PAGE

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/COV

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadila			FL	Sheet
Approved by	Ir. Mohd Roesli Hassan			RS	No.

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BLOK C

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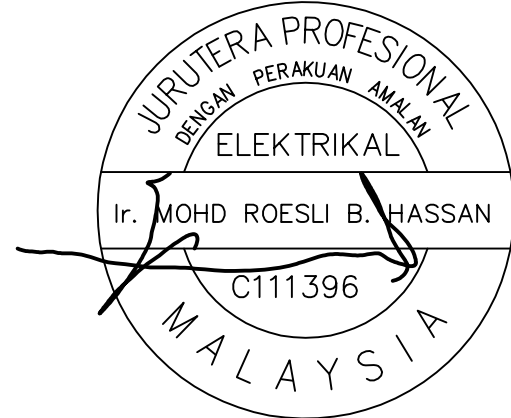
COLD WATER INSTALLATION		
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TENDER DRAWING

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PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL & MECHANICAL SERVICES
LIST OF DRAWING

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

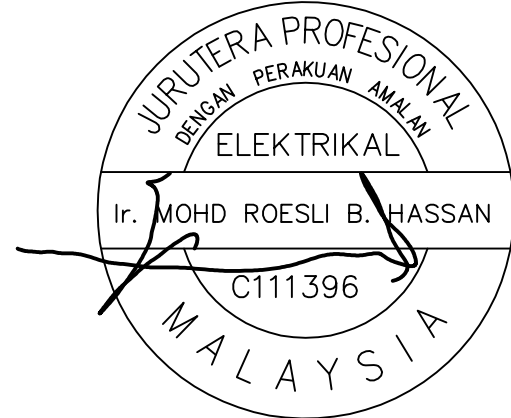
RHA25008/MARA/LOD

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadhlia			FL	Sheet
Approved by	Ir. Mohd Roesli Hassan			RH	No.

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PROJEK/PROJECT

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BLOK C & D KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION

LIGHTING & POWER
GROUND FLOOR PLAN

BLOK C

Date	Rev. no.	Amendment	Initial	Approved

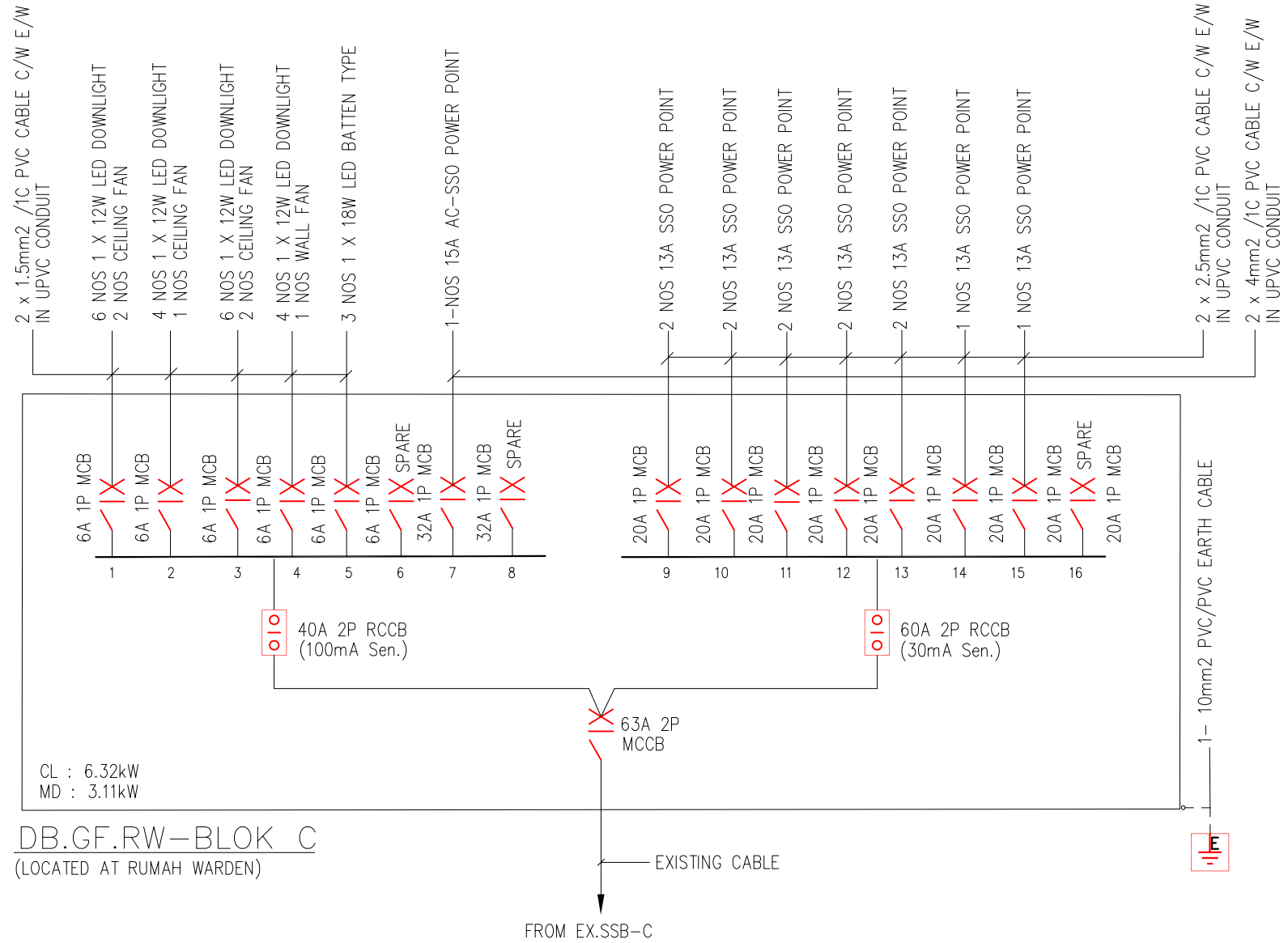
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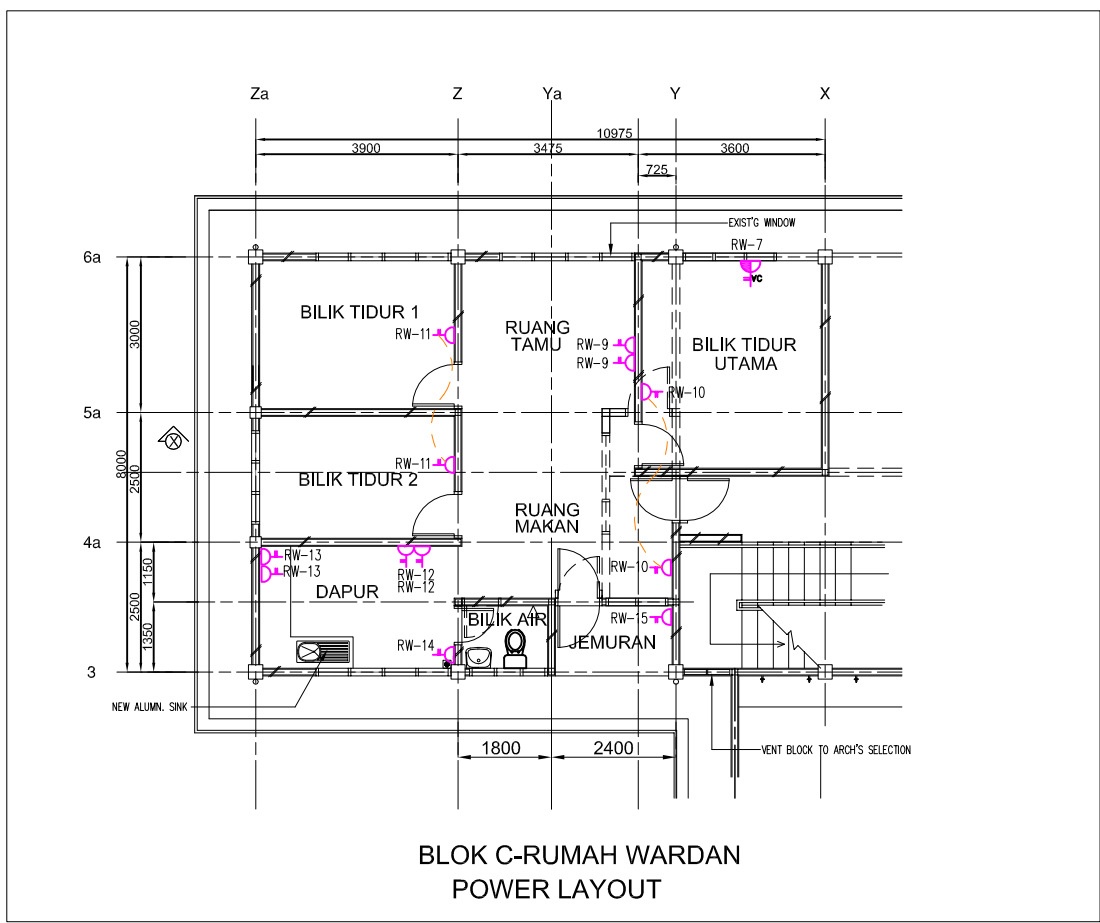
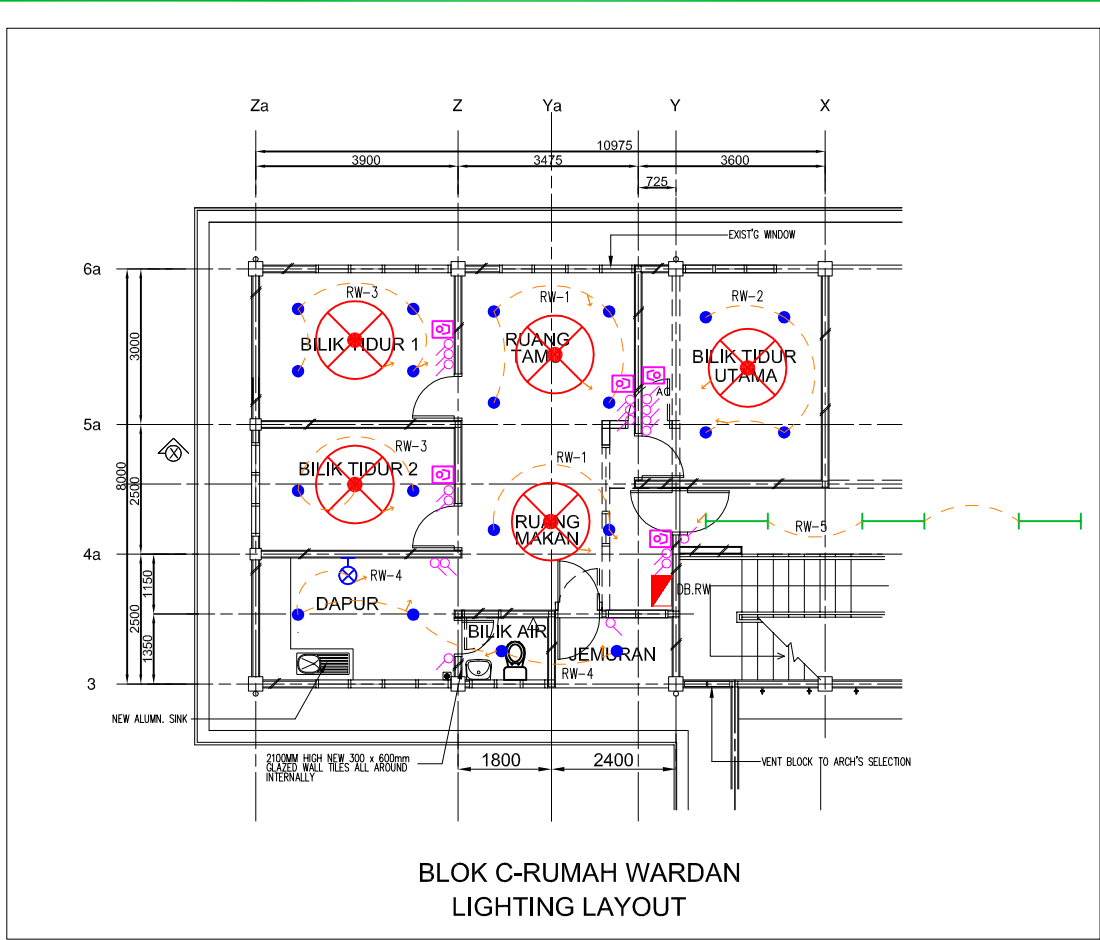
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Drawn by	Siti Amirah				JULY 2026
Designed by	Nur Fadila				Sheet
Approved by	Ir. Mohd Roesli Hassan				No.

LEGEND

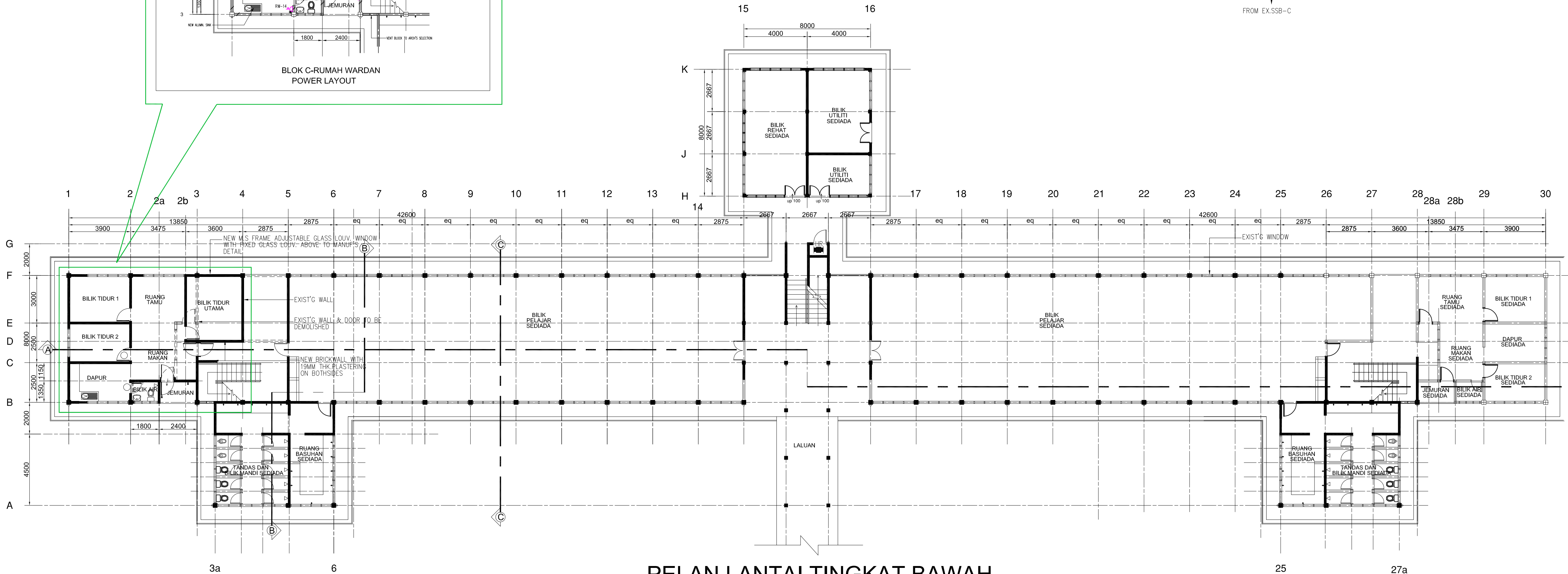
ELECTRICAL SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	1 x 18W T8 LED TUBE SURFACE MOUNTED BARE CHANNEL		13A SWITCH SOCKET OUTLET (AT 1450mm AFFL)
	12W LED DOWNLIGHT SURFACE MOUNTED		15A SWITCH SOCKET OUTLET FOR AIR-COND (AT HIGH LEVEL)
	1500MM CEILING FAN		Main Switch Board (MSB) / Distribution board (DB)
	400 mm Wall fan fitting c/w hook		5A ONE-WAY SWITCH
	Fan Regulator		20A DOUBLE POLE SWITCH (AIRCOND TYPE)



DB.GF.RW-BLOK C
(LOCATED AT RUMAH WARDEN)



PELAN LANTAI TINGKAT BAWAH



BLOK C

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The seal is circular with the text "JURUTERA PROFESIONAL" at the top, "DENGAN PERAKUAN AMAN" in the middle, "ELEKTRIKAL" below that, and "MALAYSIA" at the bottom. In the center, it reads "Ir. MOHD ROESLI B. HASSAN" and "C111396". There is a signature across the seal.



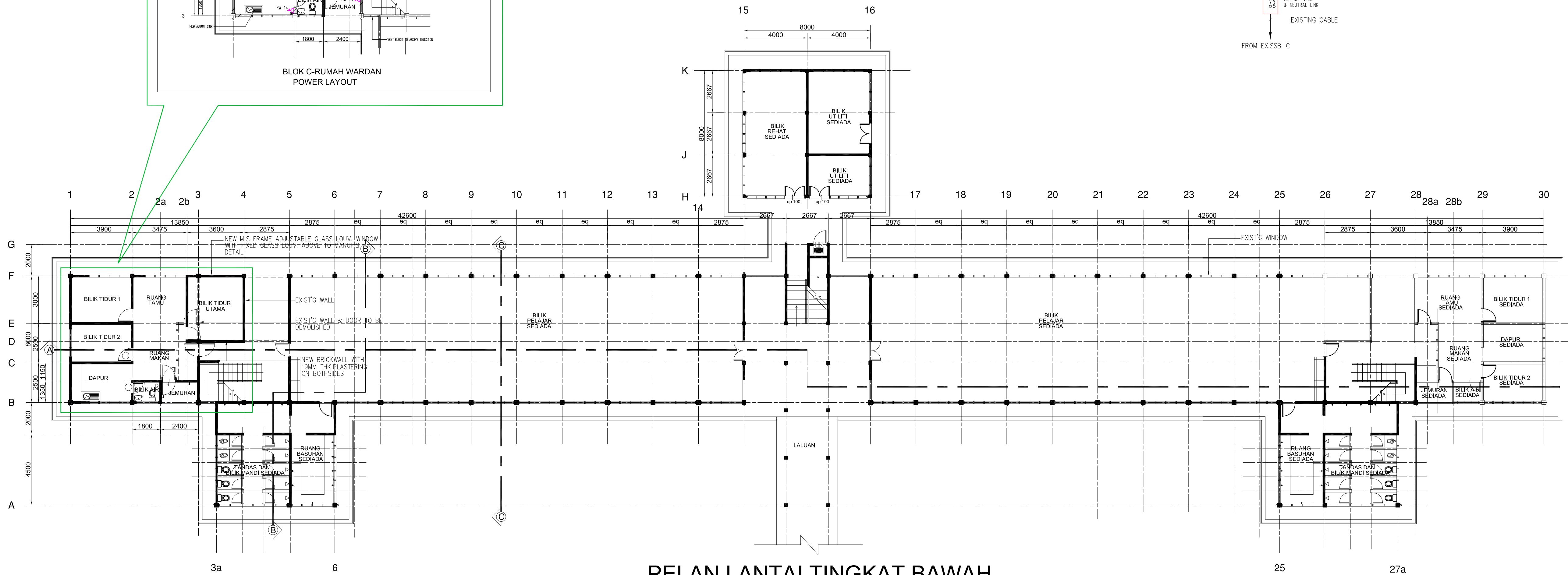
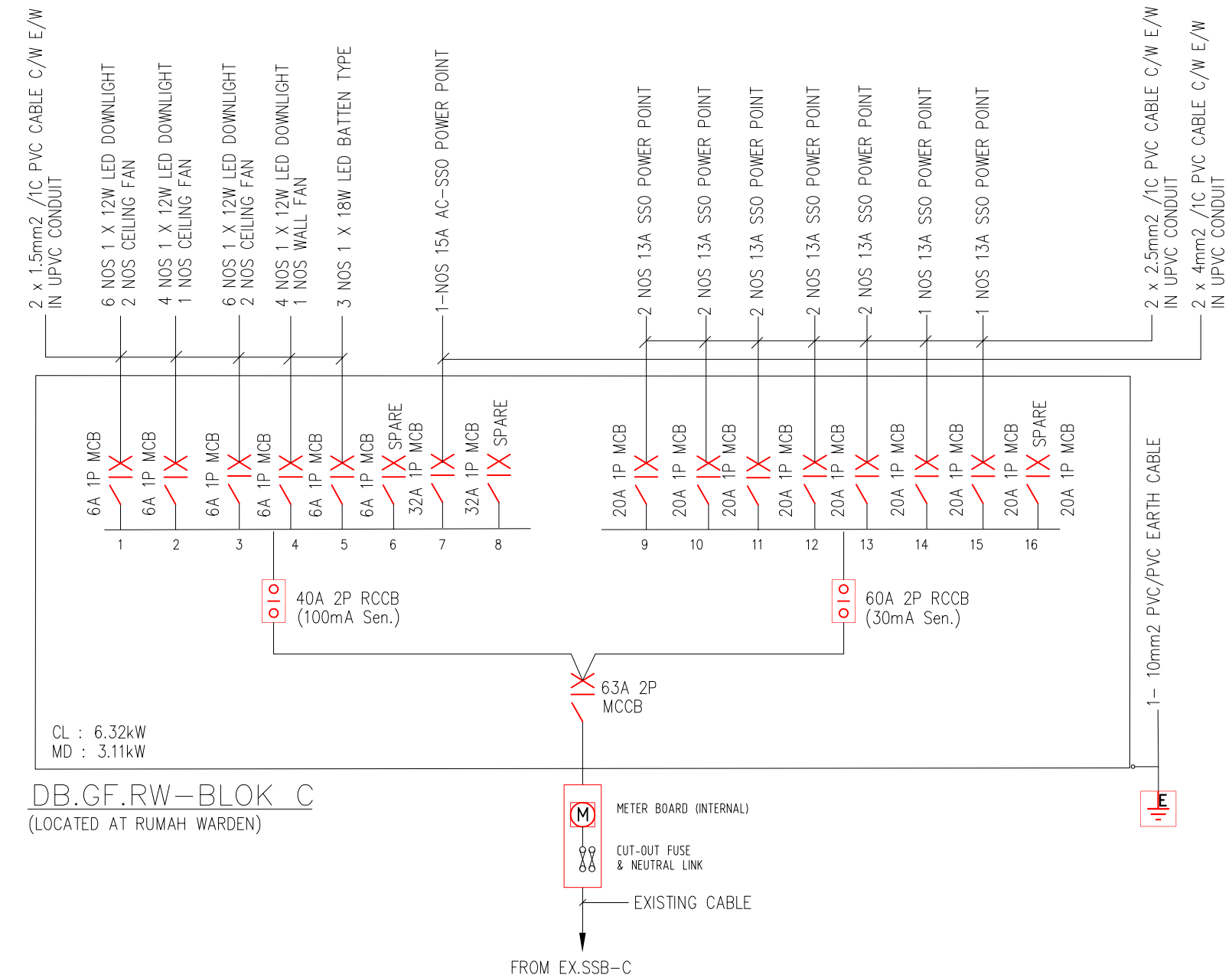
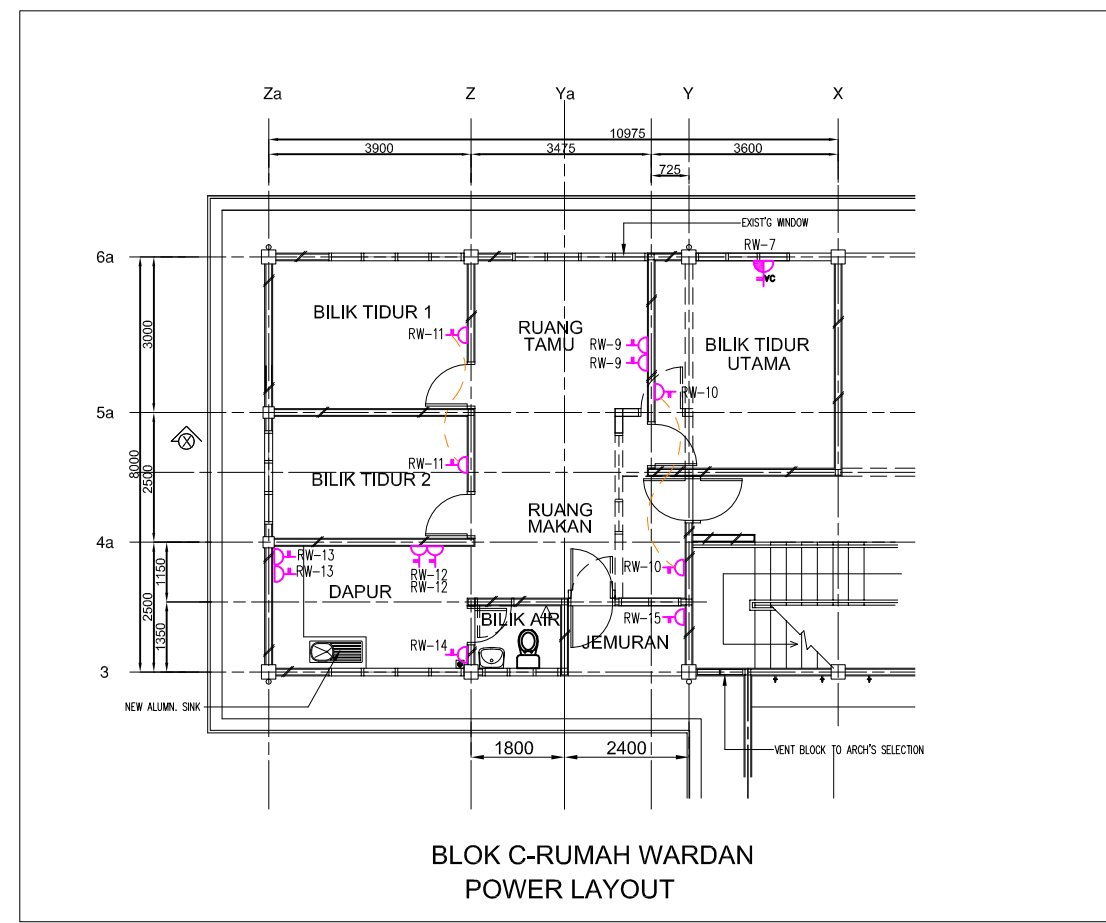
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Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			<i>siti</i>	JULY 2026
Designed by	Nur Fadhila			<i>fida</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.

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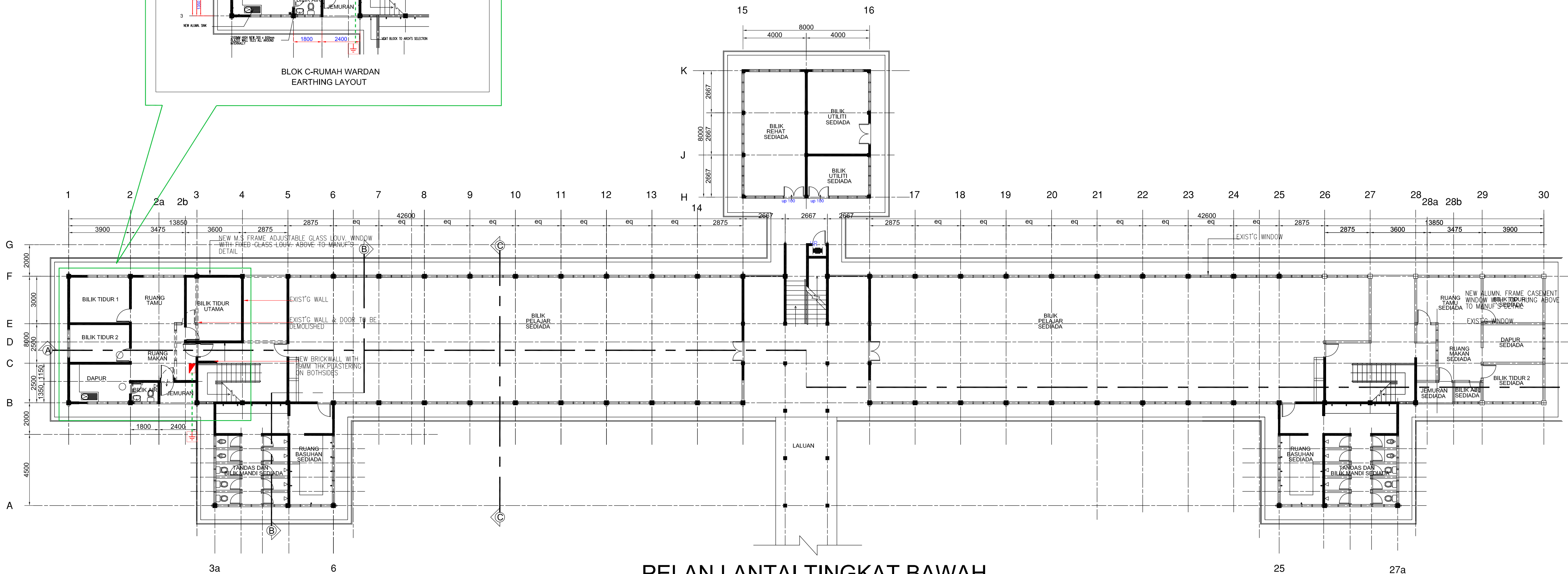
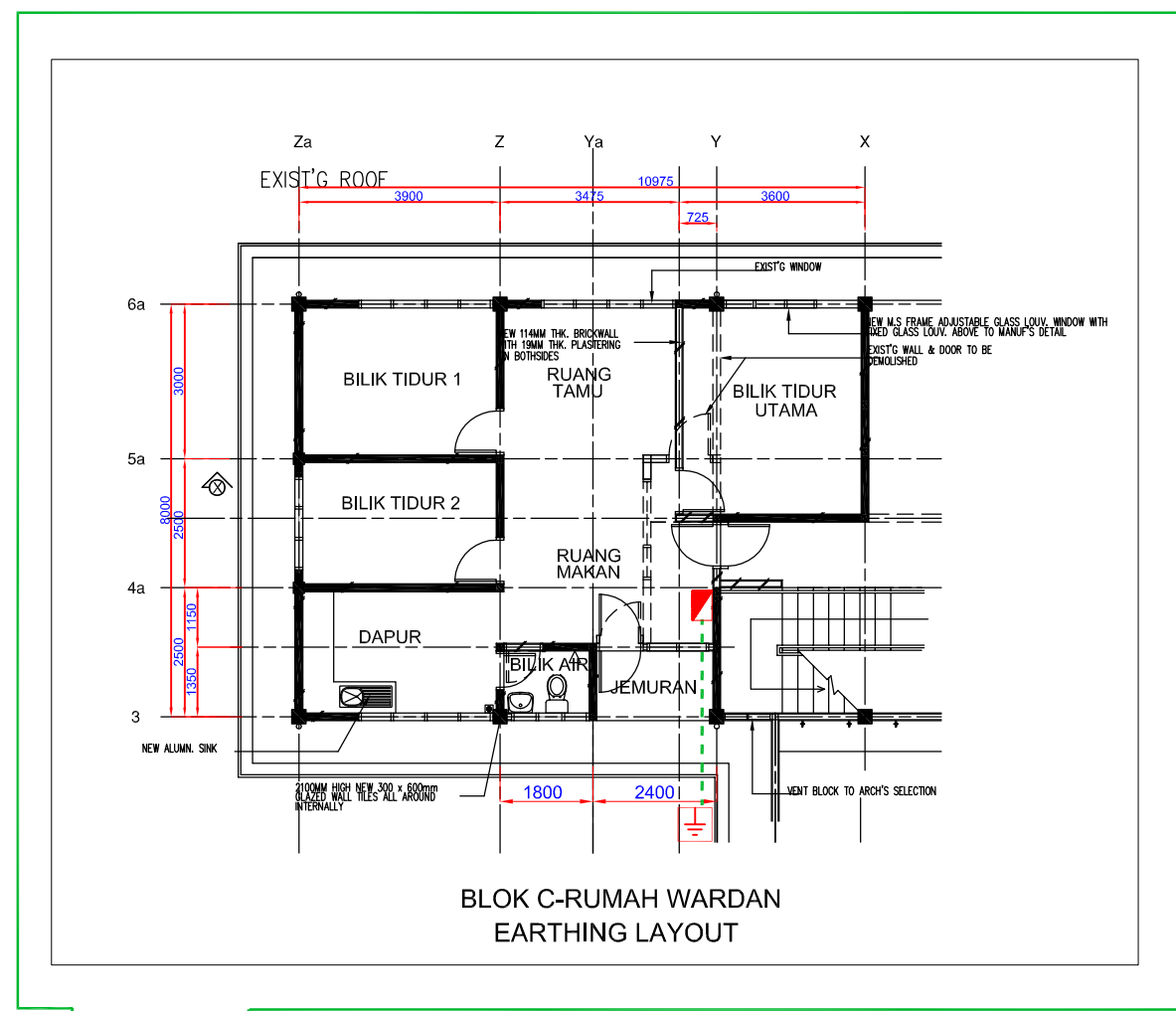
BLOK C

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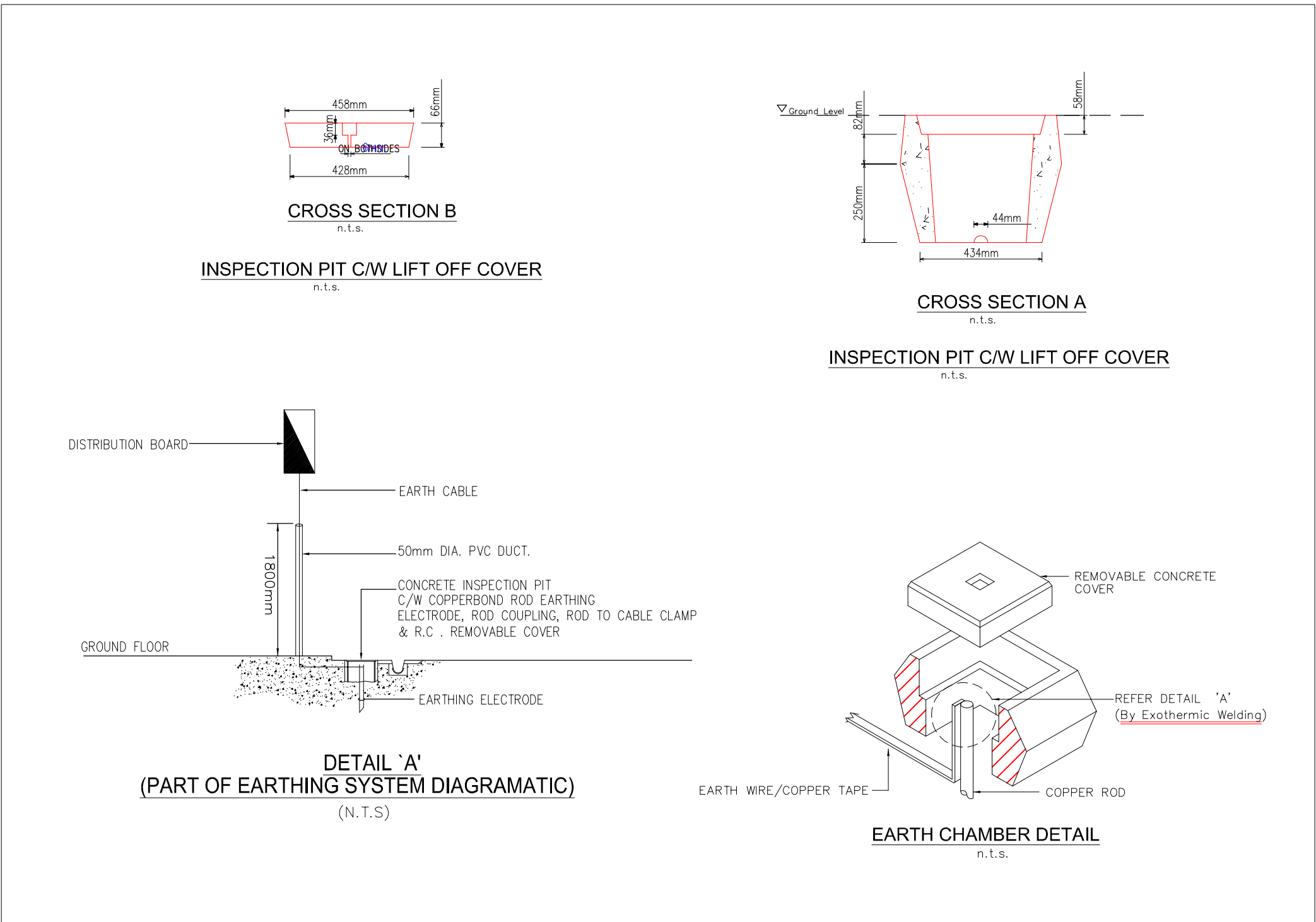
LEGEND

	EARTH WIRE IN uPVC HEAVY DUTY CONDUIT / PVC DUCT
	INSPECTION EARTH CHAMBER BOX C/W COPPER EARTH ROD 345 mm (L) x 345 mm (W) x 210 mm (H)
	DISTRIBUTION BOARD (DB)

3



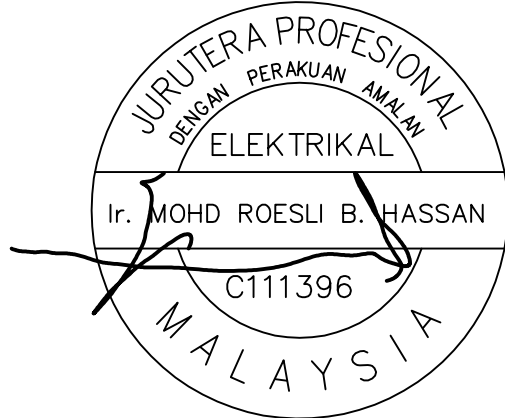
BLOK C



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BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
EARTHING INSTALLATION
GROUND FLOOR PLAN

BLOK C

Date	Rev. no.	Amendment	Initial	Approved

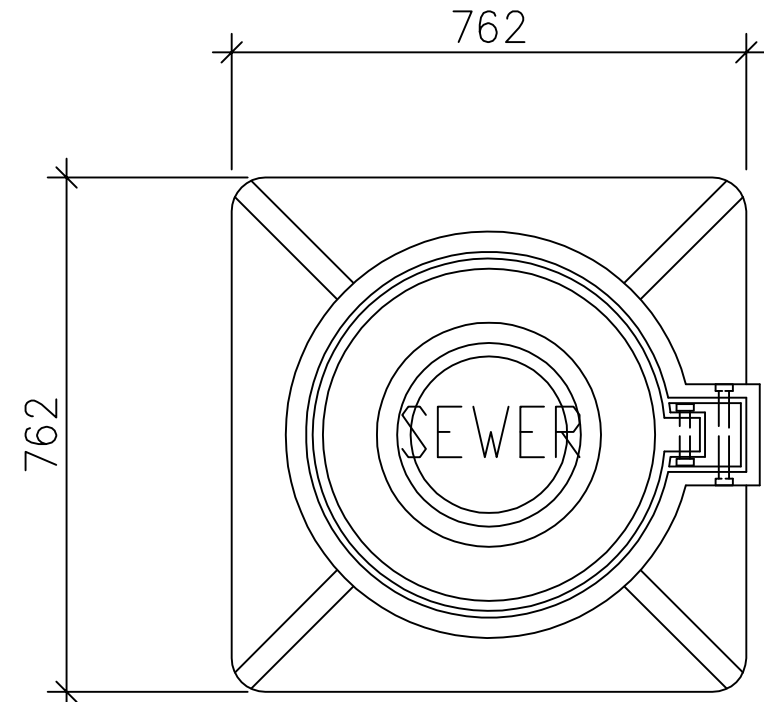
NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK C/E-01

Scale	1:150	Unit	mm	Initial		Date	
Drawn by	Siti Amirah						JULY 2026
Designed by	Nur Fadila						Sheet
Approved by	Ir. Mohd Roesli Hassan						No.

NOTE:

- Maximum allowable trench width to 1 foot above top of pipe is shown in table 1. If the contractor excavates to a greater width than shown in table 1, he may be directed to provide greater strength pipe and / or concrete encasement as approved by engineer. No extra payment will be made for these occurrence.
- Standard bedding is to be used for all pipes unless shown or directed by the engineer.
- Whenever concrete backfill or encasement is placed a transverse break at each pipe joint shall be made as specified to maintain flexibility of the pipe line expansion material shall be full depth and placed in not more than two pieces per break.
- The deflection of flexible pipe joints shall in addition to the strength requirements not be more than 5% in the installed position in any direction if shall be tested for deflection by the contractor in the engineers presence as directed by the engineer test equipment is to be supplied at no cost to the employer by contractor and approved by the engineer, any section showing deflections above 5% shall be corrected by the contractor at no expense to the employer
- Loading on pipe is developed from marsons theory using -
 - Backfill density = 120/cu . ft
 - Trench width not exceeding table 1
 - Safety factor = 1.5
 - Load factor class a bedding = 3.0
 - Load factor class b bedding = 1.9
- Traffic cover " refers to min. cover required before traffic load becomes negligible concrete backfill as in class a bedding is required if min. cover cannot be achieved.
- O d = outer diameter of pipe



PLAN MANHOLE COVER

N.T.S.

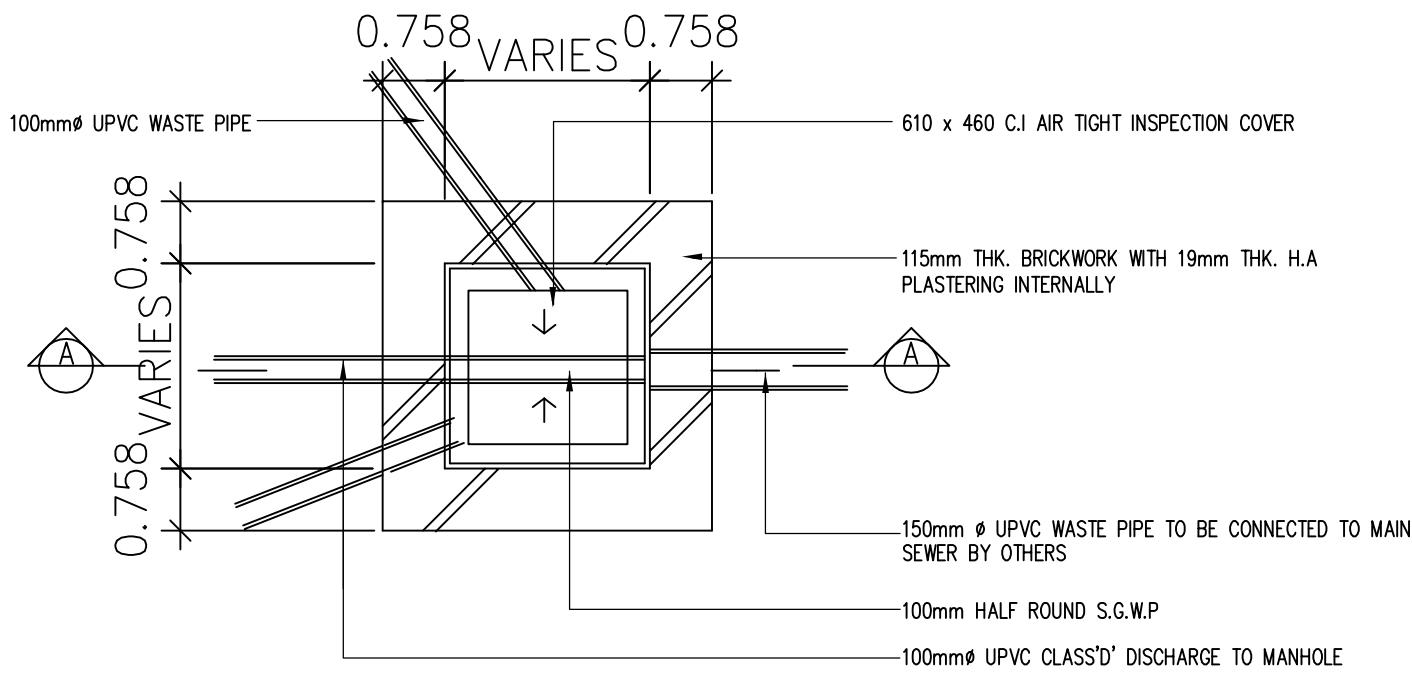
TABLE 1: SIZE OF HOUSE MANHOLE

MANHOLE DEPTH	MANHOLE SIZE	NOTE
NOT EXCEEDING 610MM	610MM X 460MM	
610MM TO 910MM	760MM X 610MM	
910MM TO 1520MM	760MM X 760MM	TO PROVIDE CAT LADDER
1520MM TO 2440MM	910MM X 1140MM	

TABLE 2: PIPE STRENGTH REQUIREMENT

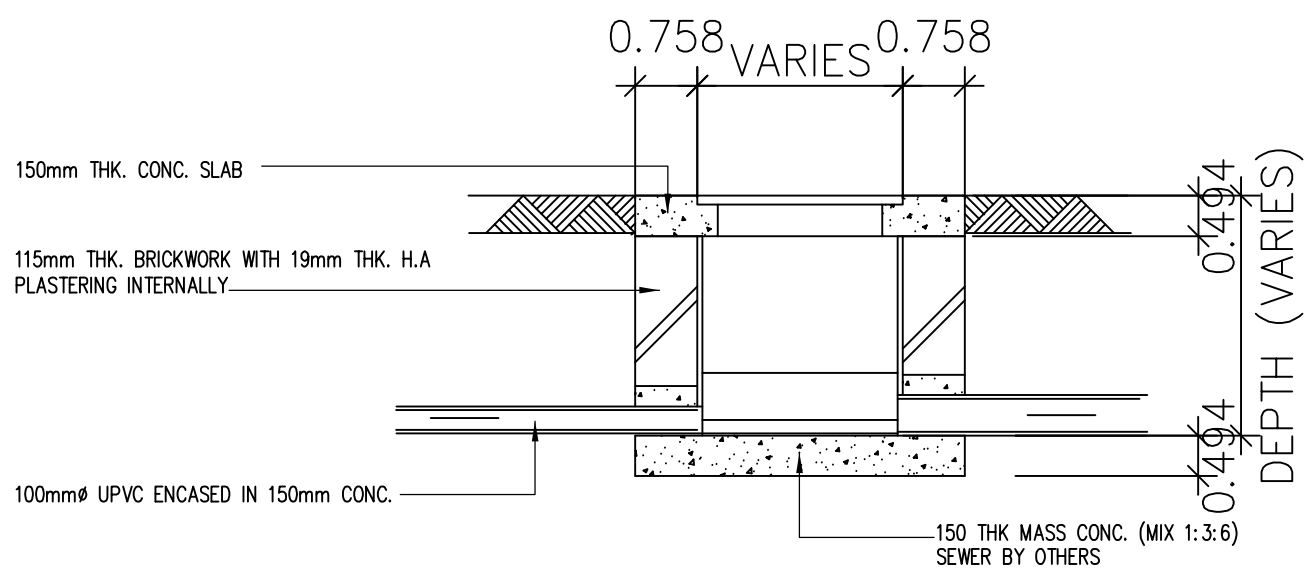
INTERNAL PIPE DIAMETER (INCHES)	MIN. ALLOWABLE 3' EDGE BEARING STRENGTH (LBS/LIN FT)	MAX ALLOWABLE DEPT TO INV. USING TO SAFETY FACTORY(SF1.5)
1	4	1500
6	6	1500
9	9	1850
12	12	2250

8. All internal waste and soil piping should comply with BS4514, BS5255 and BS4660. It should certified by relevant authority, ie: SIRIM.



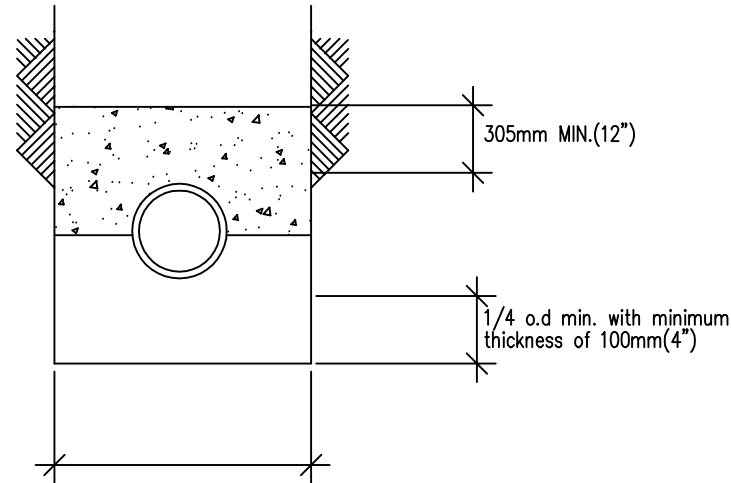
PLAN OF MANHOLE

SCALE = 1:25



SECTION A

SCALE = 1:25



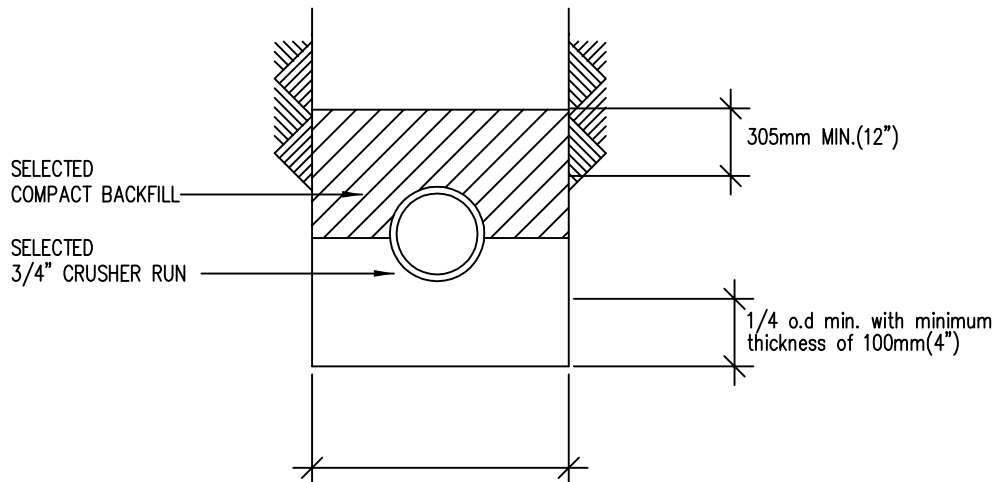
OD + 305mm(12")

Pipe embedded in carefully compacted 3/4" dia. crusher run extending halfway up to the side of the pipe. The remainder side fills and top with monolithic plain concrete.

CLASS 'A' BEDDING

N.T.S.

Std.detail of v.c.p bedding

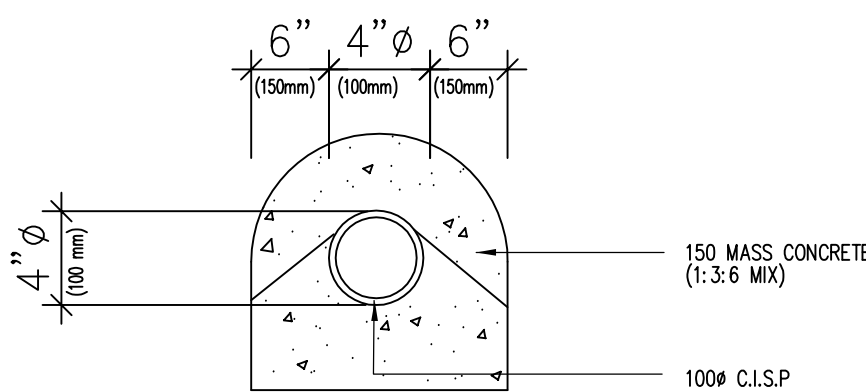


OD + 305mm(12")

Pipe embedded in carefully compacted 3/4" dia. crusher run extending halfway up to the side of the pipe. The remainder side fills and top compacted carefully with backfill

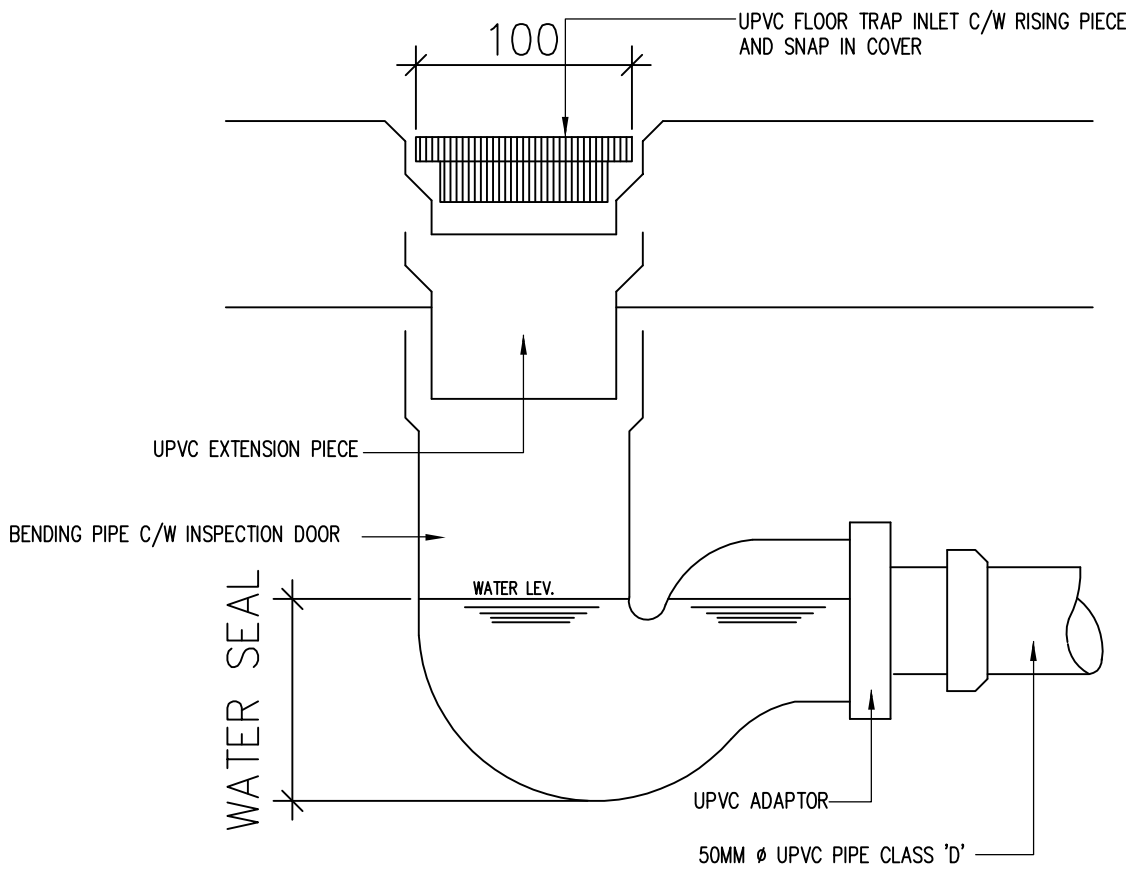
CLASS 'B' BEDDING

N.T.S.



CLASS 'B' BEDDING

N.T.S.

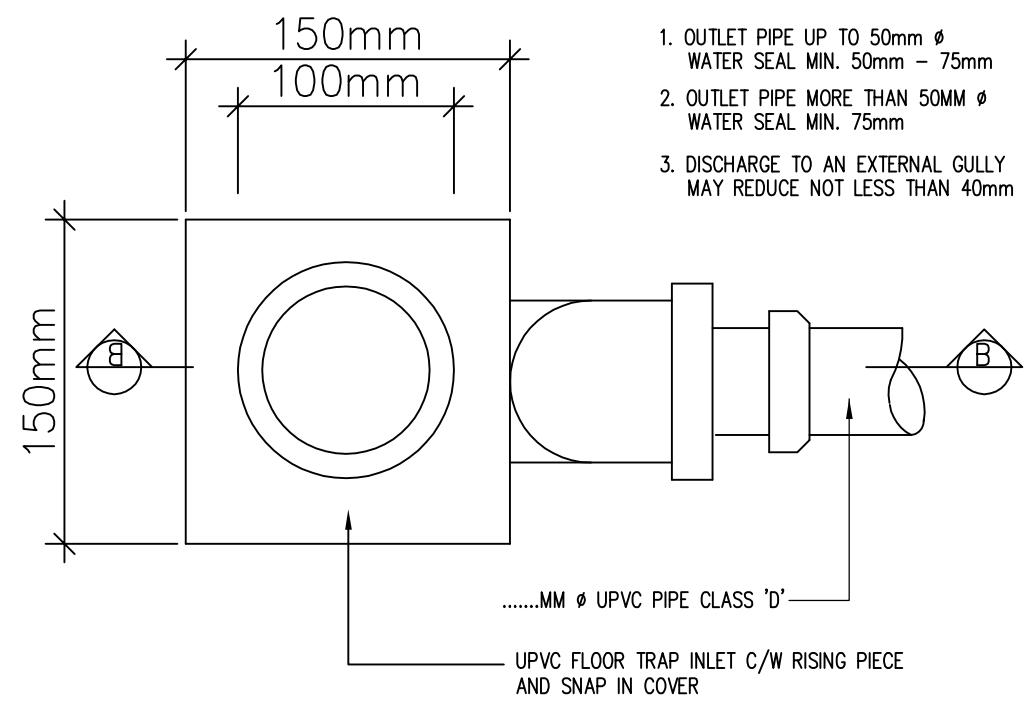


PIPING CROSS SECTION

N.T.S.

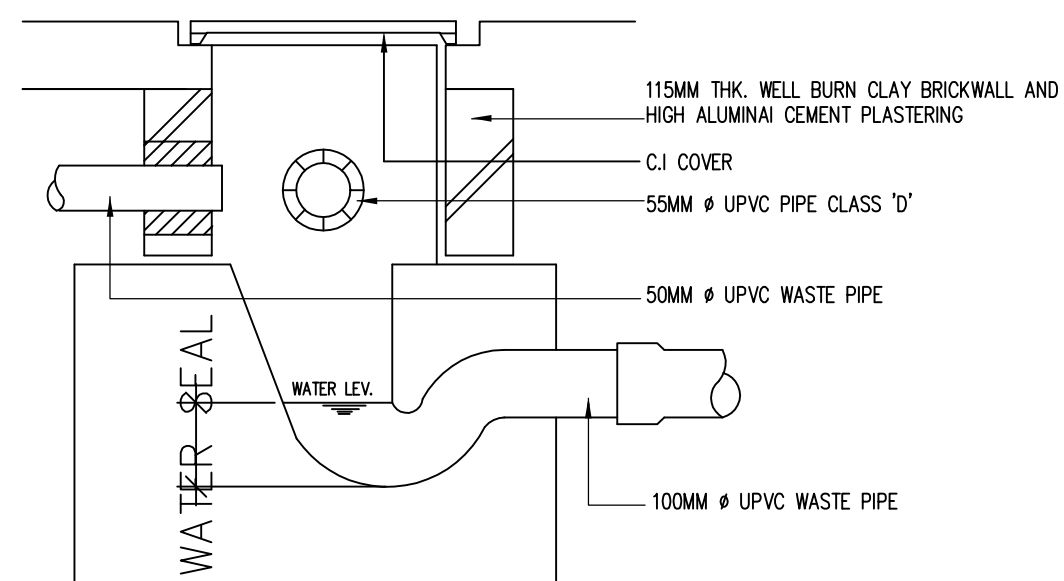
NOTE:

- OUTLET PIPE UP TO 50mm WATER SEAL MIN. 50mm - 75mm
- OUTLET PIPE MORE THAN 50MM WATER SEAL MIN. 75mm
- DISCHARGE TO AN EXTERNAL GULLY MAY REDUCE NOT LESS THAN 40mm



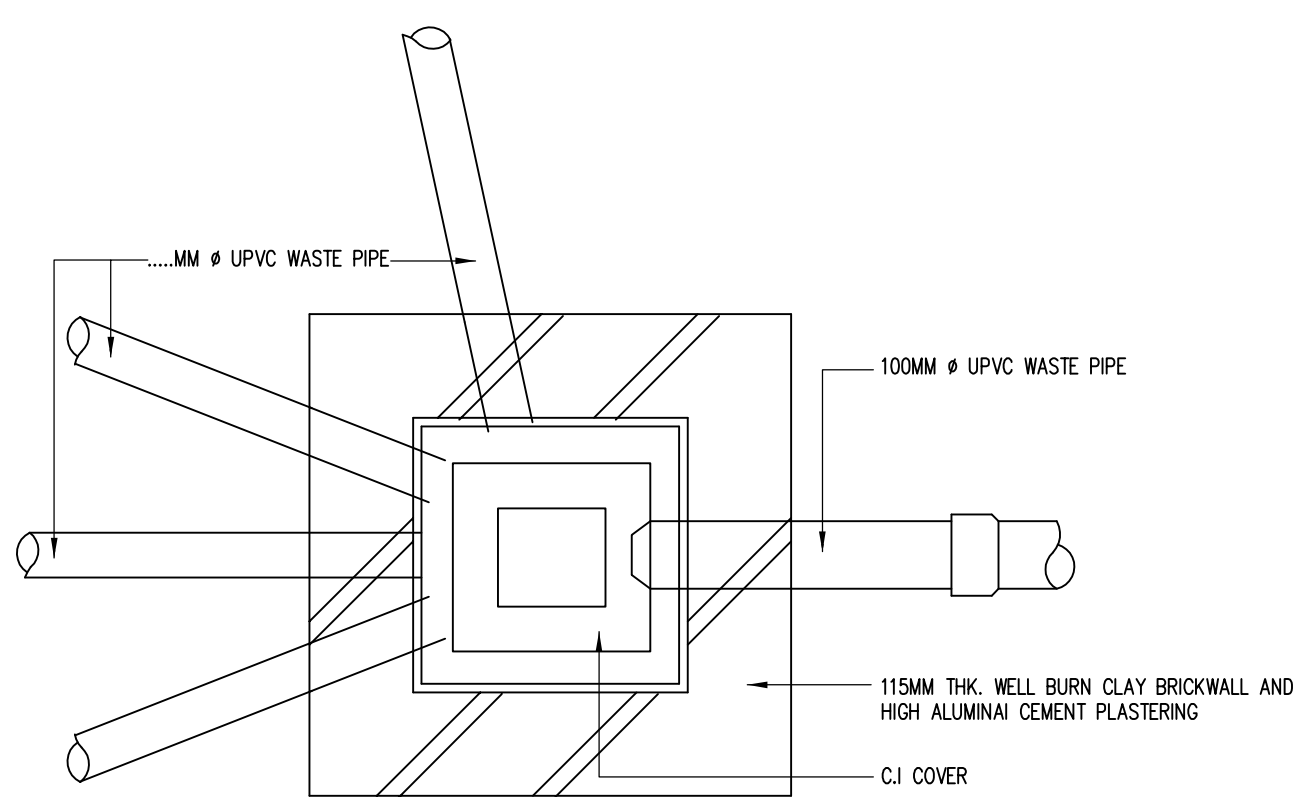
PLAN FLOOR TRAP

N.T.S.



SECTION 'A'

N.T.S.



PLAN TYPICAL GULLY TRAP

N.T.S.

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDANTANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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JURUTERA PERUNDING/CONSULTANT ENGINEER



RHA Consulting Engineers Sdn Bhd

(692206-V)

186, Lorong Putra 1/D,

Pusat Perniagaan Putra,

Jalan Kilang Lama,

09000 Kulim, Kedah Darul Aman

Tel. no. 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES

SANITARY PLUMBING INSTALLATION

NOTES, LEGEND & DETAILS FOR
INTERNAL SANITARY PLUMBING INSTALLATION

BLOK C

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK C/SP-01

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah				JULY 2026
Designed by	Nur Fadila				Sheet
Approved by	Ir. Md Isa Bin Daud				No.

BLOK C

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JURUTERA PROFESIONAL
DENGAN PERAKUAN AMALAN
MEKANIKAL
Ir. MD ISA BIN DAUD
C112195
MALAYSIA



NOTA/NOTE

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JURUTERA PERUNDING/CONSULTANT ENGINEER



186, Lorong Putra 1/D,
Pusat Perniagaan Putra,
Jalan Kilang Lama,
09000 Kulim, Kedah Darul Aman

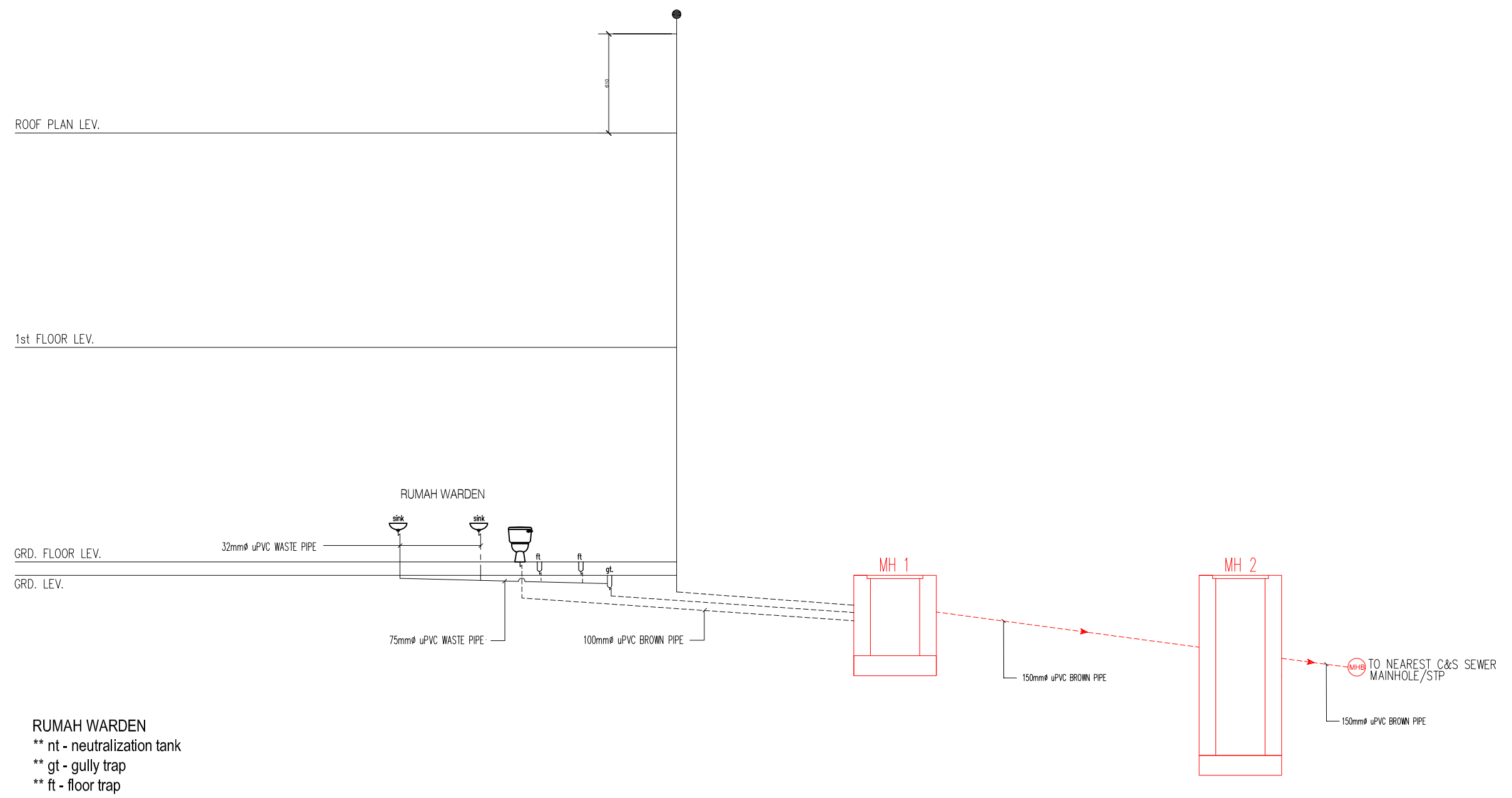
PROJEK/PROJECT

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

BLOK C

NO. LUKISAN/DRAWING NO.

Scale	1:150	Unit	mm	Initial	Date
-------	-------	------	----	---------	------

BLOK C

RUMAH WARDEN
 ** nt - neutralization tank
 ** gt - gully trap
 ** ft - floor trap

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TENDER DRAWING

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(Mechanical & Electrical Consulting Engineers and Energy Manager)

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Tel. no: 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION
INTERNAL COLD WATER
PIPING SCHEMATIC

BLOK C

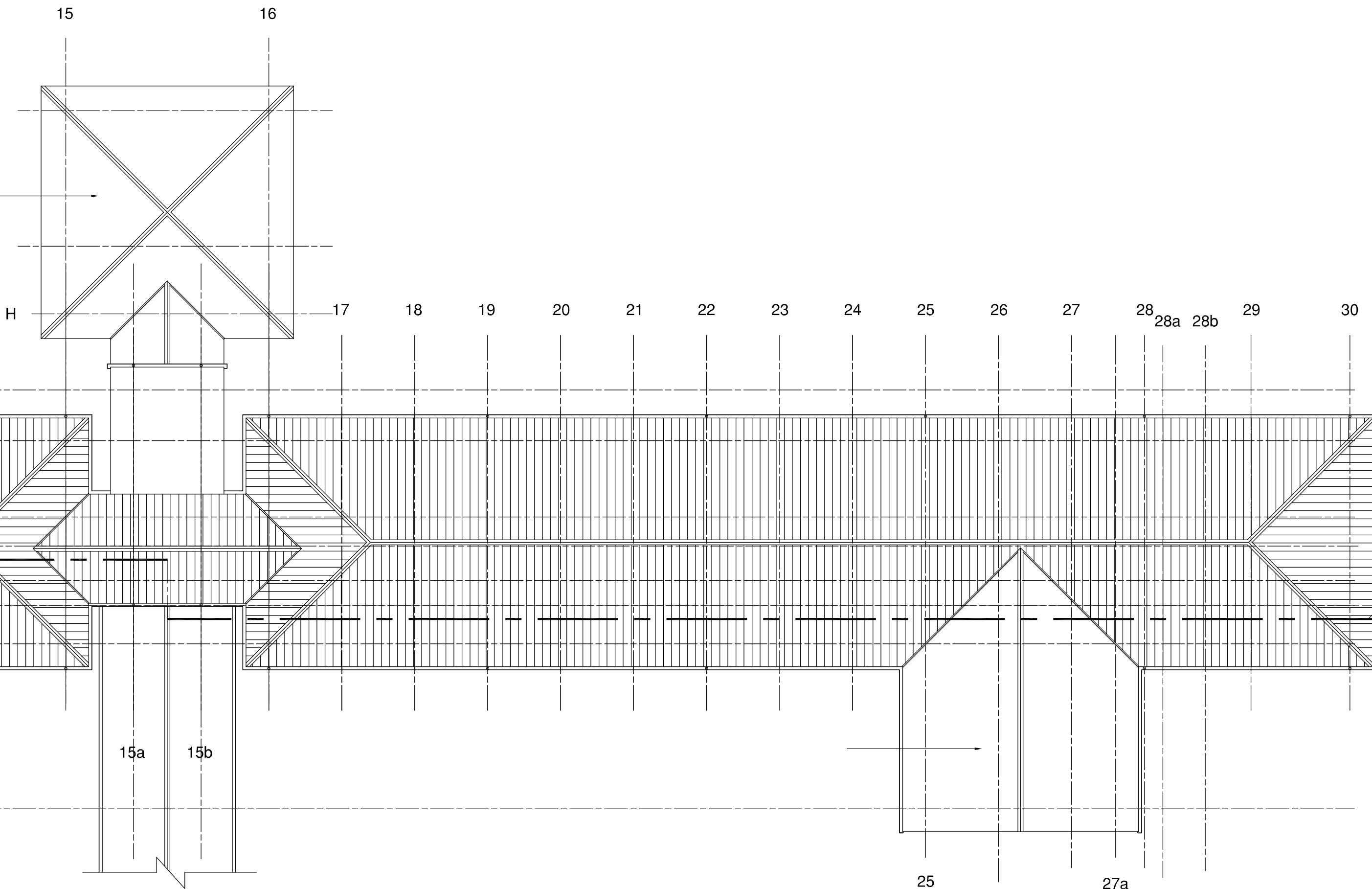
Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

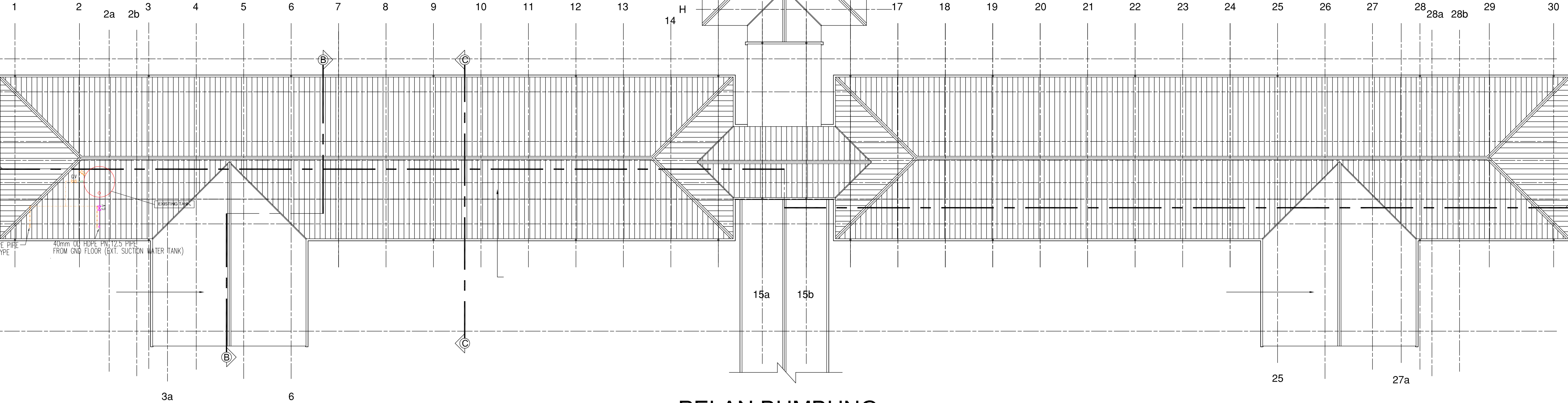
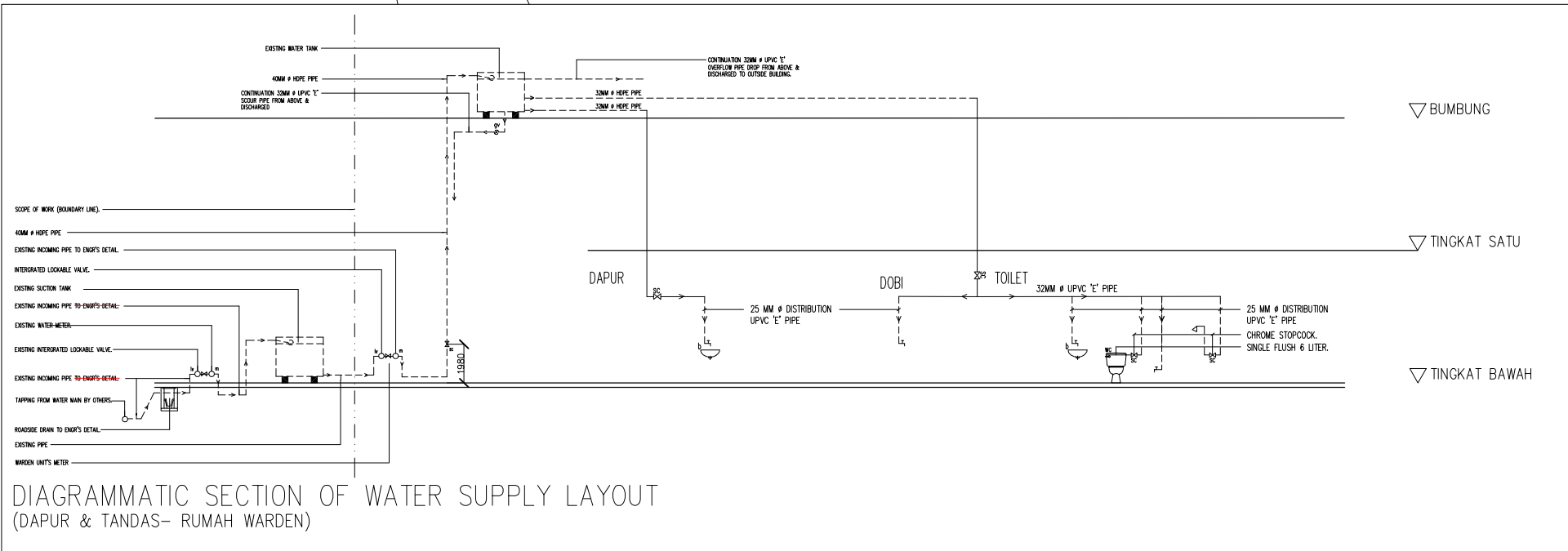
RHA25008/MARA/MS/BLOK C/CW-02

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Md Isa Bin Daud			IDA	No.

PELAN LANTAI TINGKAT BAWAH

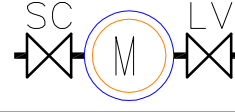


PELAN BUMBUNG



BLOK C

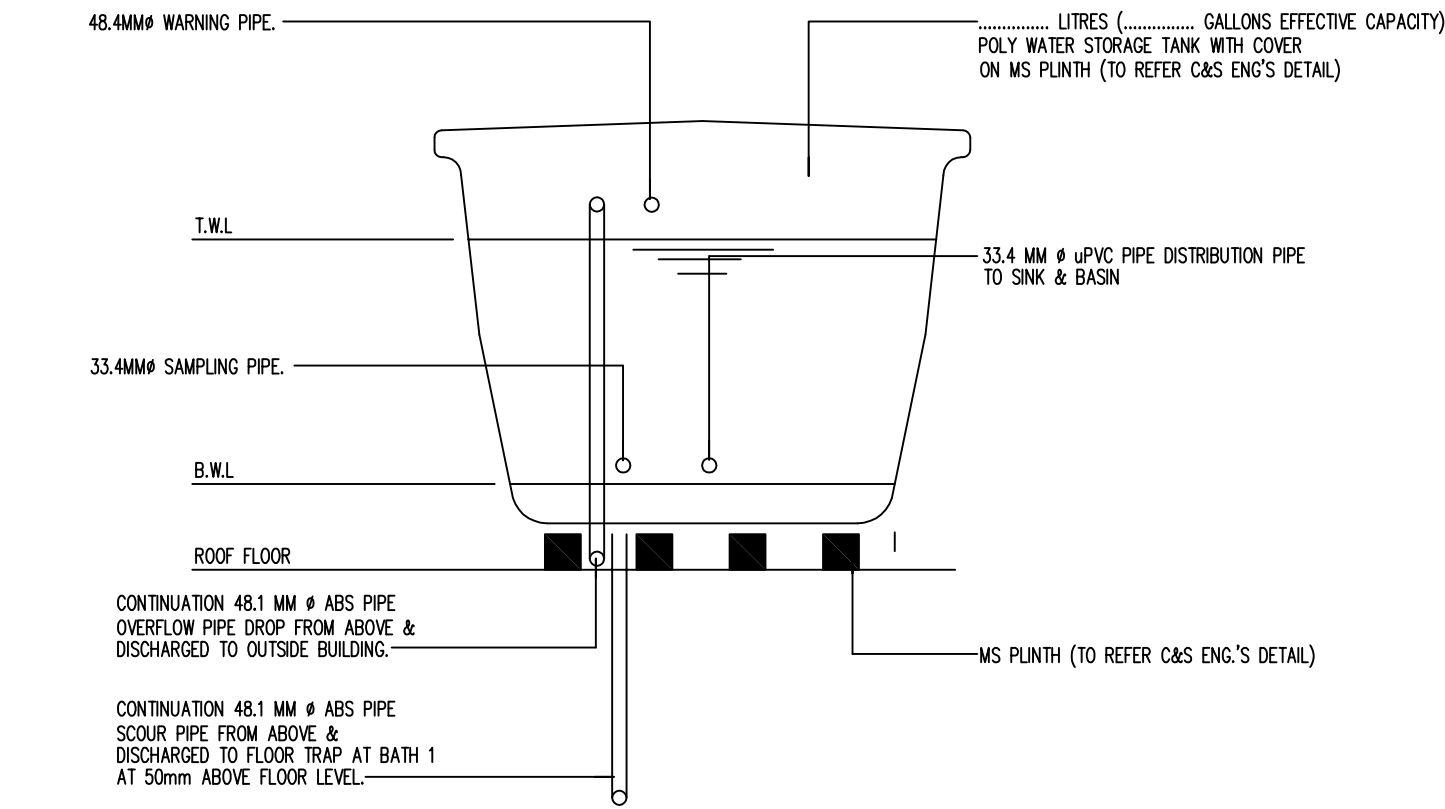
LEGEND

COLD WATER PIPING SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	STOPCOCK		WATER METER C/W LOCKABLE VALVE
	WATER TAP		SQUAT CLOSET
	GATE VALVE		BASIN / SINK
	SLUICE VALVE		PIPE
	WATER CLOSET		WATER TANK
	SHOWER		
	WATER PUMP		

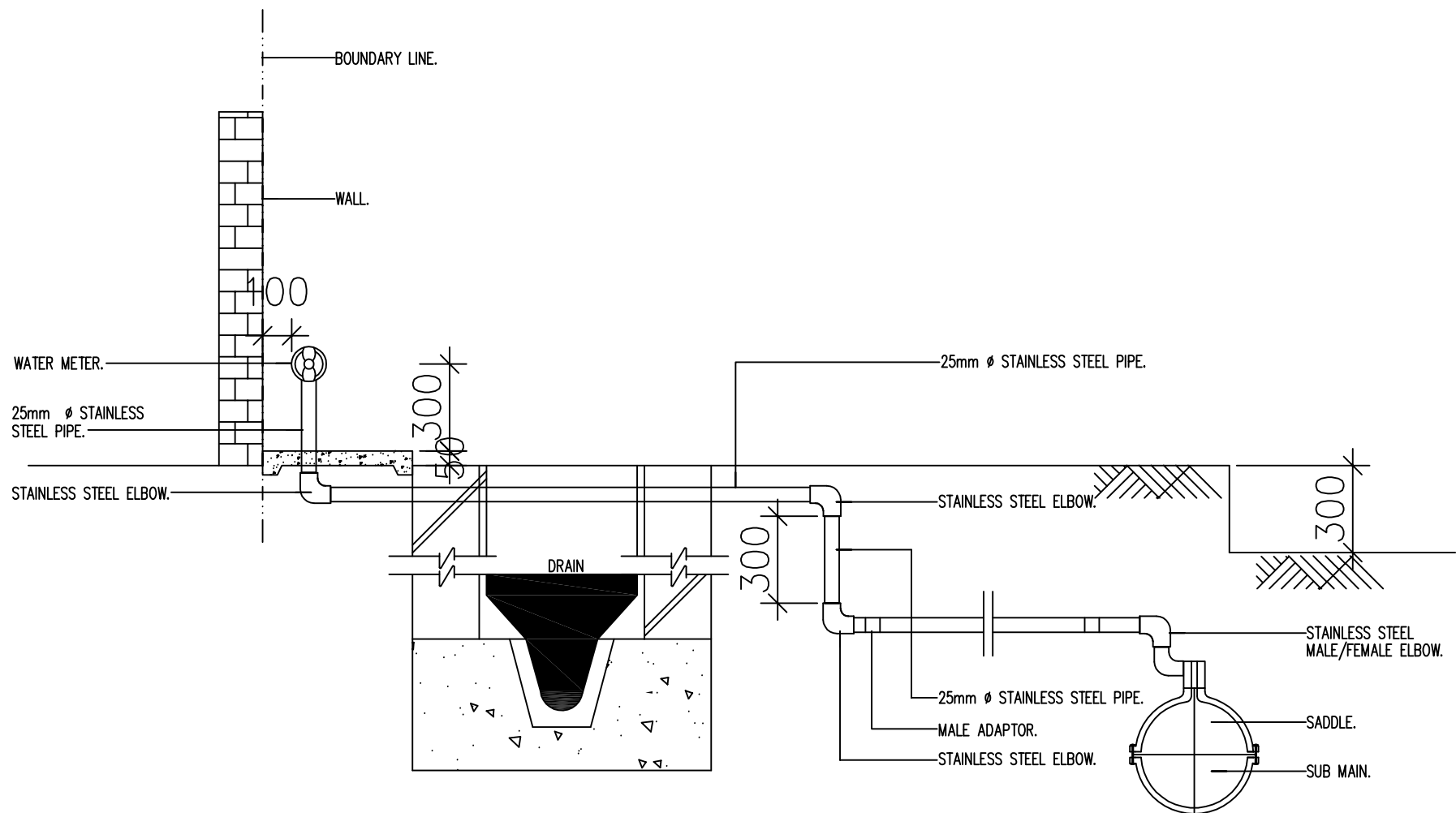
OUTSIDE DIAMETERS (OD) FOR HDPE & ABS PIPE

NORMINAL SIZE	OUTSIDE DIAMETER (mm)		
	HDPE (PN 12.5)	ABS (CLASS E)	uPVC (CLASS E)
1/2" (15mm)	20	21.40	
3/4" (20mm)	25	26.60	
1" (25mm)	32	33.40	
1.25" (32mm)		42.20	
1.5" (40mm)	50	48.10	
2" (50mm)	63	60.20	
3"	90	88.90	
4"	125	114.1	
6"	180	168.3	

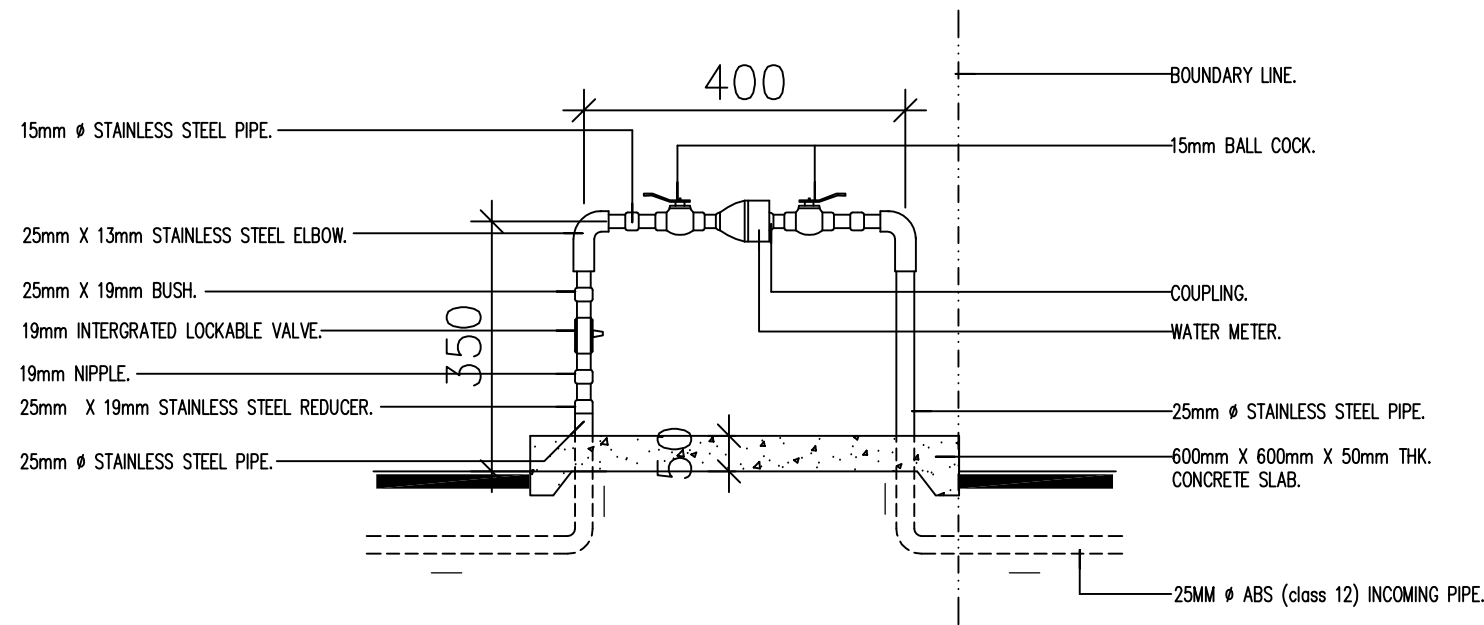
- NOTE :
- ALL METER & STOPCOCK TO BE OUTSIDE FENCING
 - CAPACITY OF WATER CLOSET CISTERN TO BE 6 LITRES



WATER TANK DETAIL
N.T.S



WATER METER POSITION DETAIL
N.T.S



WATER METER & LOCKABLE VALVE DETAIL

TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL



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09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION

NOTES & LEGEND

BLOK C

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK C/CW-01

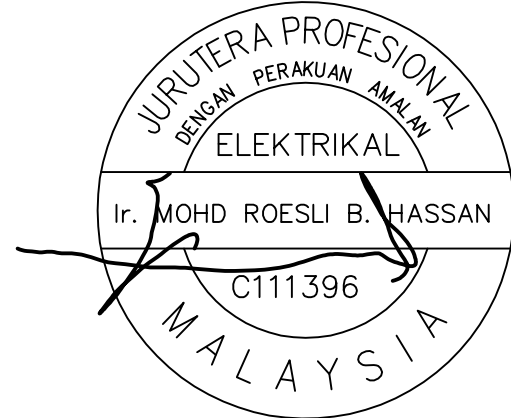
Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadhlia			FA	Sheet
Approved by	Ir. Md Isa Bin Daud			IDA	No.

BLOK C

TENDER DRAWING

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PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
**ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION**

LIGHTING & POWER
- PELAN TINGKAT BAWAH (LOWER GROUND)
- PELAN TINGKAT BAWAH
- PELAN TINGKAT ATAS

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

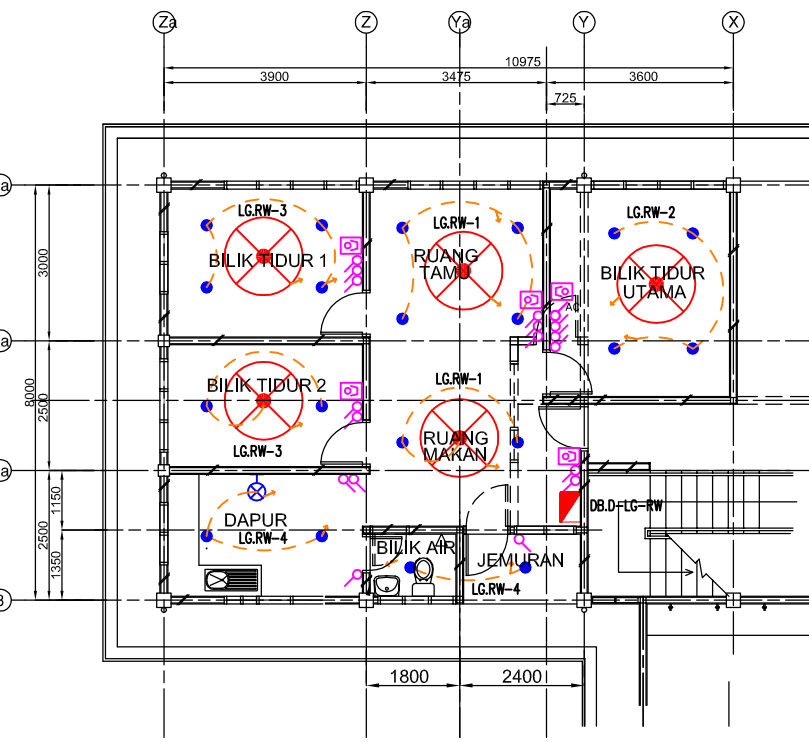
NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-01

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			sk	JULY 2026
Designed by	Nur Fadila			hda	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rshk	No.

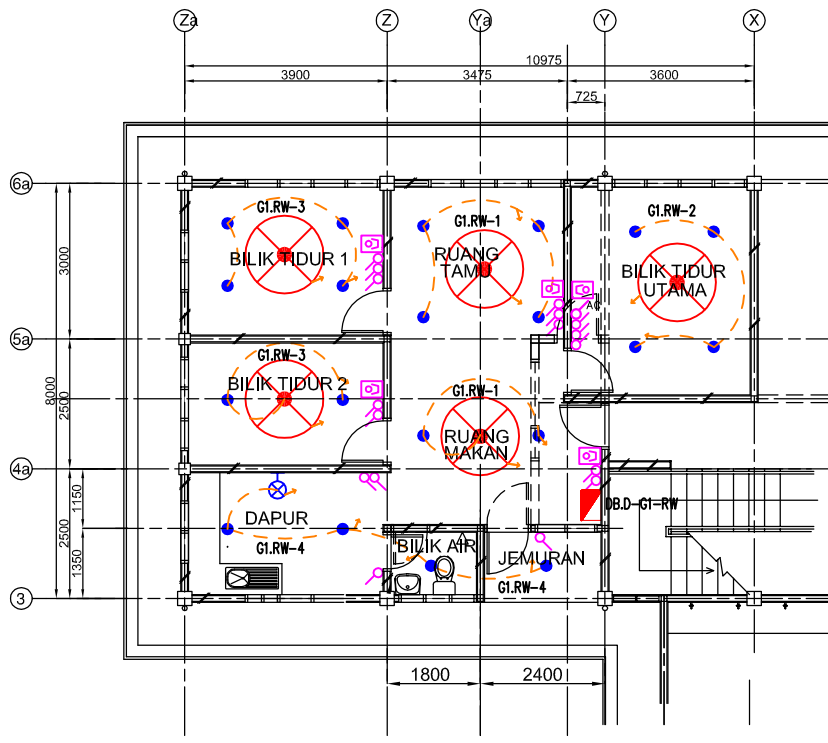
DETAIL A-1

PELAN TINGKAT BAWAH TANAH (LG)
RUMAH WARDEN



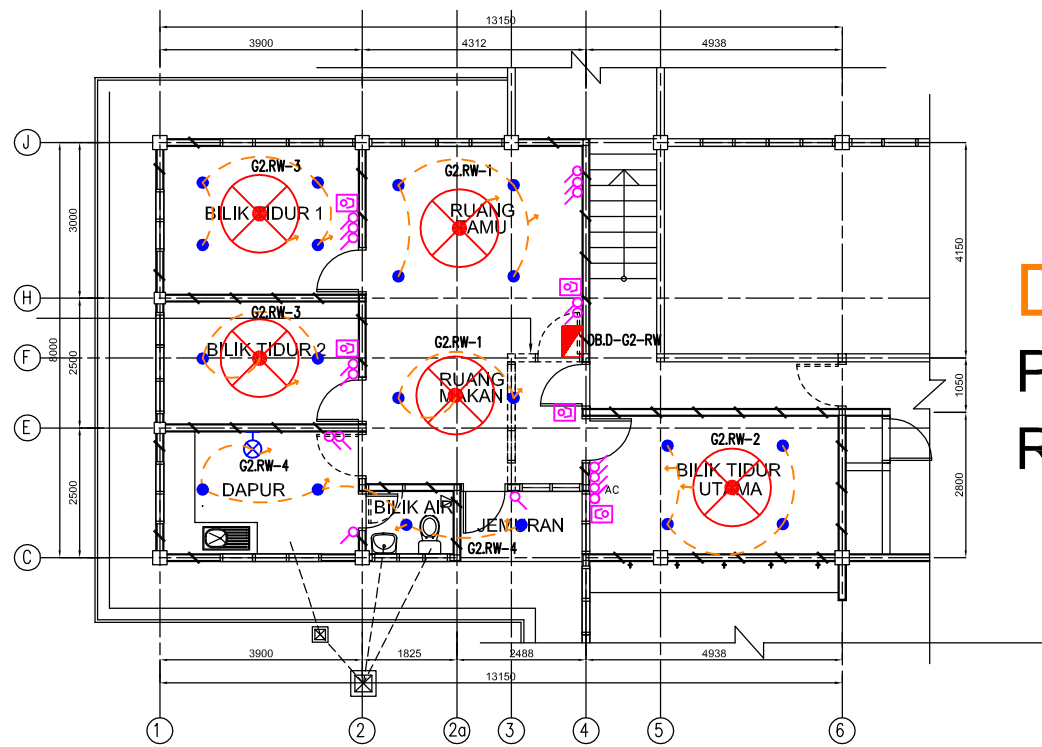
DETAIL A-2

PELAN TINGKAT ATAS
RUMAH WARDEN

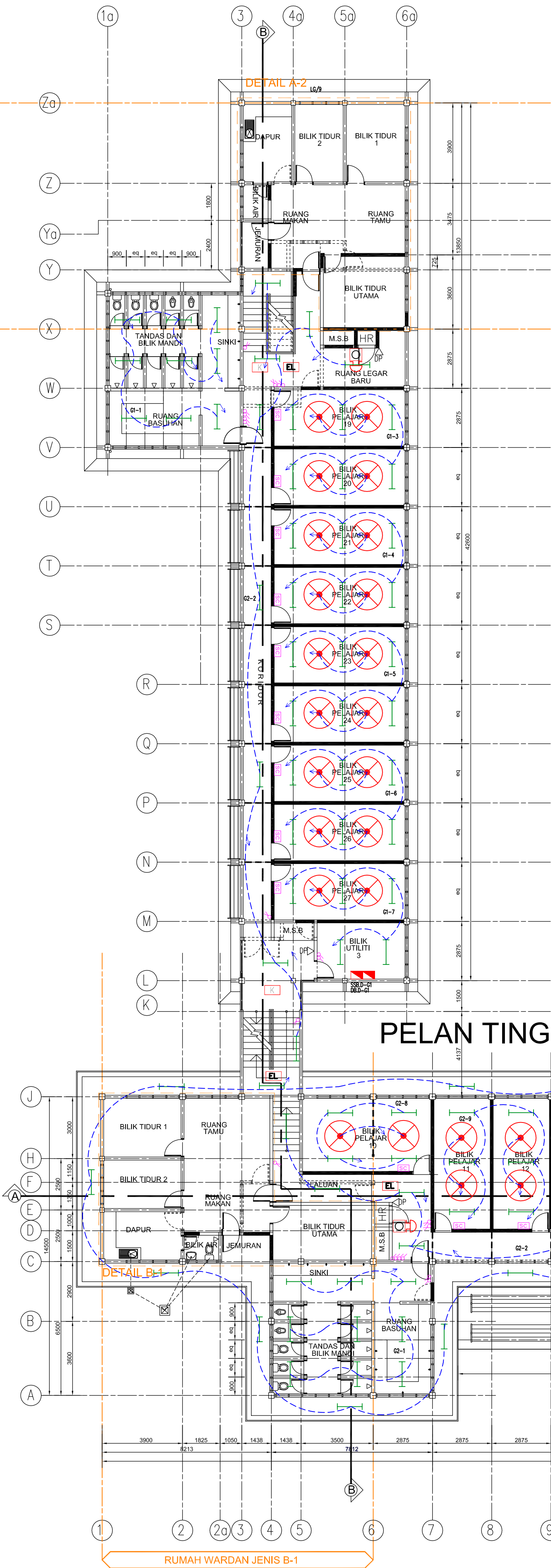


DETAIL B-1

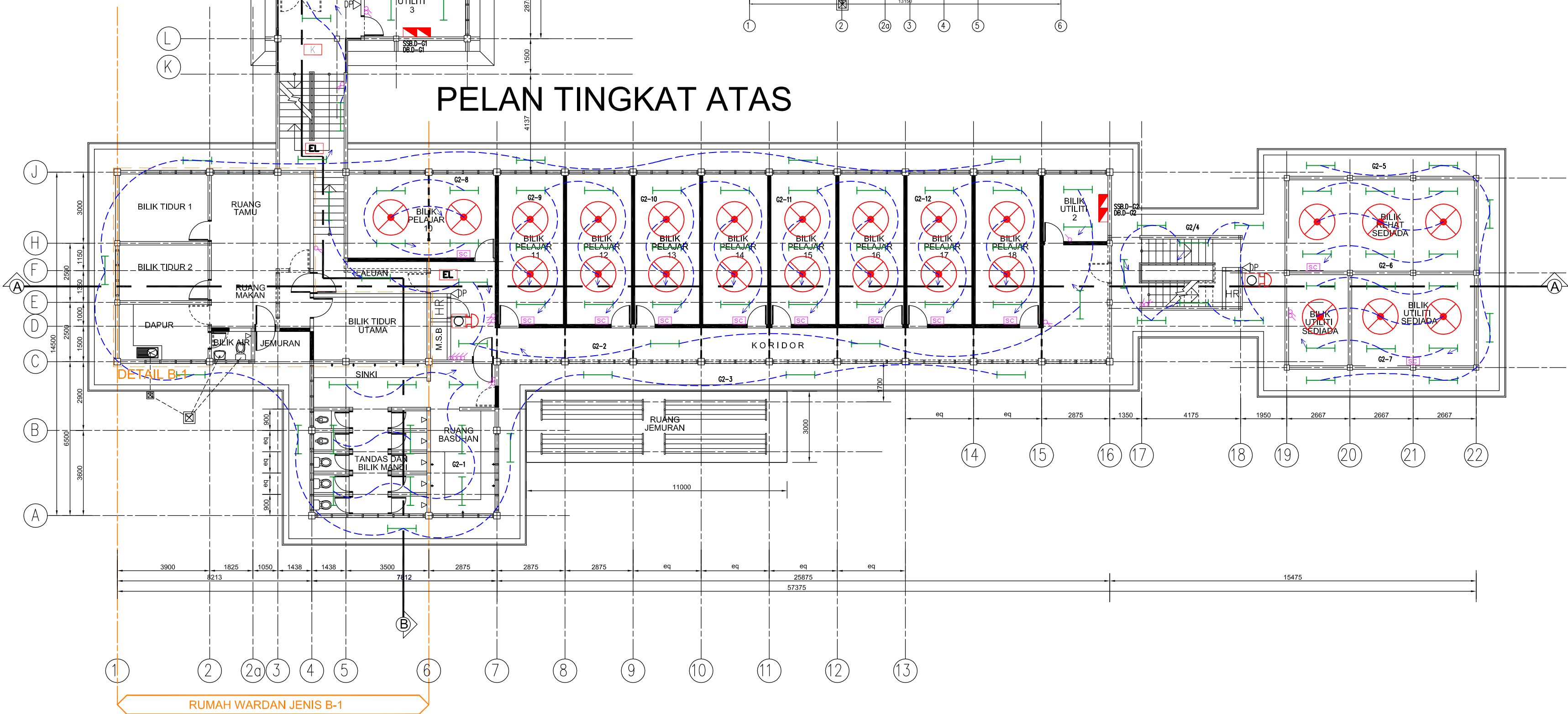
PELAN TINGKAT BAWAH
RUMAH WARDEN



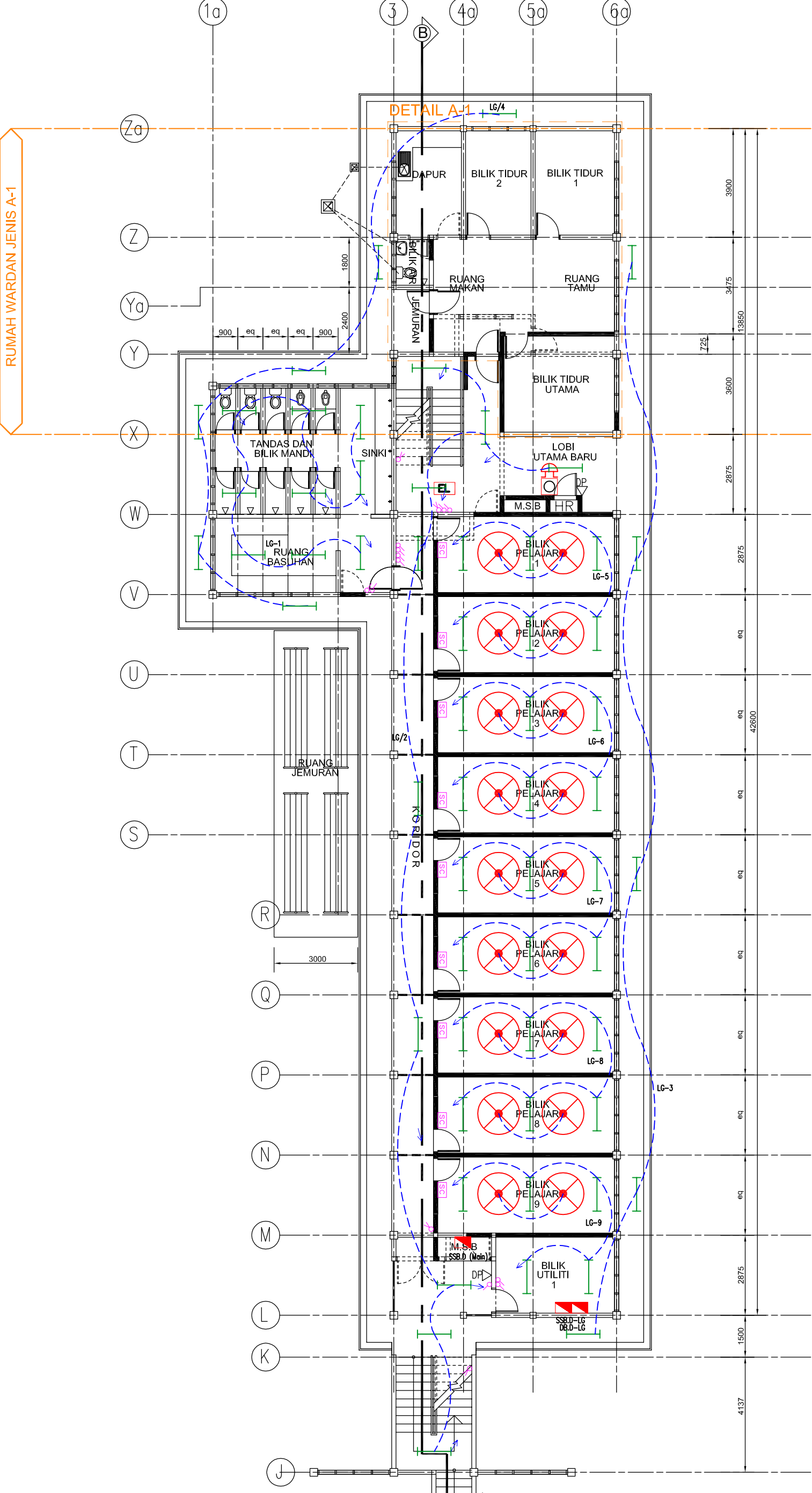
PELAN TINGKAT ATAS



PELAN TINGKAT BAWAH



PELAN TINGKAT BAWAH
(LOWER GROUND)

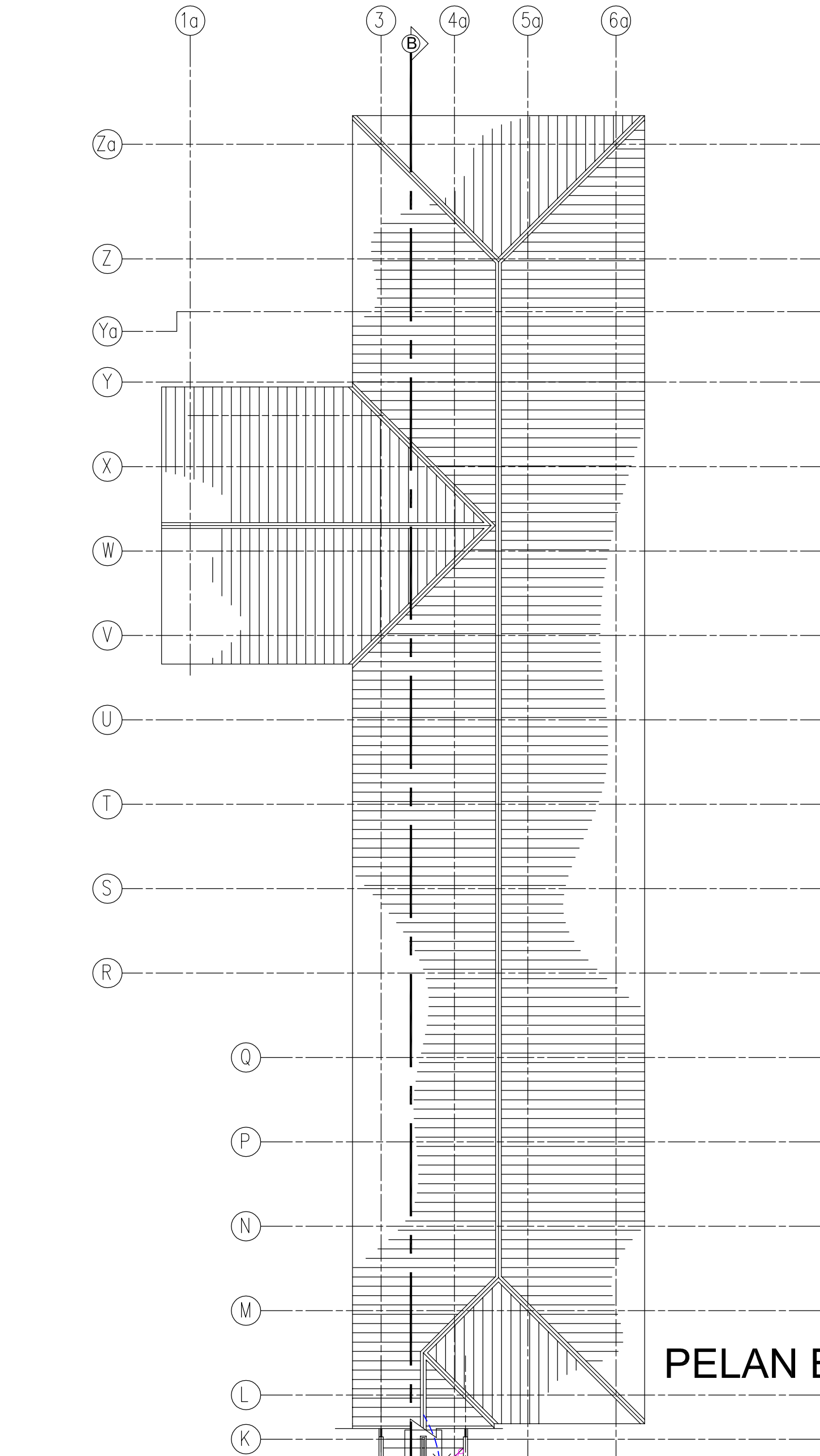


LEGEND

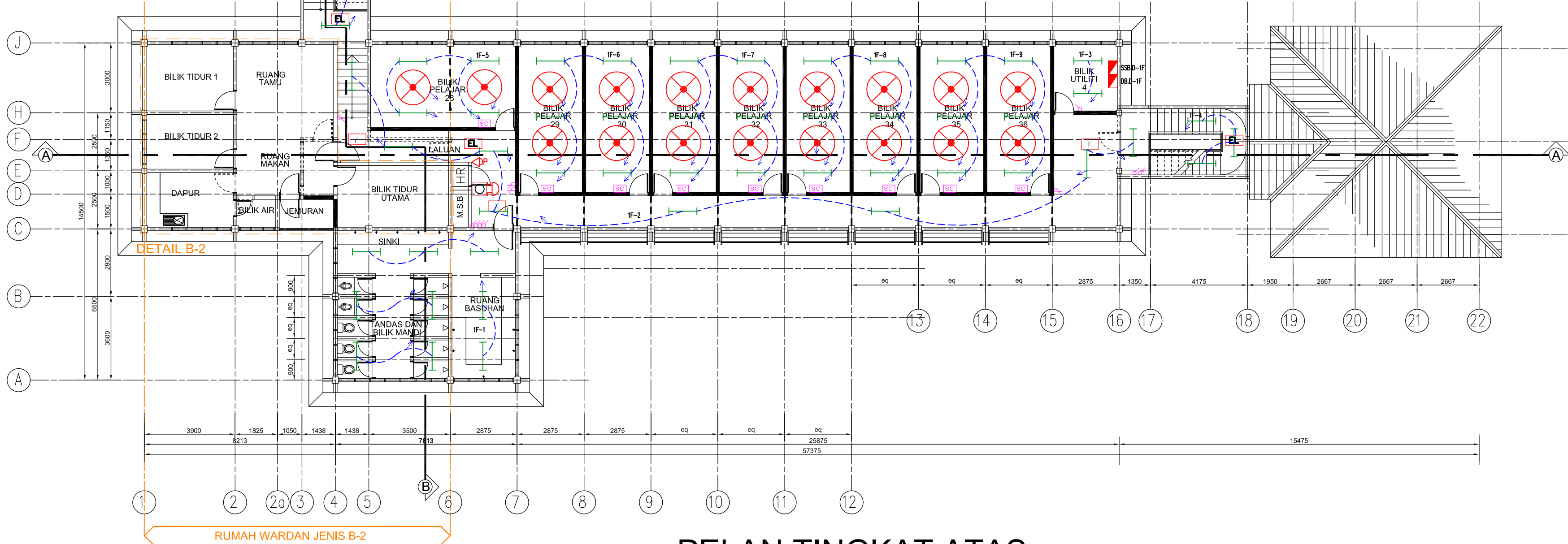
ELECTRICAL SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
●	15W LED DOWNLIGHT SURFACE MOUNTED	13A	13A SWITCH SOCKET OUTLET FOR STUDY TABLE (AT 1100mm AFFL)
1 x 18W TB LED TUBE SURFACE MOUNTED BARE CHANNEL		13A	13A SWITCH SOCKET OUTLET (AT 1450mm AFFL)
400 mm Wall fan fitting c/w hook		13A	13A SWITCH SOCKET OUTLET AT HIGH LEVEL (FOR WFI ROUTE)
1500MM CEILING FAN		15A	15A SWITCH SOCKET OUTLET FOR AIR-COND (AT HIGH LEVEL)
SA 2-WAY SWITCH		FS	Fireman switch at 5' 0" height f.f.l
SA ONE-WAY SWITCH		MSB	Main Switch Board (MSB) / Distribution board (DB)
SA ONE-WAY SWITCH (AIRCOND TYPE)		8W	8W Emergency Light c/w 3hrs. standby Nickel Cadmium Battery
MULTIPLE SWITCH CENTER		8W	8W Keluar Sign c/w 3hrs. standby Nickel Cadmium Battery

BLOK D

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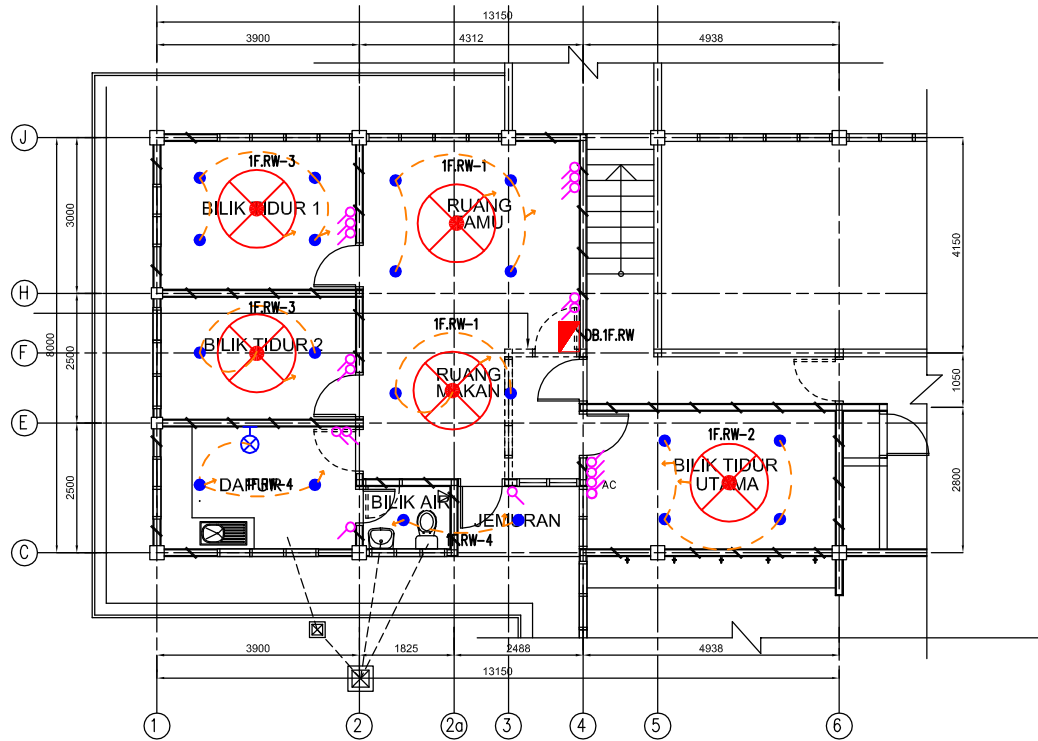
PELAN BUMBUNG



PELAN TINGKAT ATAS

LEGEND

ELECTRICAL SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
●	15W LED DOWNLIGHT SURFACE MOUNTED	1100	13A SWITCH SOCKET OUTLET FOR STUDY TABLE (AT 1100mm AFFL)
—	1 x 18W T8 LED TUBE SURFACE MOUNTED BARE CHANNEL	1101	13A SWITCH SOCKET OUTLET (AT 1450mm AFFL)
⊗	400 mm Wall fan fitting c/w hook	1102	13A SWITCH SOCKET OUTLET AT HIGH LEVEL (FOR WFI ROUTE)
⊗	1500MM CEILING FAN	1103	15A SWITCH SOCKET OUTLET FOR AIR-COND (AT HIGH LEVEL)
⚡	5A 2-WAY SWITCH	fs	Fireman switch at 5' 0" height f.f.l
⚡	5A ONE-WAY SWITCH	MSB	Main Switch Board (MSB) / Distribution board (DB)
⚡	5A ONE-WAY SWITCH (AIRCOND TYPE)	EL	8W Emergency Light c/w 3hrs. standby Nickel Cadmium Battery
SC	MULTIPLE SWITCH CENTER	EL	8W Keluar Sign c/w 3hrs. standby Nickel Cadmium Battery

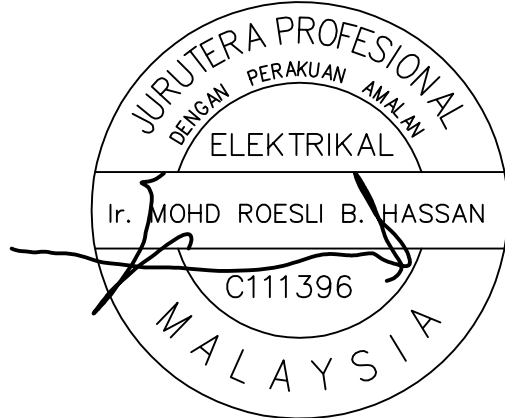


DETAIL B-2
PELAN TINGKAT ATAS
RUMAH WARDEN

TENDER DRAWING

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E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION

LIGHTING & POWER
- PELAN TINGKAT ATAS
- PELAN BUMBUNG
- PELAN BUMBUNG

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-02

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			sk	JULY 2026
Designed by	Nur Fadila			hla	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rsh	No.

BLOK D

TENDER DRAWING

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E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE

MECHANICAL SERVICES

INTERNAL COLD WATER INSTALLATION

INTERNAL COLD WATER
- PELAN TINGKAT BAWAH (LOWER GROUND)
- PELAN TINGKAT BAWAH
(FOR WFI ROUTE)
- PELAN TINGKAT ATAS

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-03

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadila			FD	Sheet
Approved by	Ir. Md Isa Bin Daud			IA	No.

DETAIL A-1
PELAN TINGKAT BAWAH(LG)
RUMAH WARDEN

DETAIL A-2
PELAN TINGKAT ATAS
RUMAH WARDEN

DETAIL B-1
PELAN TINGKAT BAWAH
RUMAH WARDEN

PELAN TINGKAT BAWAH
(LOWER GROUND)

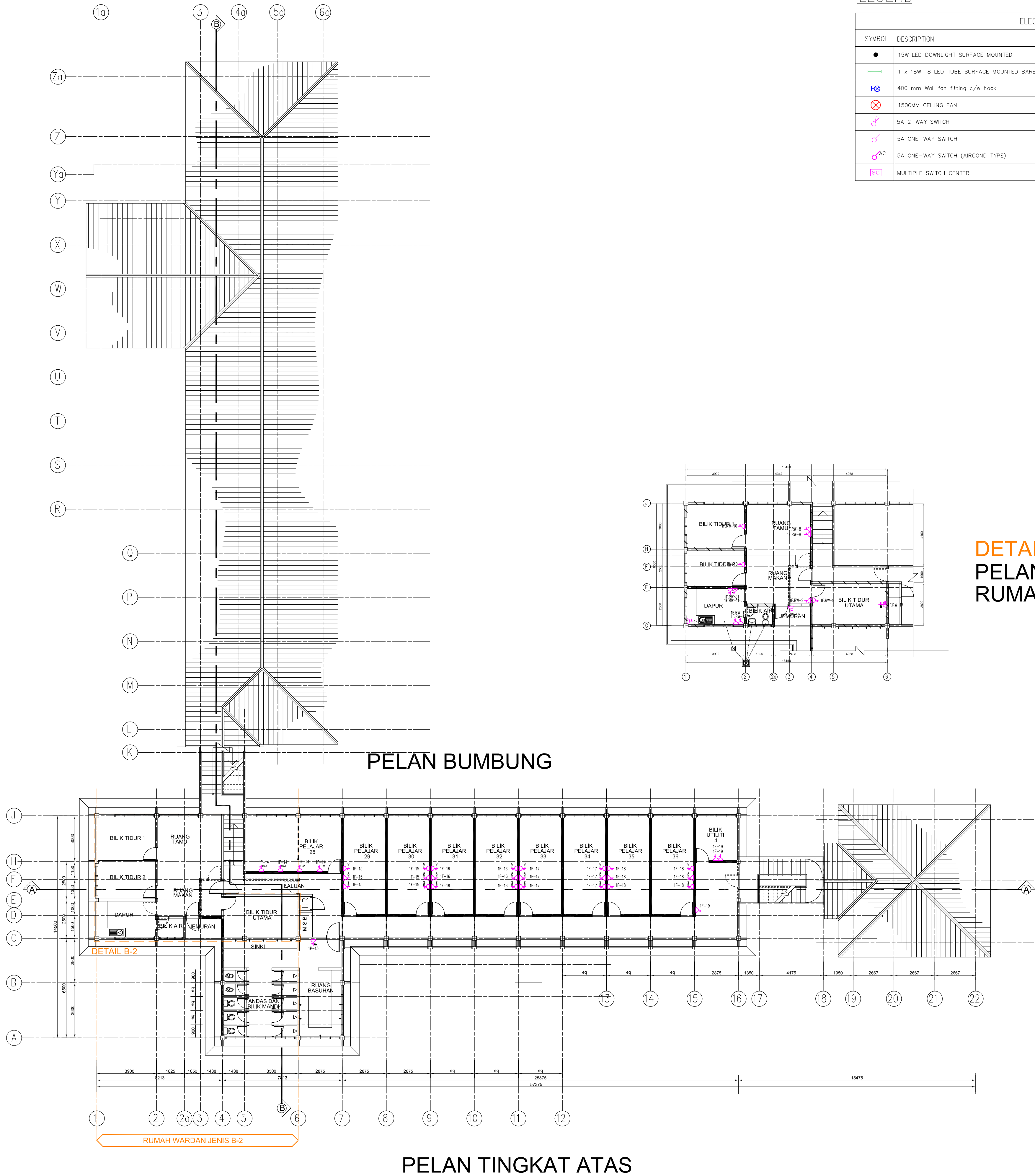
PELAN TINGKAT BAWAH

LEGEND

ELECTRICAL SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	15W LED DOWNLIGHT SURFACE MOUNTED		13A SWITCH SOCKET OUTLET FOR STUDY TABLE (AT 1100mm AFFL)
	1 x 18W T8 LED TUBE SURFACE MOUNTED BARE CHANNEL		13A SWITCH SOCKET OUTLET (AT 1450mm AFFL)
	400 mm Wall fan fitting c/w hook		13A SWITCH SOCKET OUTLET AT HIGH LEVEL (FOR WFI ROUTE)
	1500MM CEILING FAN		15A SWITCH SOCKET OUTLET FOR AIR-COND (AT HIGH LEVEL)
	5A 2-WAY SWITCH		Fireman switch at 5' 0" height f.f.l
	5A ONE-WAY SWITCH		Main Switch Board (MSB) / Distribution board (DB)
	5A ONE-WAY SWITCH (AIRCOND TYPE)		8W Emergency Light c/w 3hrs. standby Nickel Cadmium Battery
	MULTIPLE SWITCH CENTER		8W Keluar Sign. c/w 3hrs. standby Nickel Cadmium Battery

BLOK D

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LEGEND

ELECTRICAL SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
●	15W LED DOWNLIGHT SURFACE MOUNTED	1100	13A SWITCH SOCKET OUTLET FOR STUDY TABLE (AT 1100mm AFFL)
1 x 18W TB LED TUBE SURFACE MOUNTED BARE CHANNEL		13A	13A SWITCH SOCKET OUTLET (AT 1450mm AFFL)
400 mm Wall fan fitting c/w hook		13A	13A SWITCH SOCKET OUTLET AT HIGH LEVEL (FOR WFI ROUTE)
1500MM CEILING FAN		AC	15A SWITCH SOCKET OUTLET FOR AIR-COND (AT HIGH LEVEL)
5A 2-WAY SWITCH		FS	Fireman switch at 5' 0" height f.f.l
5A ONE-WAY SWITCH		MSB	Main Switch Board (MSB) / Distribution board (DB)
5A ONE-WAY SWITCH (AIRCOND TYPE)		EL	8W Emergency Light c/w 3hrs. standby Nickel Cadmium Battery
MULTIPLE SWITCH CENTER		8W	8W Keluar Sign c/w 3hrs. standby Nickel Cadmium Battery

DETAIL B-2
PELAN TINGKAT ATAS
RUMAH WARDEN

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



I hereby certify that the land/building is under owner's responsibility and deemed to have been taken place when the construction is substantially and sufficient completed in accordance with the contract.

PEMLIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

Contractors must check all dimensions and exactly location on site. Only figured dimensions are to be worked on. Discrepancies must be reported immediately to the engineer's before commencement of work.

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JURUTERA PERUNDING/CONSULTANT ENGINEER



RHA Consulting Engineers Sdn Bhd
(692206-V)
(Mechanical & Electrical Consulting Engineers and Energy Manager)
186, Lorong Putra 1/D,
Pusat Perniagaan Putra,
Jalan Kilang Lama,
09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES

INTERNAL COLD WATER INSTALLATION

INTERNAL COLD WATER
- PELAN TINGKAT ATAS
- PELAN BUMBUNG

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-04

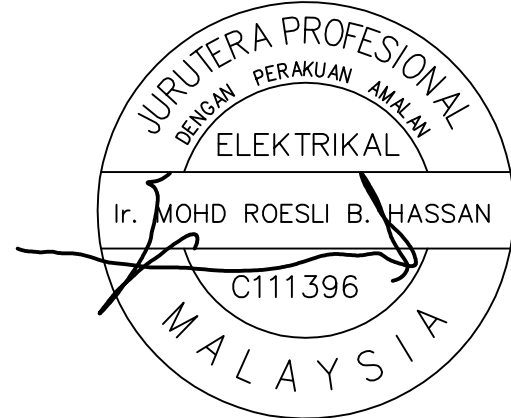
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Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadhlia			NF	Sheet
Approved by	Ir. Md Isa Bin Daud			MD	No.

BLOK D

TENDER DRAWING

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BAHAGIAN BINAAN DAN SELENGGARAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

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Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION
SINGLE LINE DIAGRAM VOL.1
TINGKAT BAWAH TANAH

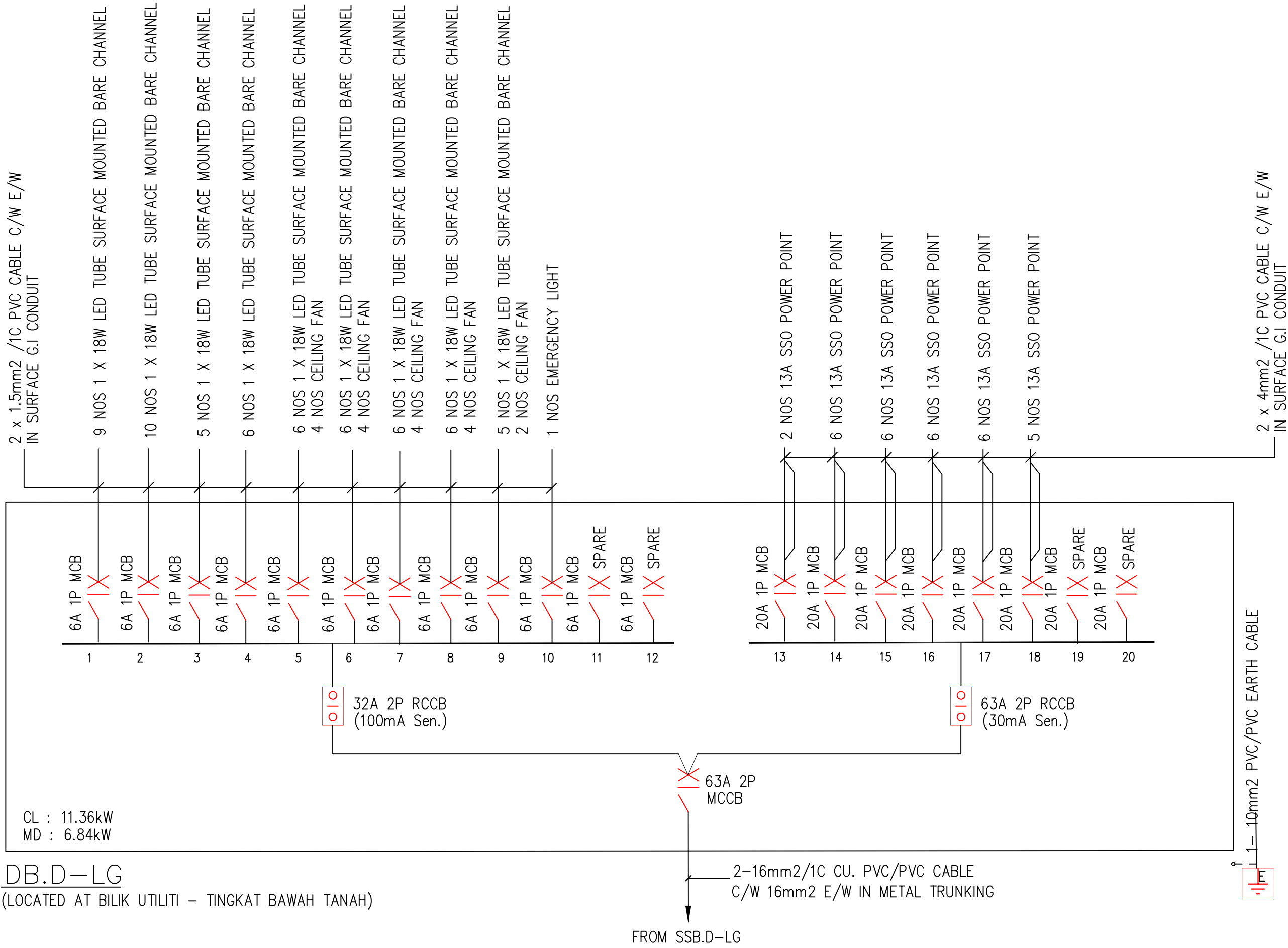
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

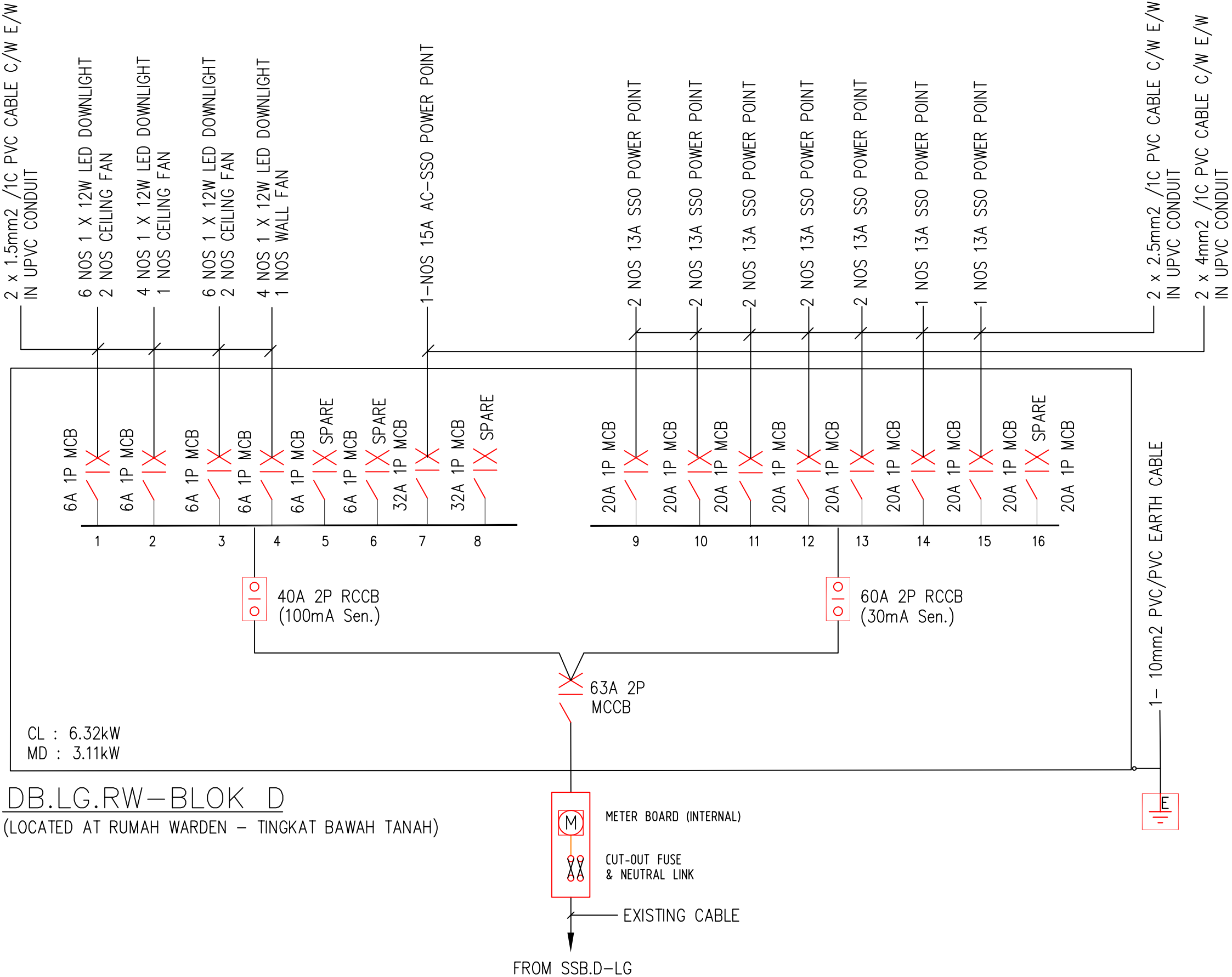
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RHA25008/MARA/ES/BLOK D/LV-05

Scale	N.T.S	Unit	mm	Initial	Date
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Designed by	Nur Fadhila			hila	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rhsk	No.



DB.D-LG
(LOCATED AT BILIK UTILITI - TINGKAT BAWAH TANAH)



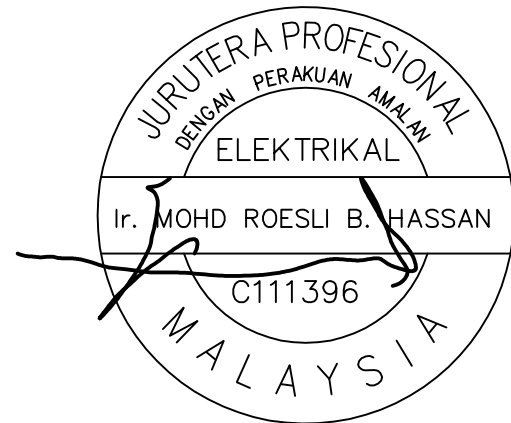
DB.LG.RW-BLOK D
(LOCATED AT RUMAH WARDEN - TINGKAT BAWAH TANAH)

BLOK D

TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL



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BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21 JALAN MARA,
50609 KUALA LUMPUR.

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(Mechanical & Electrical Consulting Engineers and Energy Manager)

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Jalan Kilang Lama,
09000 Kulim, Kedah Darul Aman

Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION

SINGLE LINE DIAGRAM VOL.2
TINGKAT ATAS

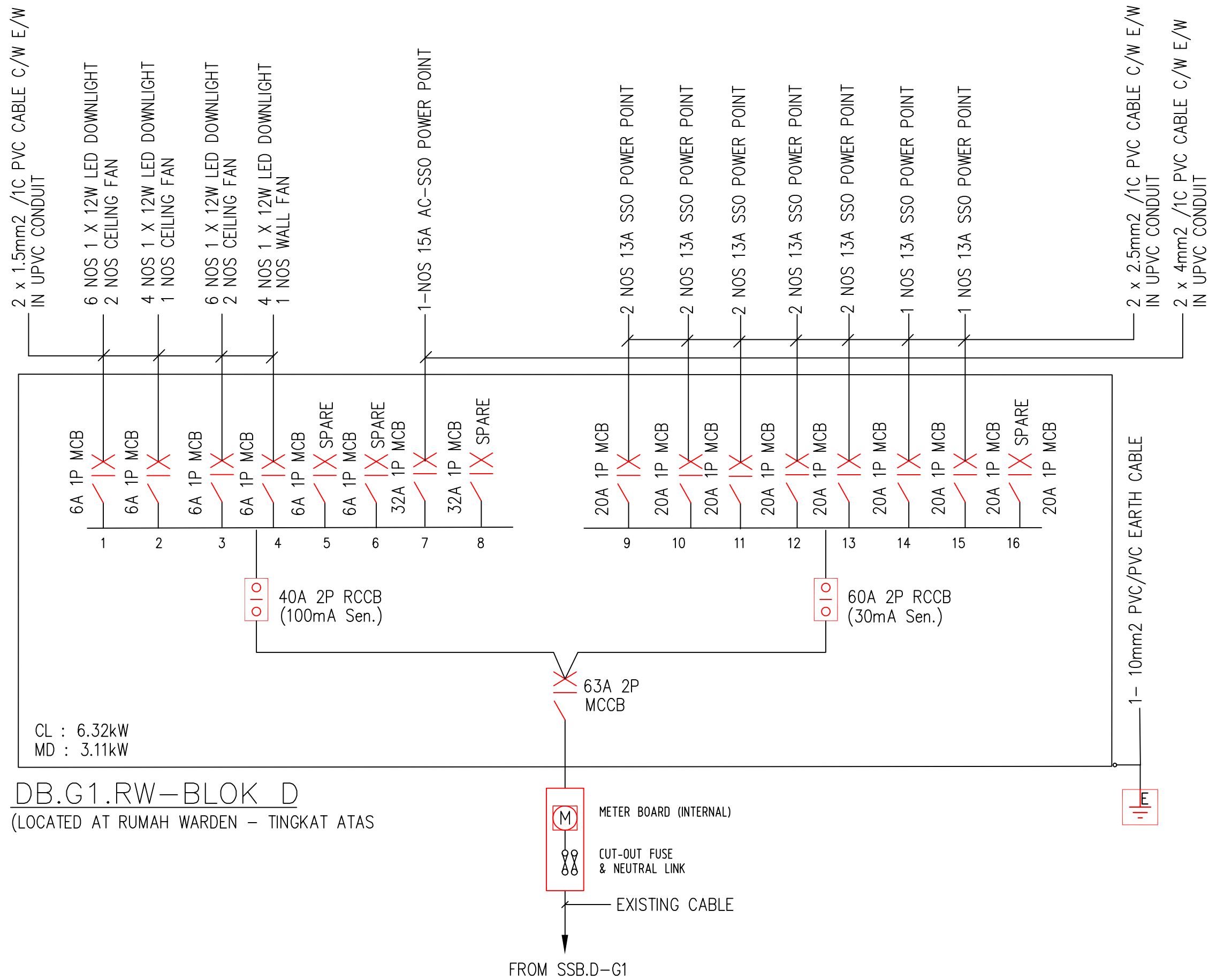
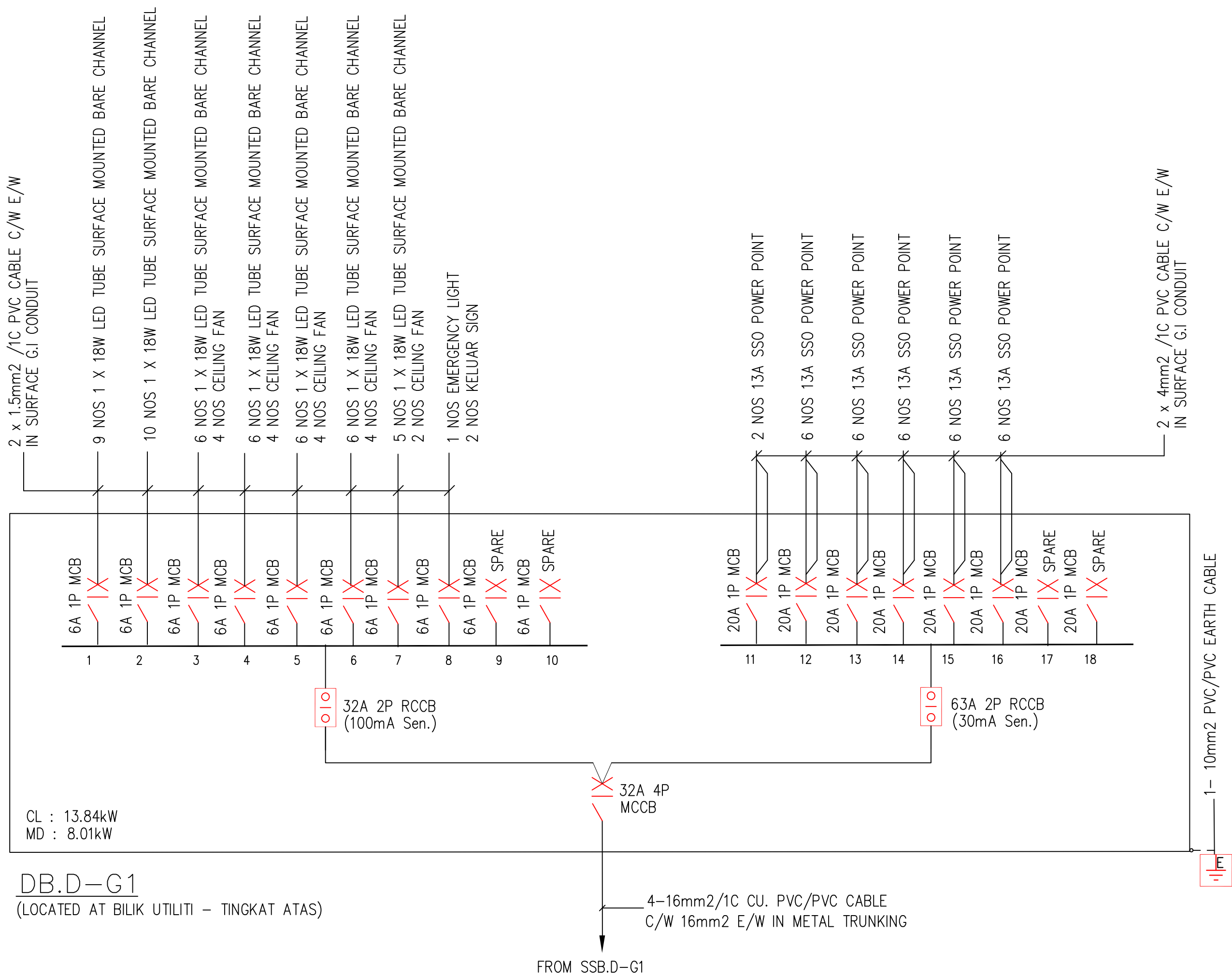
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

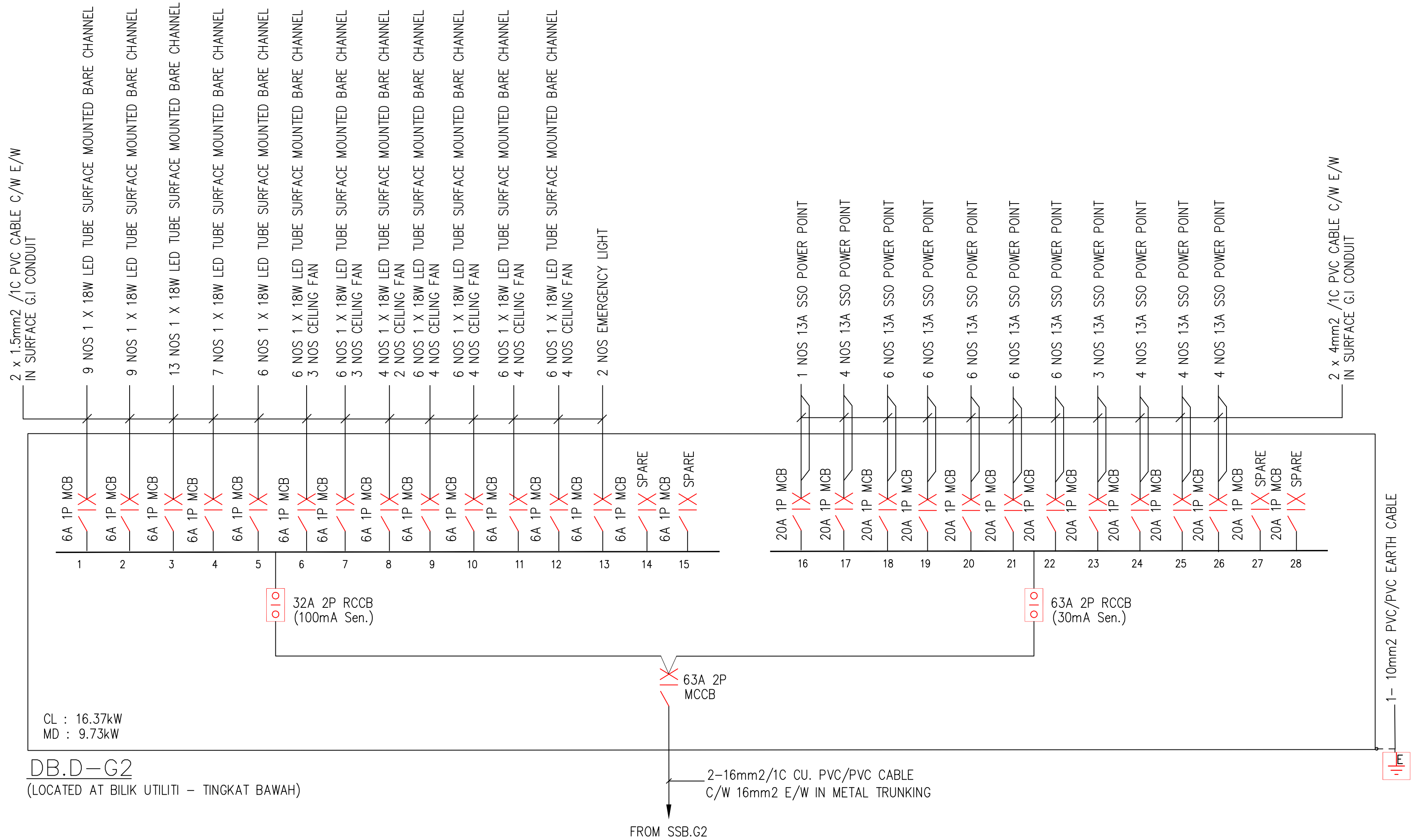
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RHA25008/MARA/ES/BLOK D/LV-06

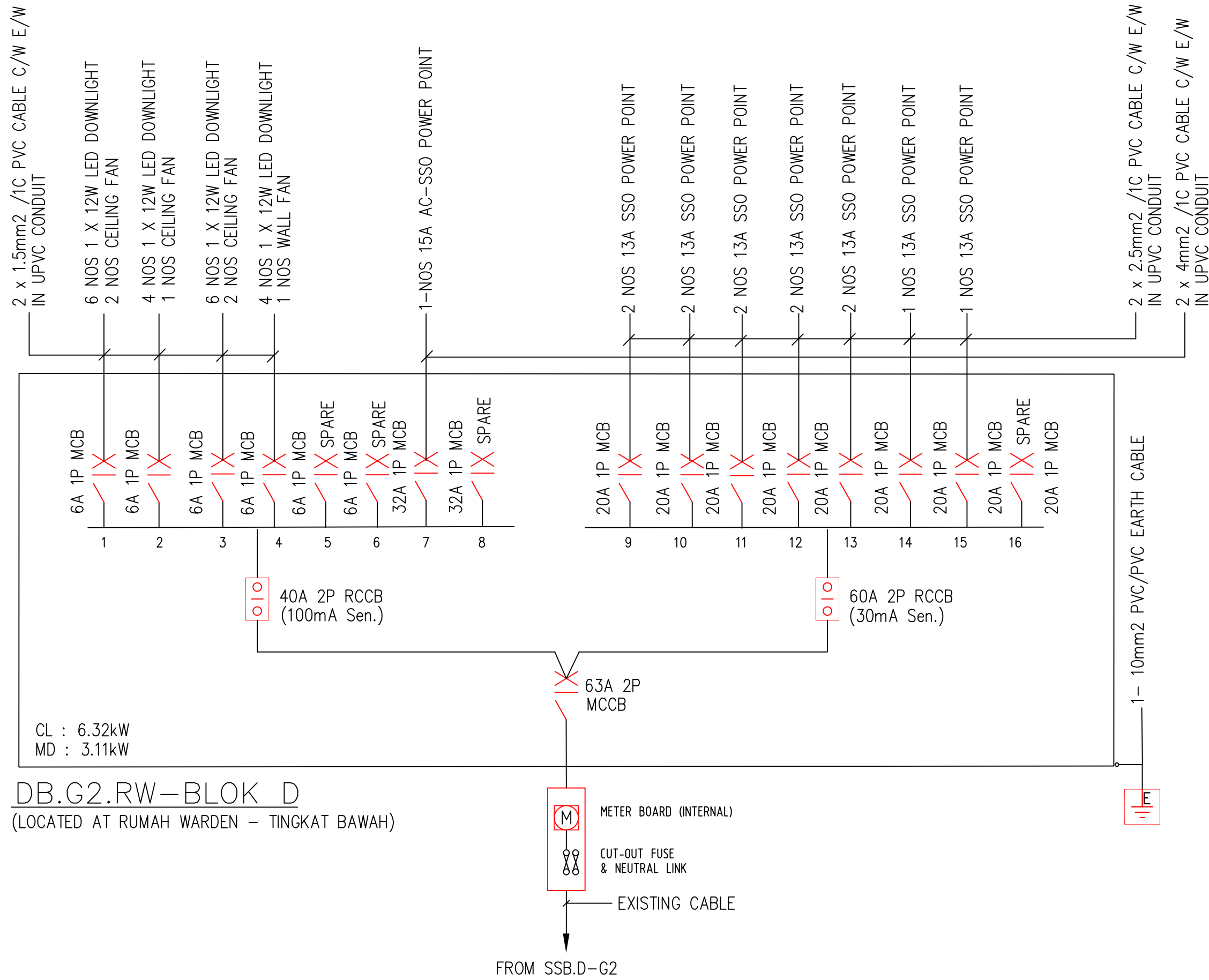
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Drawn by	Siti Amirah			<i>siti</i>	JULY 2026
Designed by	Nur Fadhila			<i>nile</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.



BLOK D



DB.D-G2
(LOCATED AT BILIK UTILITI - TINGKAT BAWAH)



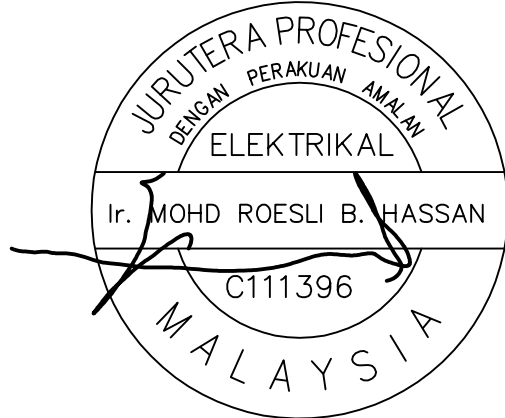
DB.G2.RW-BLOK D
(LOCATED AT RUMAH WARDEN - TINGKAT BAWAH)

BLOK D

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21 JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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(692206-V)

(Mechanical & Electrical Consulting Engineers and Energy Manager)

186, Lorong Putra 1/D,

Pusat Perniagaan Putra,

Jalan Kilang Lama,

09000 Kulim, Kedah Darul Aman

Tel. no: 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

**CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.**

**UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)**

TAJUK LUKISAN/DRAWING TITLE
**ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION**

SINGLE LINE DIAGRAM VOL.3
TINGKAT ATAS

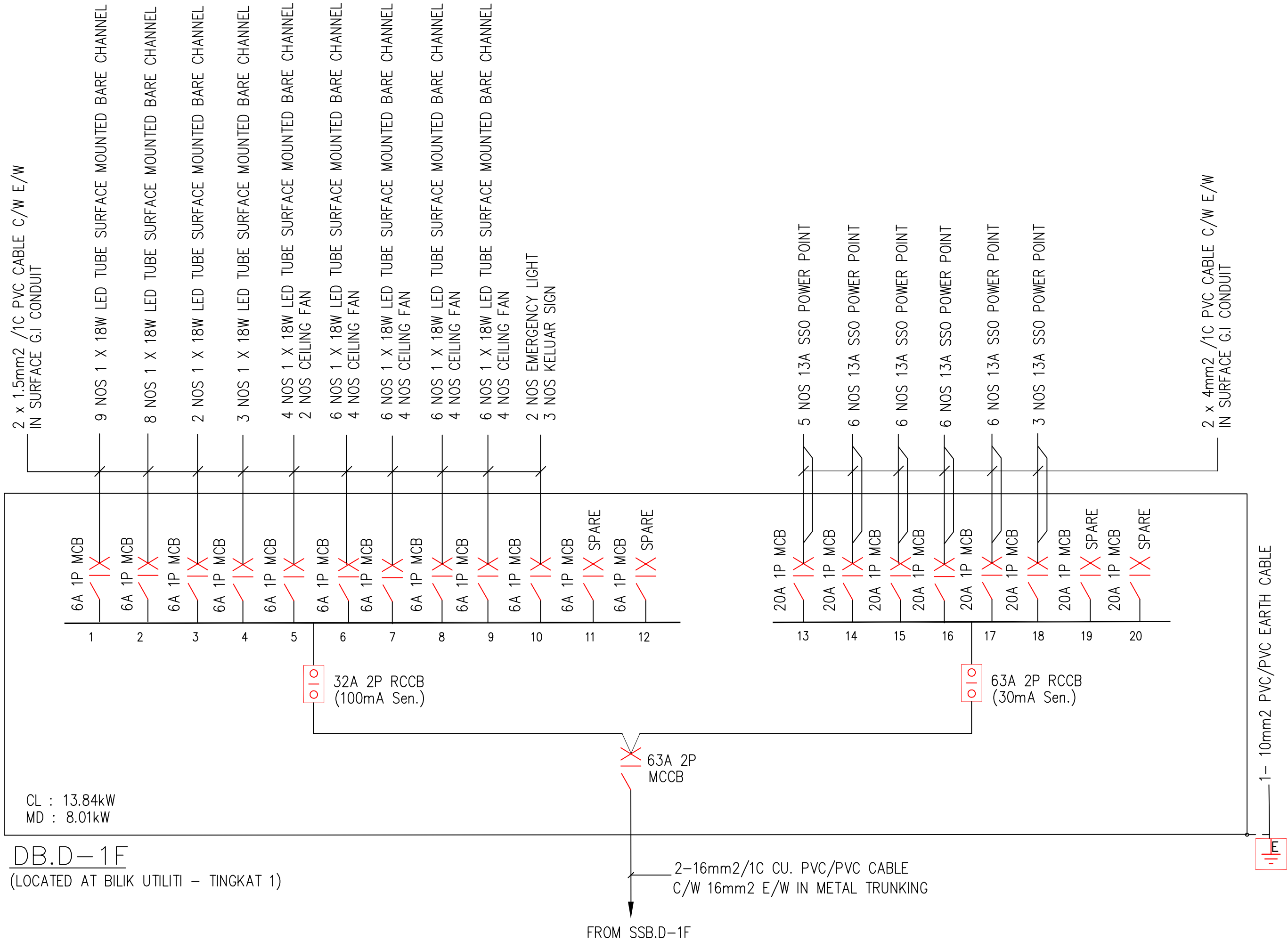
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

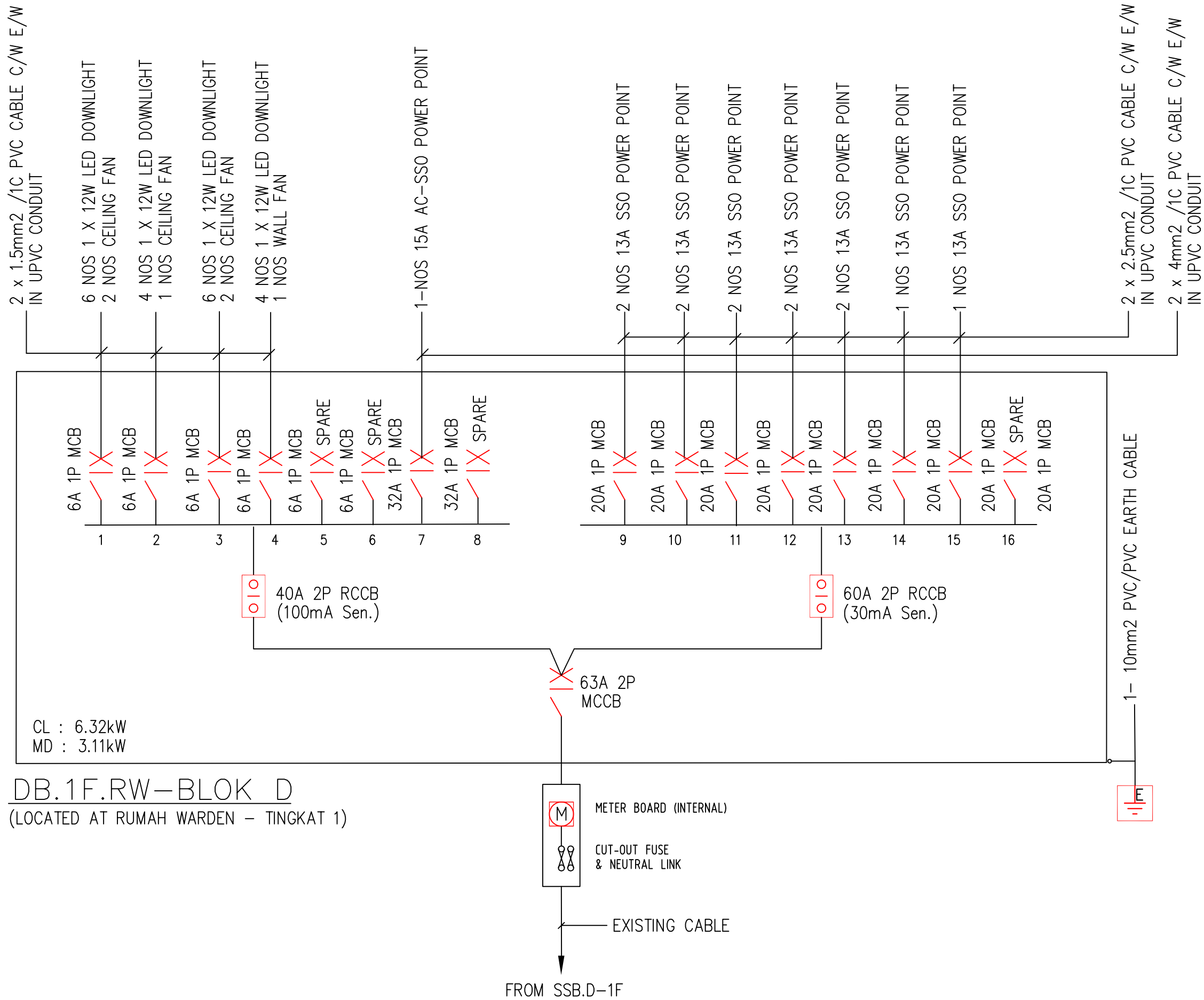
NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-07

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amirah			sk	JULY 2026
Designed by	Nur Fadhlila			hila	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rosh	No.



DB.D-1F
(LOCATED AT BILIK UTILITI - TINGKAT 1)



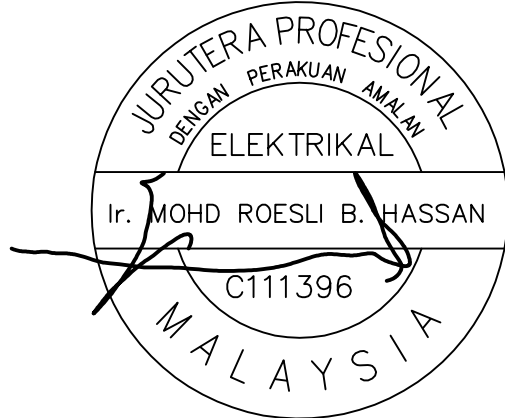
DB.1F.RW-BLOK D
(LOCATED AT RUMAH WARDEN - TINGKAT 1)

BLOK D

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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JURUTERA PERUNDING/CONSULTANT ENGINEER



RHA Consulting Engineers Sdn Bhd

(692206-V)

186, Lorong Putra 1/D,

Pusat Perniagaan Putra,

Jalan Kilang Lama,

09000 Kulim, Kedah Darul Aman

Tel. no: 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
LOW VOLTAGE INSTALLATION

SINGLE LINE DIAGRAM VOL.4
TINGKAT 1

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/LV-08

Scale	N.T.S	Unit	mm	Initial	Date
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Designed by	Nur Fadhlia			hla	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rshk	No.

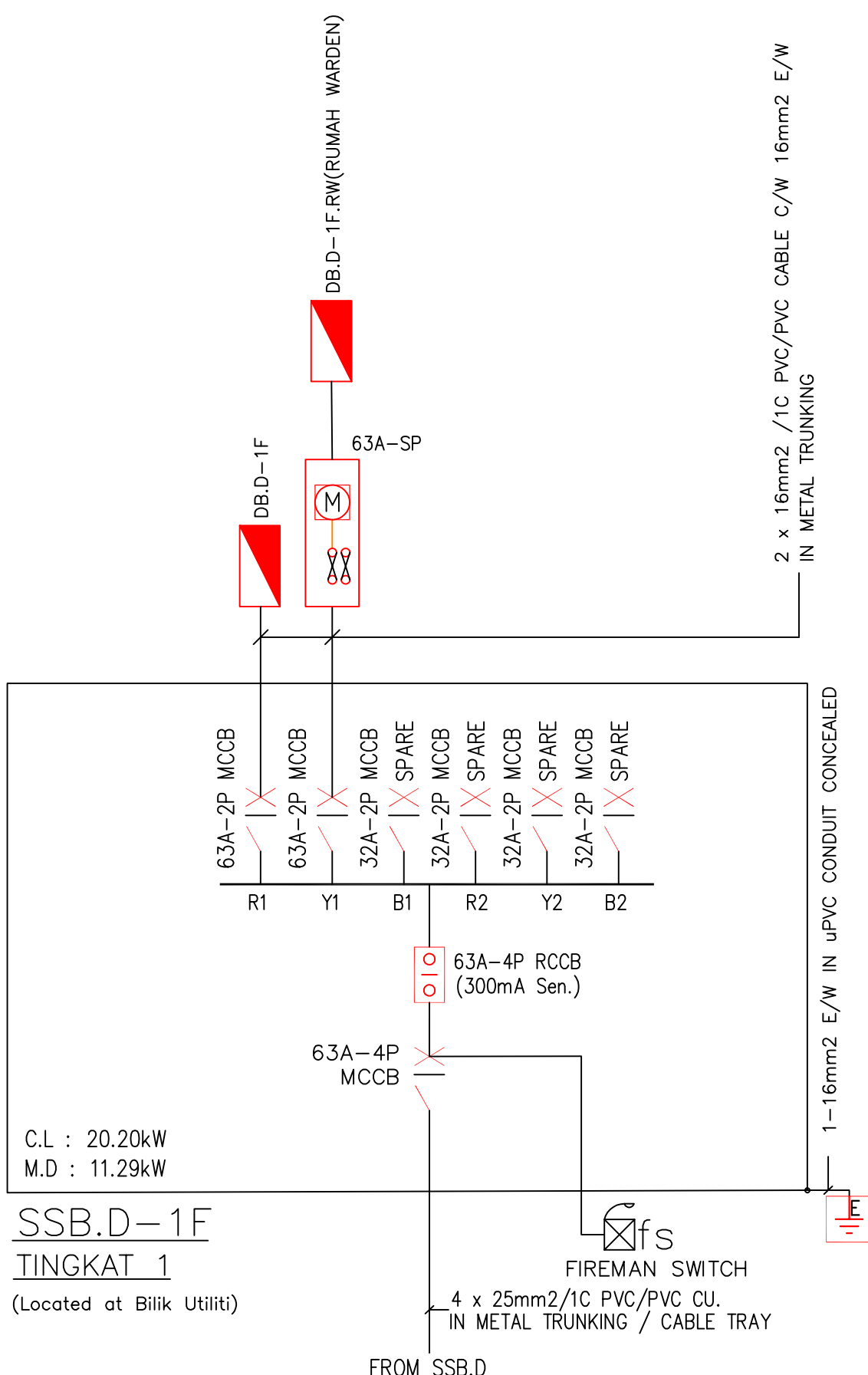
I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

A circular professional stamp for a Juruteraka Profesional (Professional Engineer) in the field of Elektrikal (Electrical). The stamp includes the text "JURUTERA PROFESIONAL", "DENGAN PERAKUAN AMAL", "ELEKTRIKAL", the name "Ir. MOHD ROESLI B. HASSAN", the registration number "C111396", and "MALAYSIA". The stamp is signed with a large, stylized signature across the center.

Manufacturer's catalogues, technical specifications and data for all equipments offered shall be submitted together with the tender. Tender without complete catalogues and technical details will be rejected.

RHA

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amirah			<i>siti</i>	JULY 2026
Designed by	Nur Fadhila			<i>hila</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.



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SEMUA HAK CIPTA TERPELIHARA © ALL RIGHTS RESERVED. NO PART OF THIS DRAWING MAY BE PRODUCED, IN ANY FORM OR BY ANY MEANS, WITHOUT PERMISSION OF SOLVUE CONSULTING ENGINEERS SDN BHD

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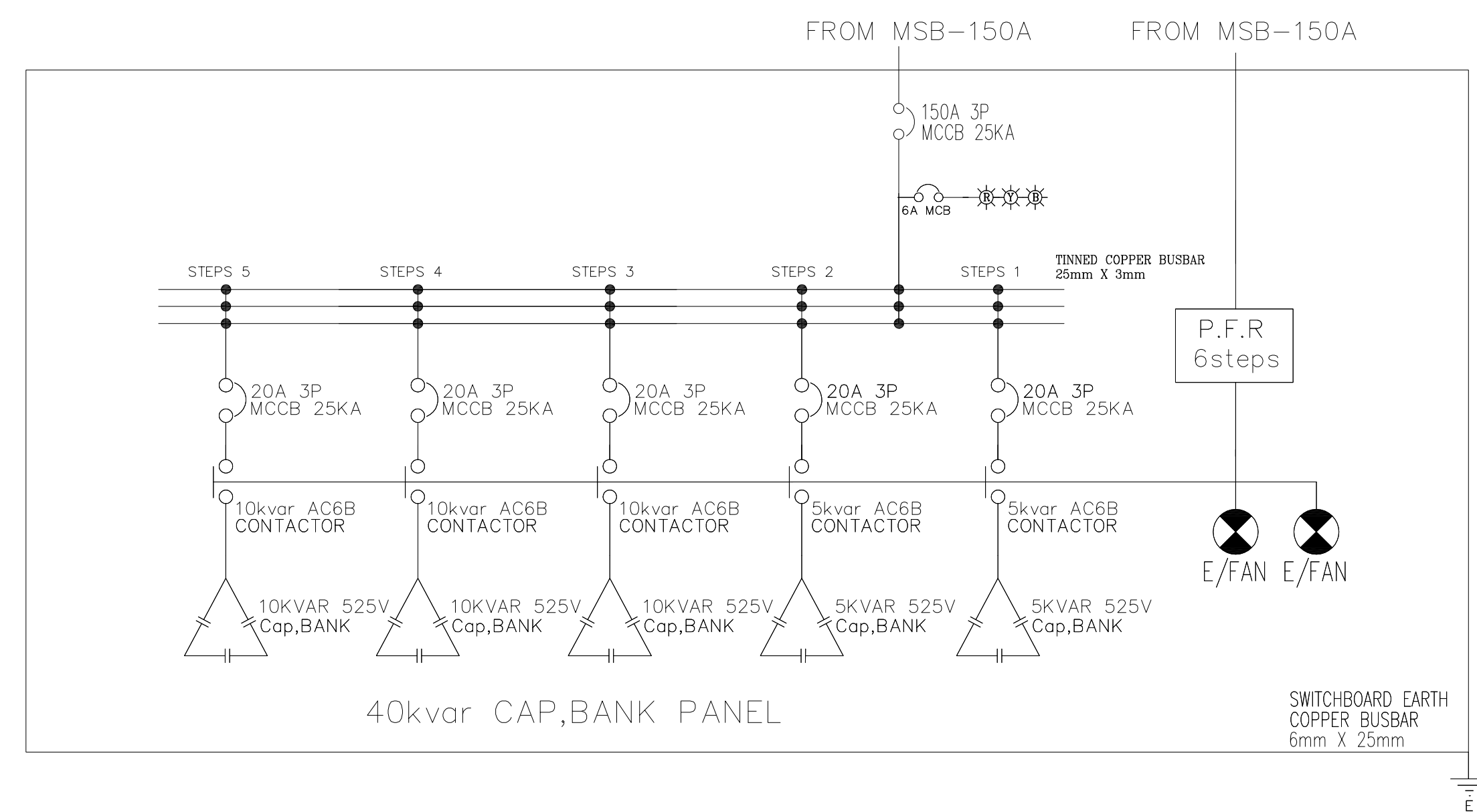
The seal is circular with the text "JURUTERA PROFESIONAL" at the top, "DENGAN PERAKUAN AMALAN" in the middle, "ELEKTRIKAL" below that, and "MALAYSIA" at the bottom. The name "Ir. MOHD ROESLI B. HASSAN" and the number "C111396" are in the center. A signature is written across the seal.

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RHA

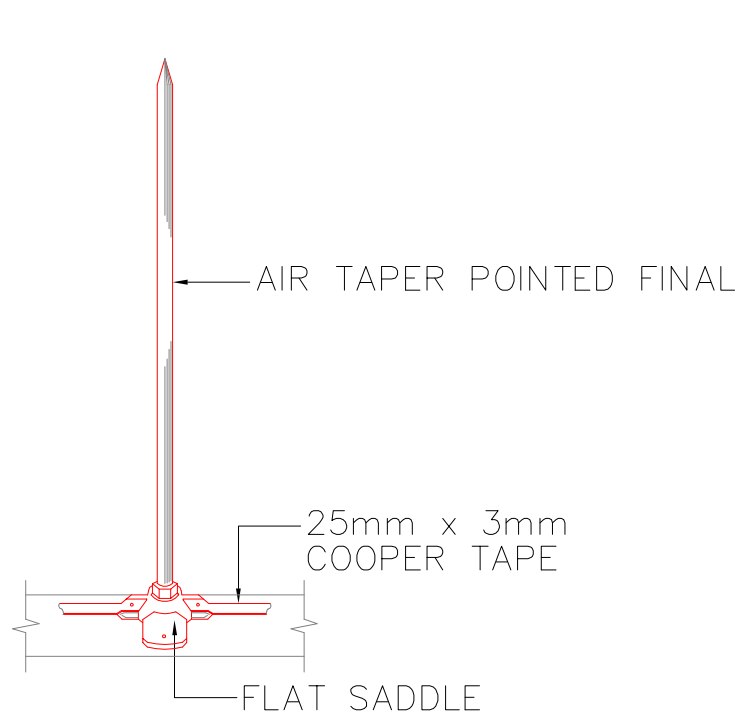
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amirah			<i>siti</i>	JULY 2026
Designed by	Nur Fadhila			<i>fida</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.

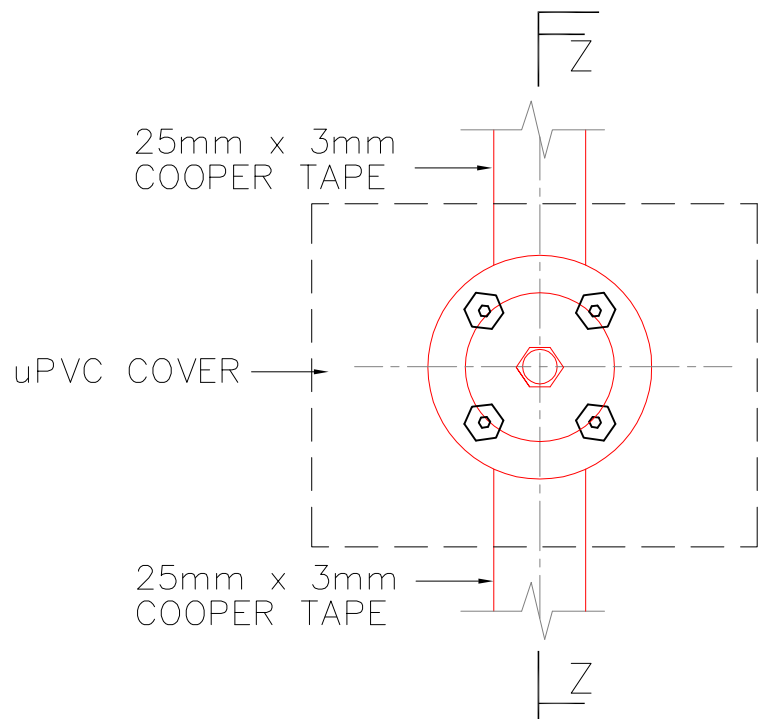


LEGEND

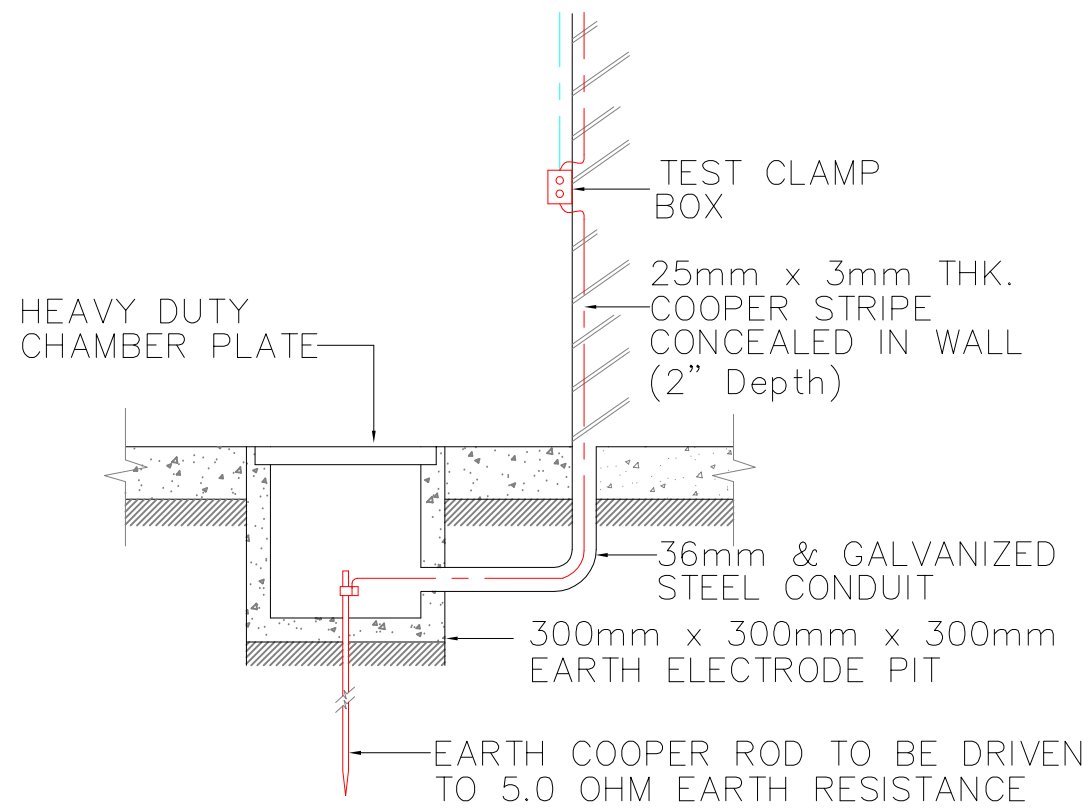
	16 mm (nominal dia.) x 300 mm (length), 16 mm (thread dia.) Air Terminals With Lock Nut
	25mm x 3mm BAR COPPER TAPE
	DOWN CONDUCTOR
	HEAVY DUTY INSPECTION EARTH CHAMBER BOX C/W COPPER EARTH ROD 345 mm (L) x 345 mm (W) x 210 mm (H)
	Earth Electrode 14.2 mm (nominal dia.) x 1500 mm (length), 15.875 mm (thread dia.)



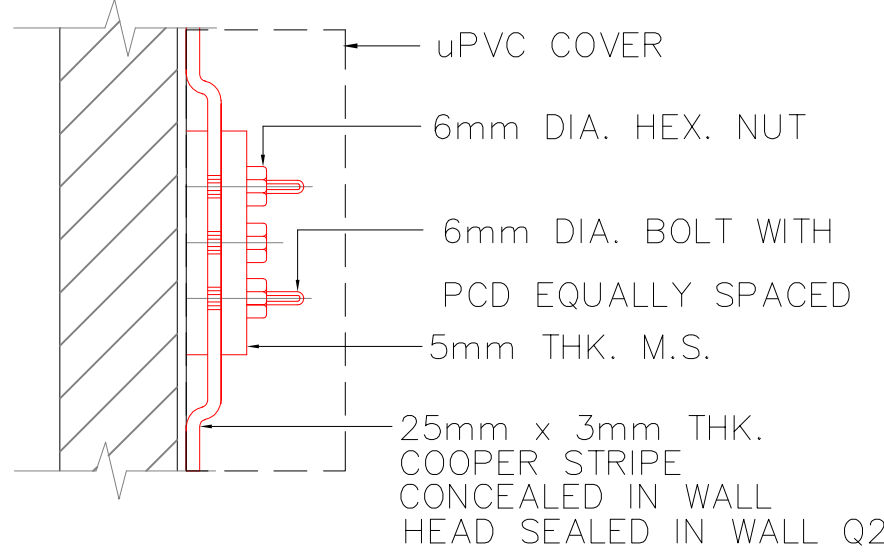
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(N.T.S)



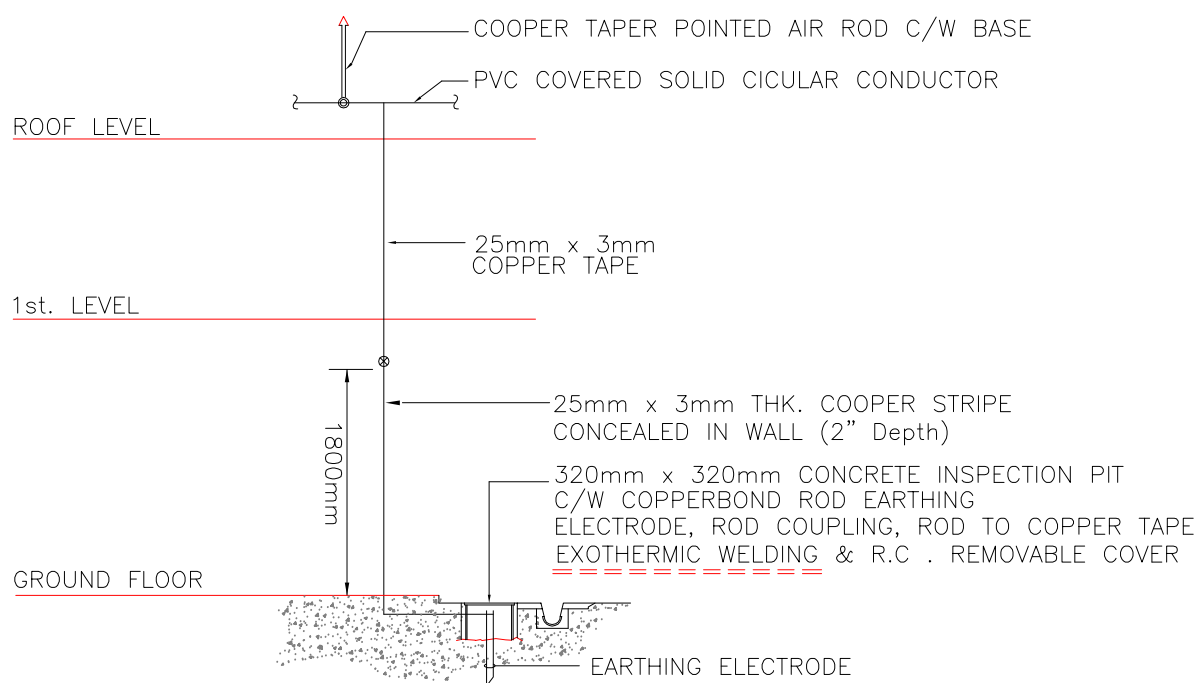
TEST CLAMP DETAIL
(N.T.S)



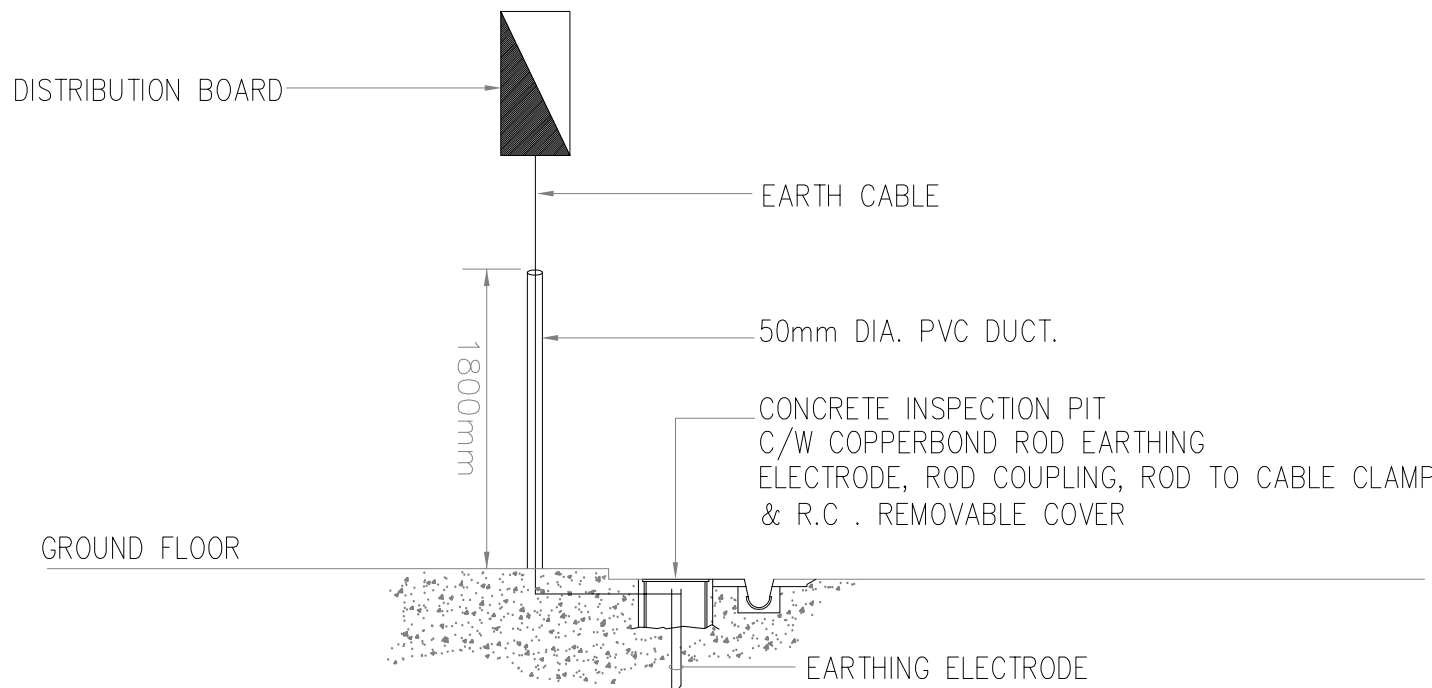
EARTH CHAMBER DETAIL
(N.T.S)



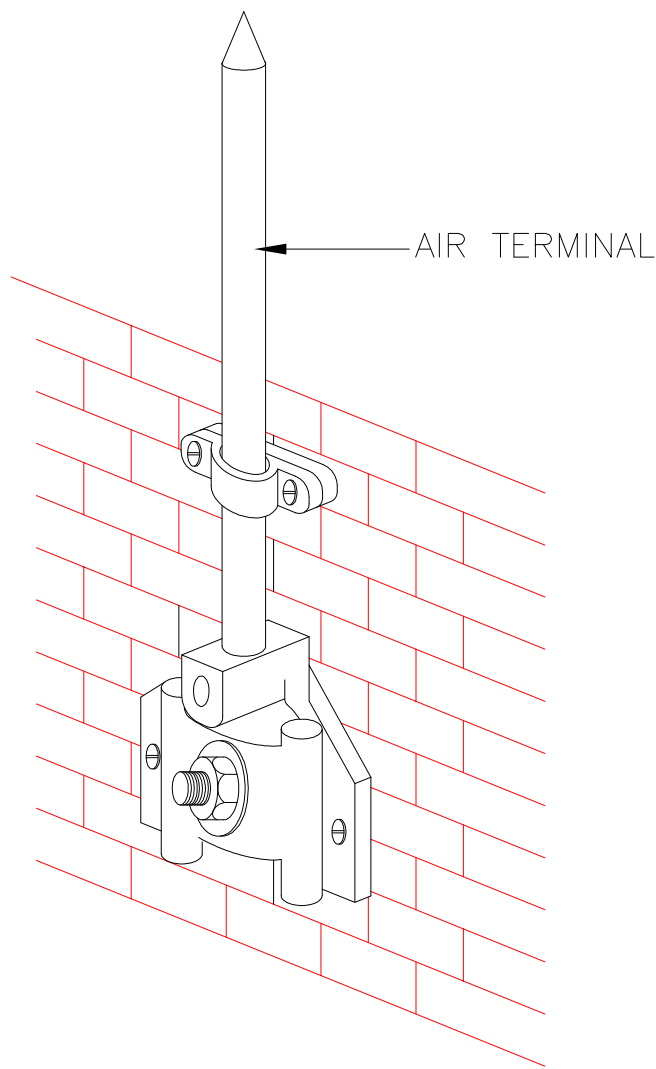
SECTION Z-Z
(N.T.S)



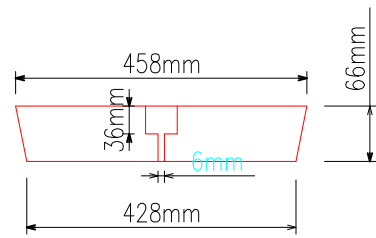
DETAIL 'A'
(PART OF LIGHTNING PROTECTION DIAGRAMMATIC)
(N.T.S)



DETAIL 'A'
(PART OF EARTHING SYSTEM DIAGRAMATIC)
(N.T.S)

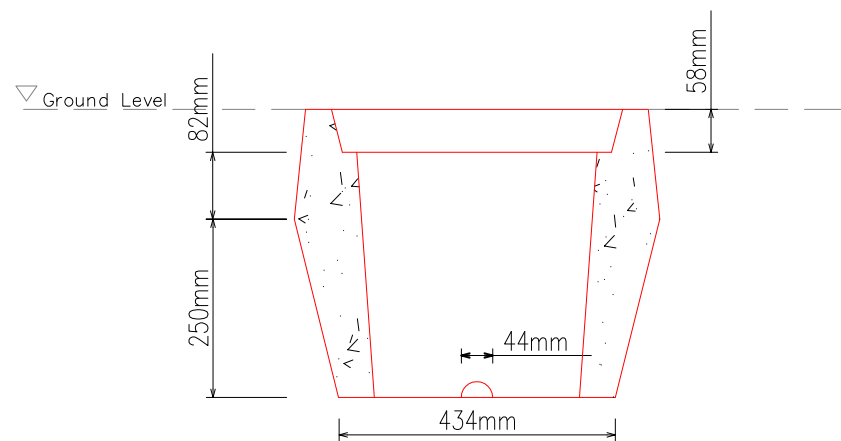


AIR TERMINAL
(WALL MOUNTED)
n.t.s



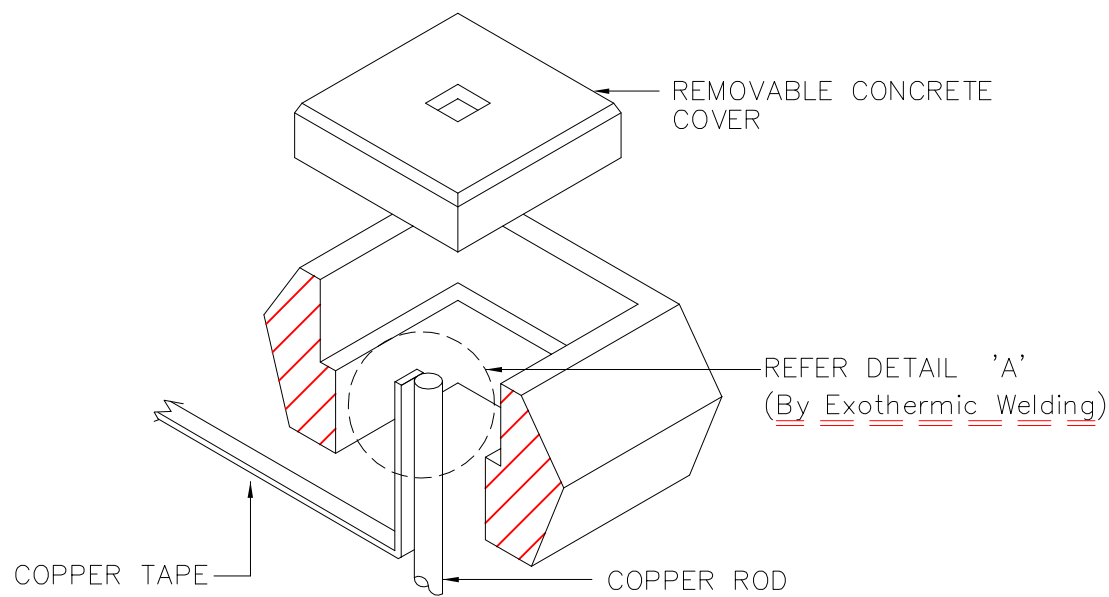
CROSS SECTION B
n.t.s.

INSPECTION PIT C/W LIFT OFF COVER
n.t.s.



CROSS SECTION A
n.t.s.

INSPECTION PIT C/W LIFT OFF COVER
n.t.s.

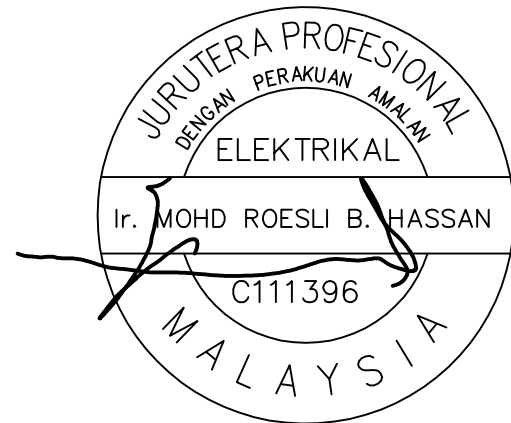


EARTH CHAMBER DETAIL
n.t.s.

TENDER DRAWING

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(Mechanical & Electrical Consulting Engineers and Energy Manager)
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09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
EARTHING & LIGHTNING PROTECTION
LEGEND & NOTES

(BANGUNAN BLOK D)

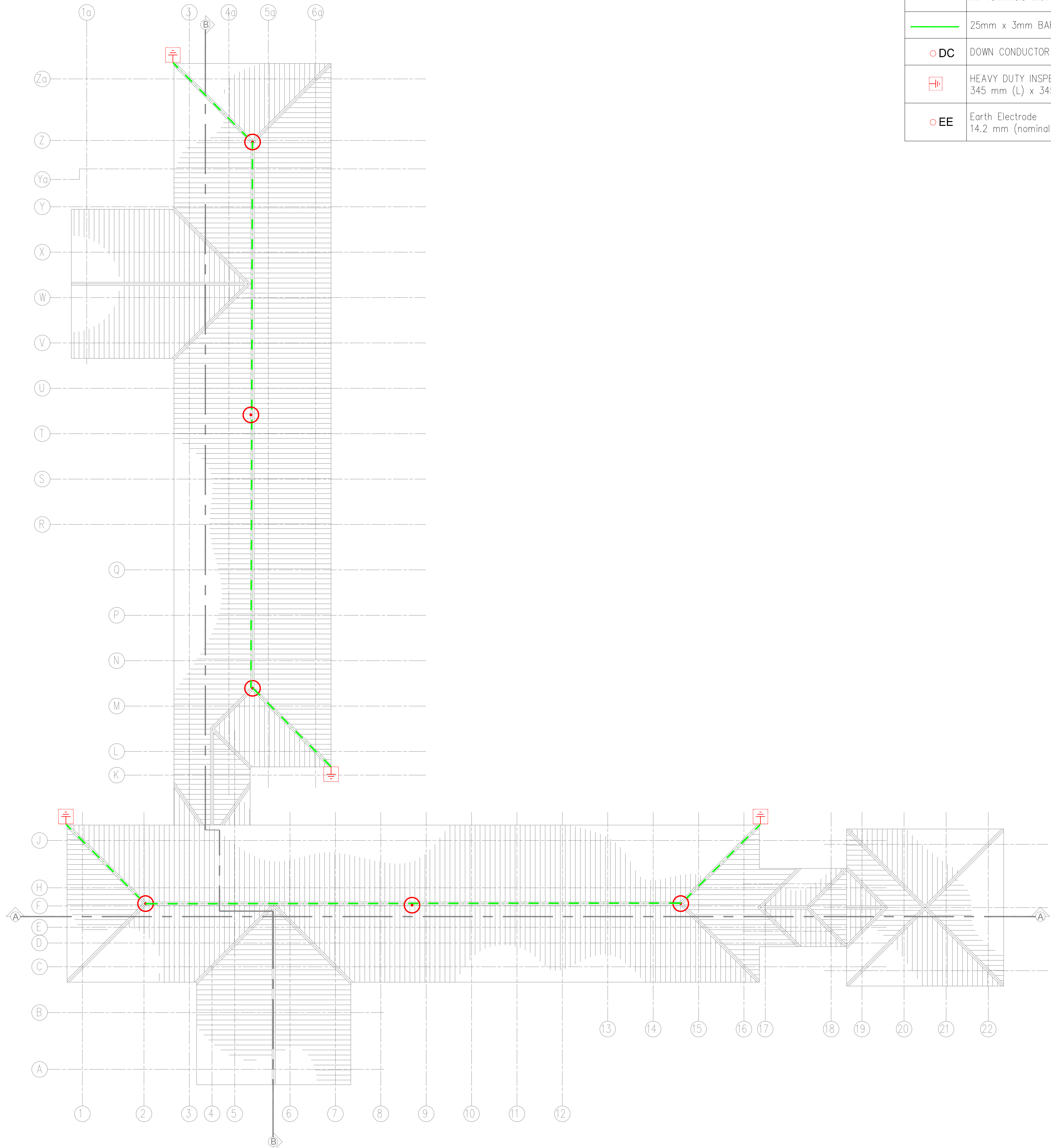
Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/ELP-01

Scale	N.T.S	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadila			LF	Sheet
Approved by	Ir. Mohd Roesli Hassan			RRH	No.

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SEMUA HAK CIPTA TERPELIHARA & ALL RIGHTS RESERVED. NO PART OF THIS DRAWING MAY BE PRODUCED, IN ANY FORM OR BY ANY MEANS, WITHOUT PERMISSION OF SOLVE CONSULTING ENGINEERS SDN BHD



PELAN BUMBUNG

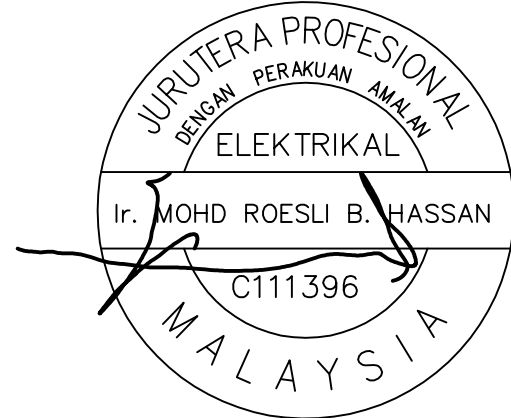
LEGEND

	16 mm (nominal dia.) x 300 mm (length), 16 mm (thread dia.) Air Terminals With Lock Nut
	25mm x 3mm BAR COPPER TAPE
	DOWN CONDUCTOR
	HEAVY DUTY INSPECTION EARTH CHAMBER BOX C/W COPPER EARTH ROD 345 mm (L) x 345 mm (W) x 210 mm (H)
	Earth Electrode 14.2 mm (nominal dia.) x 1500 mm (length), 15.875 mm (thread dia.)

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumbing work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



I hereby certify that the land/building is under owner's responsibility and deemed to have been taken place when the construction is substantially and sufficient completed in accordance with the contract.

PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21 JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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JURUTERA PERUNDING/CONSULTANT ENGINEER



RHA Consulting Engineers Sdn Bhd
(692206-V)
(Mechanical & Electrical Consulting Engineers and Energy Manager)
186, Lorong Putra 1/D,
Pusat Perniagaan Putra,
Jalan Kilang Lama,
09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
EARTHING & LIGHTNING PROTECTION
PELAN BUMBUNG

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

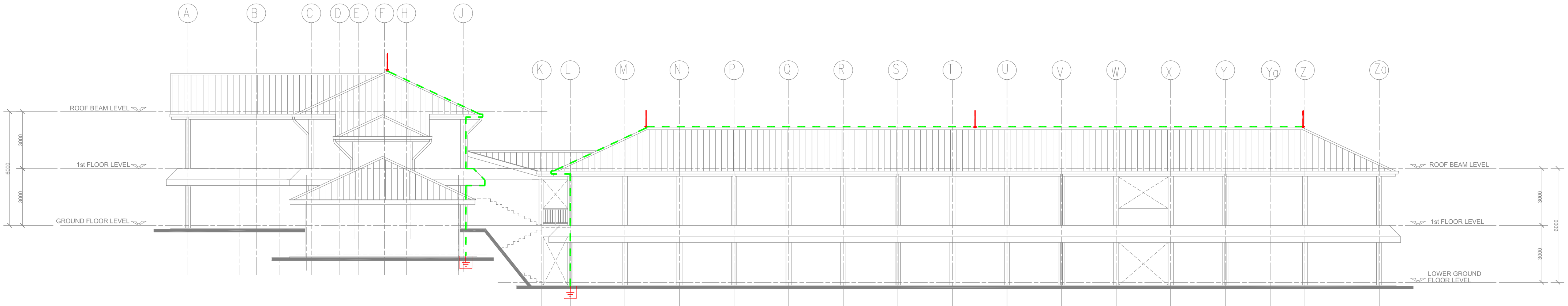
RHA25008/MARA/ES/BLOK D/ELP-02

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Mohd Roesli Hassan			MRH	No.

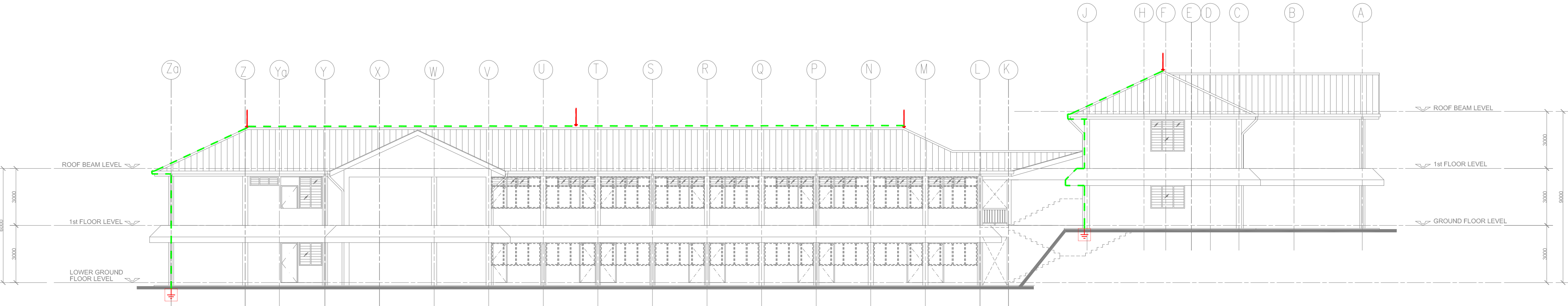
BLOK D

LEGEND

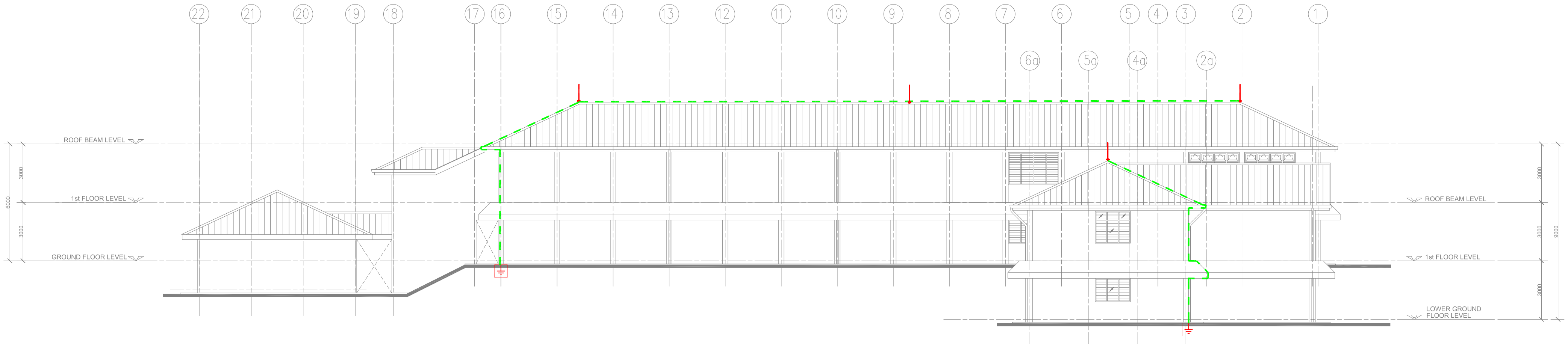
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	HEAVY DUTY INSPECTION EARTH CHAMBER BOX C/W COPPER EARTH ROD 345 mm (L) x 345 mm (W) x 210 mm (H)
	Earth Electrode 14.2 mm (nominal dia.) x 1500 mm (length), 15.875 mm (thread dia.)



PANDANGAN KANAN



PANDANGAN KIRI

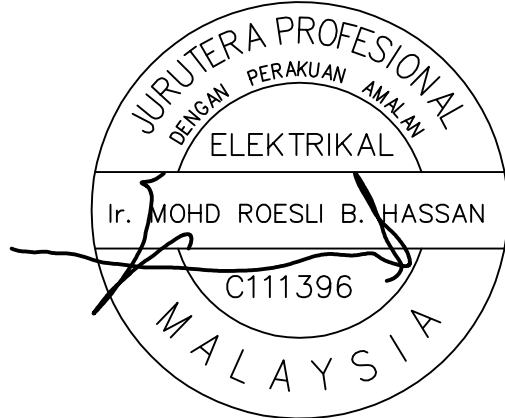


PANDANGAN BELAKANG

TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

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Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
EARTHING & LIGHTNING PROTECTION
PANDANGAN KIRI
PANDANGAN KANAN
PANDANGAN BELAKANG

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/ELP-03

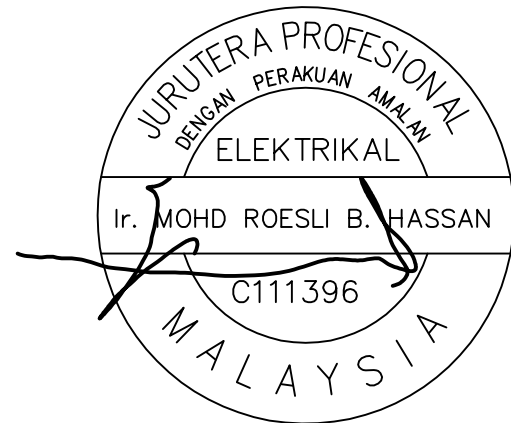
Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			sk	JULY 2026
Designed by	Nur Fadhlia			lila	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rashd	No.

BLOK D

TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL



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E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
ELECTRICAL SERVICES
PUBLIC ADDRESS INSTALLATION

PELAN TINGKAT ATAS
PELAN TINGKAT BAWAH
PELAN TINGKAT BAWAH (LOWER GROUND)

BLOK D

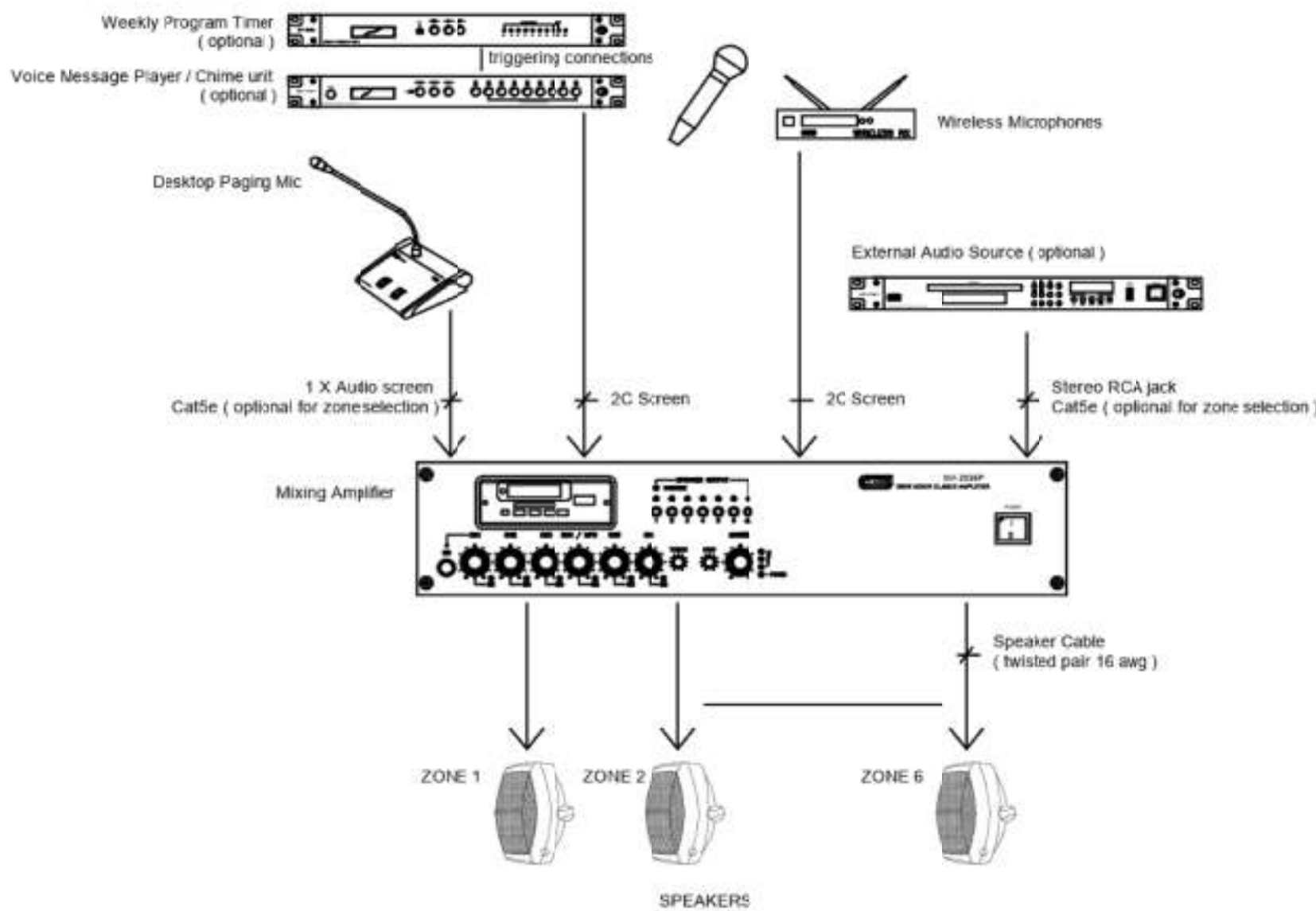
Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/ES/BLOK D/PA-01

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Mohd Roesli Hassan			RRH	No.

PUBLIC ADDRESS AND SOUND SYSTEM SERVICES	
SYMBOL	DESCRIPTION
	30W IP65 HORN SPEAKER C/W BRACKET
	IN CONCEALED UPVC CONDUIT OR EXPOSED G.I. CONDUIT
	PA SYSTEM EQUIPMENT C/W RACK (LOCKABLE)
	VOLUME CONTROL C/W OVERDRIVE RELAY
	MICROPHONE POINT



PELAN TINGKAT BAWAH

PELAN TINGKAT BAWAH
(LOWER GROUND)

BLOK D

TENDER DRAWING

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TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



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BAHAGIAN BINAAN DAN SELENGGARAAN,
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Tel. no: 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
SANITARY PLUMBING INSTALLATION
PIPING SCHEMATIC

BLOK D

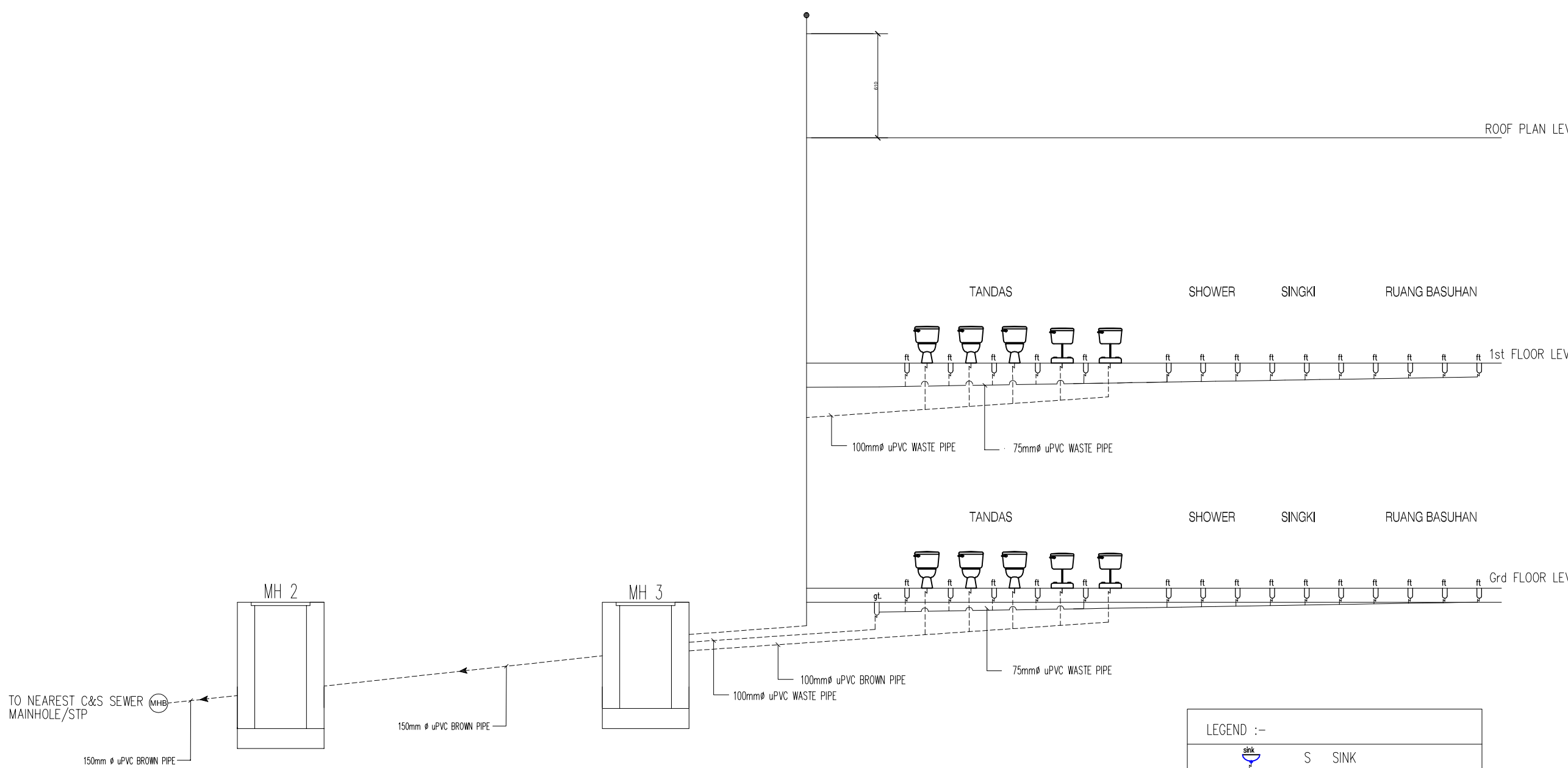
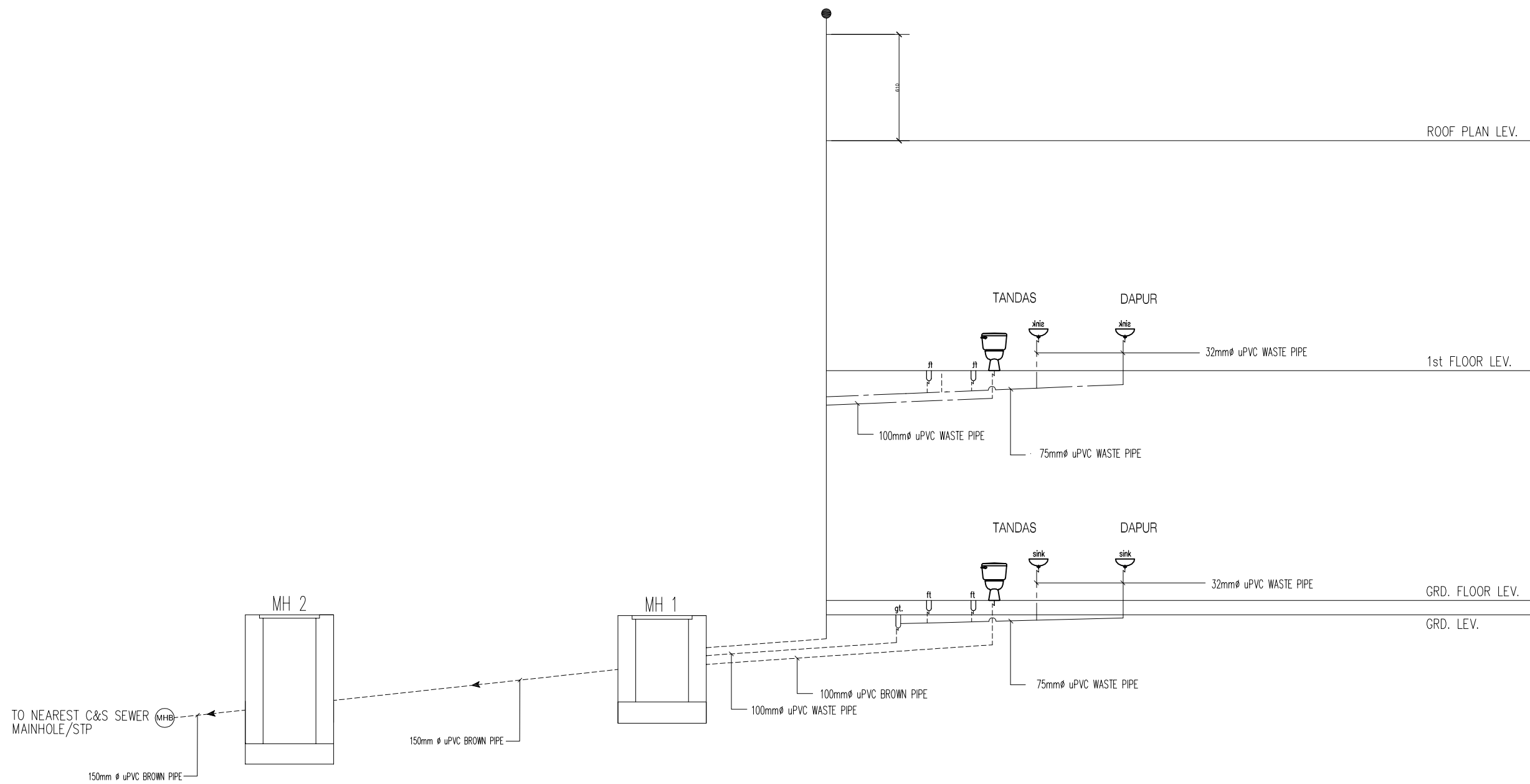
Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

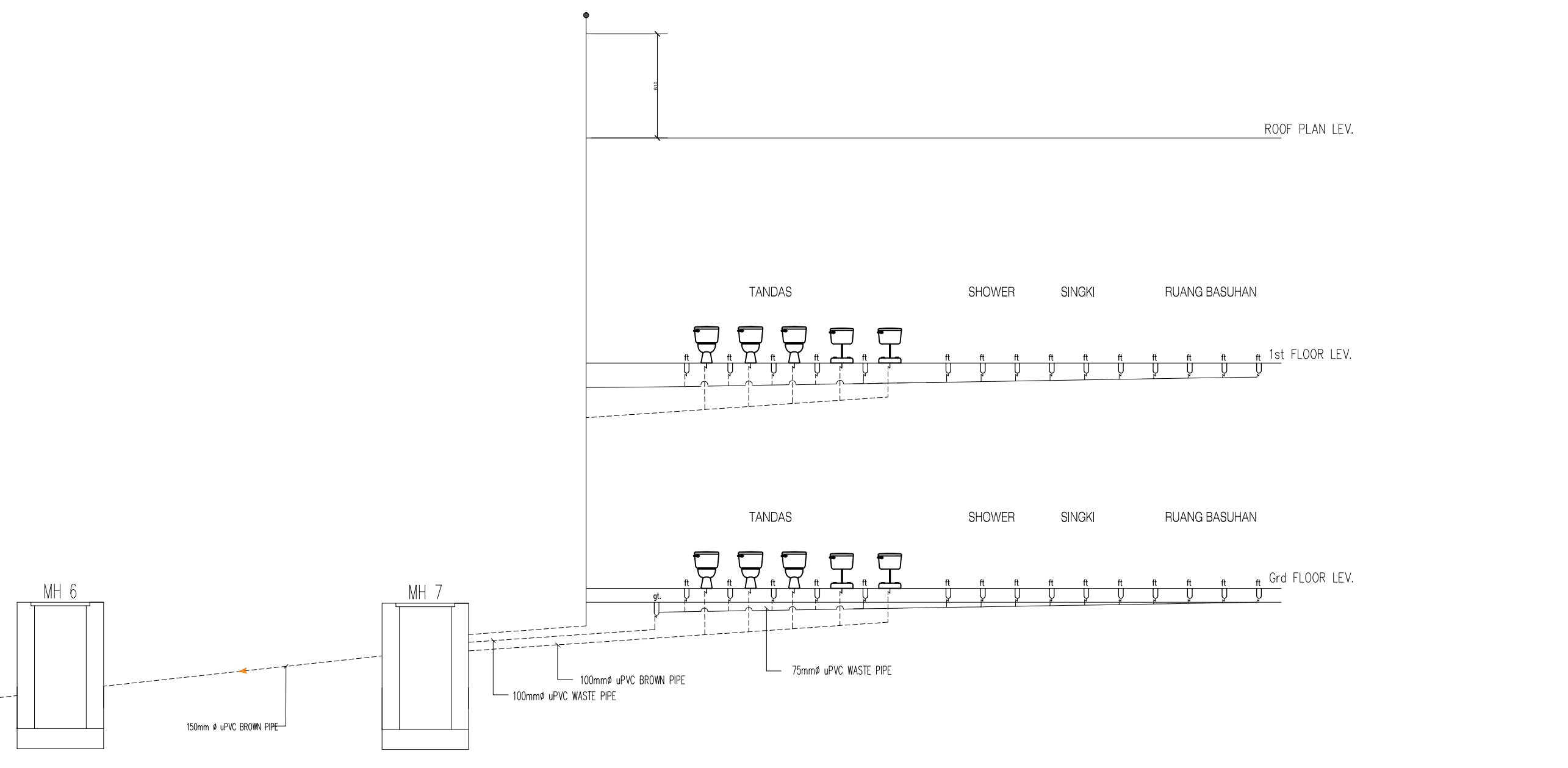
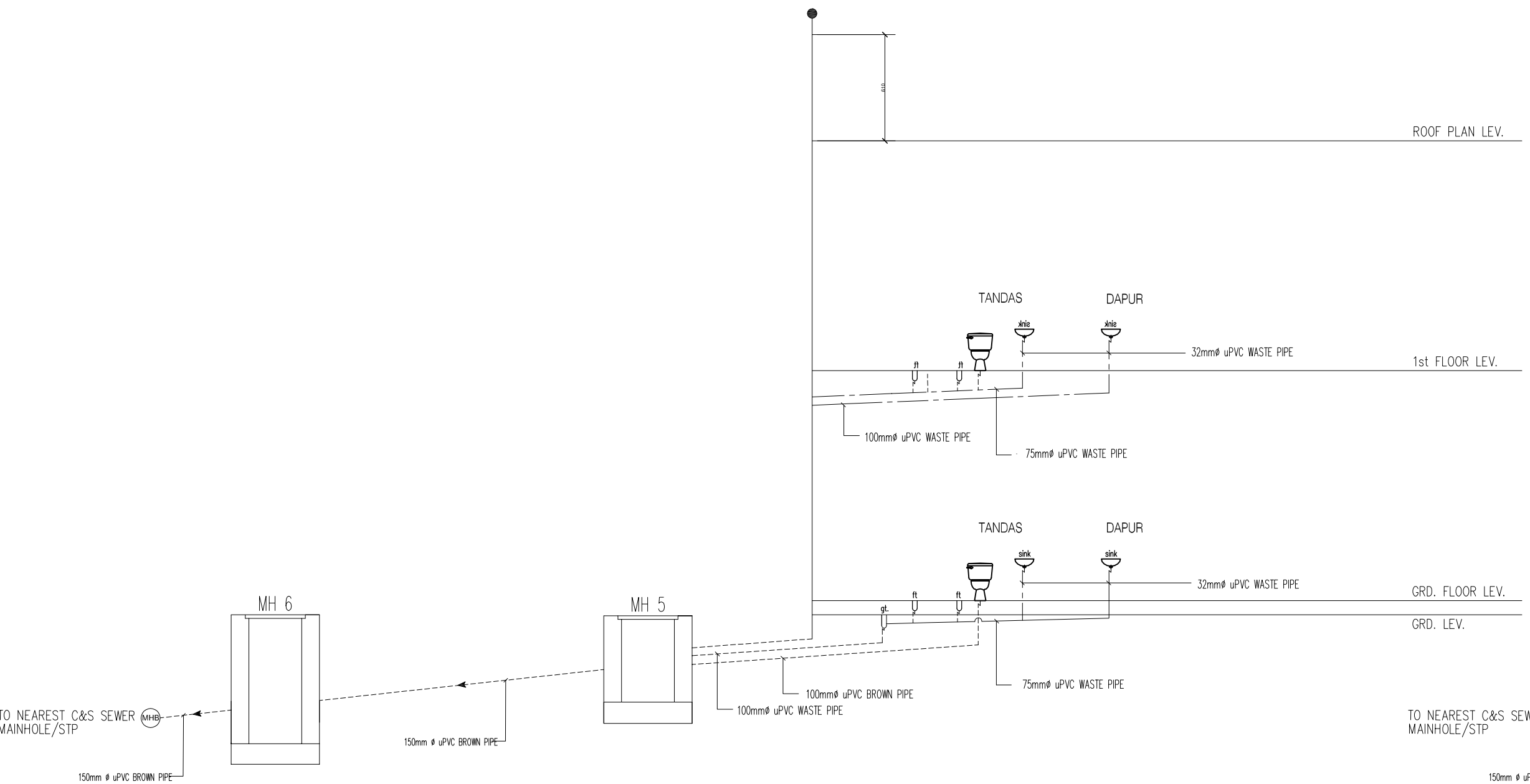
RHA25008/MARA/MS/BLOK D/SP-02

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Mohd Roesli Hassan			MRH	No.

BLOK D



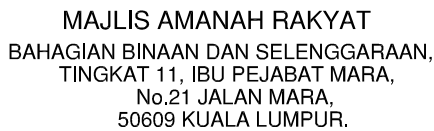
LEGEND :-	
	S SINK
	B BASIN
	WC WATER CLOSET
	WT WATER TUB
	FT FLOOR TRAP
	GT GULLY TRAP
	GRT GREASE TRAP
	MH MANHOLE
	W.P WASTE PIPE
	W.P WASTE PIPE
	S.P SOIL PIPE
	BMH BRICK MANHOLE
	R/A RESTBEND CAP & ADAPTOR





The seal is circular with the text "JURUTERA PROFESIONAL" at the top, "DENGAN PERAKUAN AMN-M" below it, "MEKANIKAL" in the center, "Ir. MD ISA BIN DAUD" below that, "C112195" below the name, and "MALAYSIA" at the bottom. A signature is written across the seal.

PEMILIK BANGUNAN / TANAH:



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(Mechanical & Electrical Consulting Engineers and Energy Manager)

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Pusat Perniagaan Putra
Jalan Kilang Lama
09000 Kulim, Kedah Darul Amai

Tel. no: 04-4916610; Fax: 04-4916630
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK / PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
SANITARY PLUMBING INSTALLATION

PELAN TINGKAT ATAS
PELAN TINGKAT BAWAH
PELAN TINGKAT BAWAH (LOWER GROUND

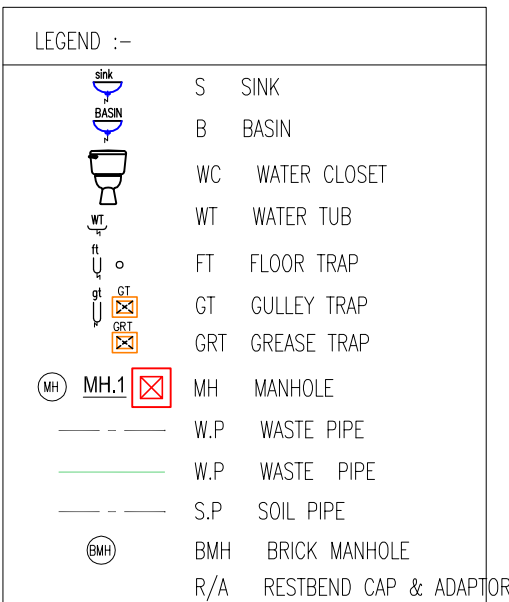
BLOK D

Date	Rev. no.	Amendment	Initial	Approve

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK D/SP-03

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			<i>siti</i>	JULY 2026
Designed by	Nur Fadhila			<i>hila</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.



BLOK D

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All plumbing work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



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E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
SANITARY PLUMBING INSTALLATION
PELAN BUMBUNG
PELAN TINGKAT ATAS

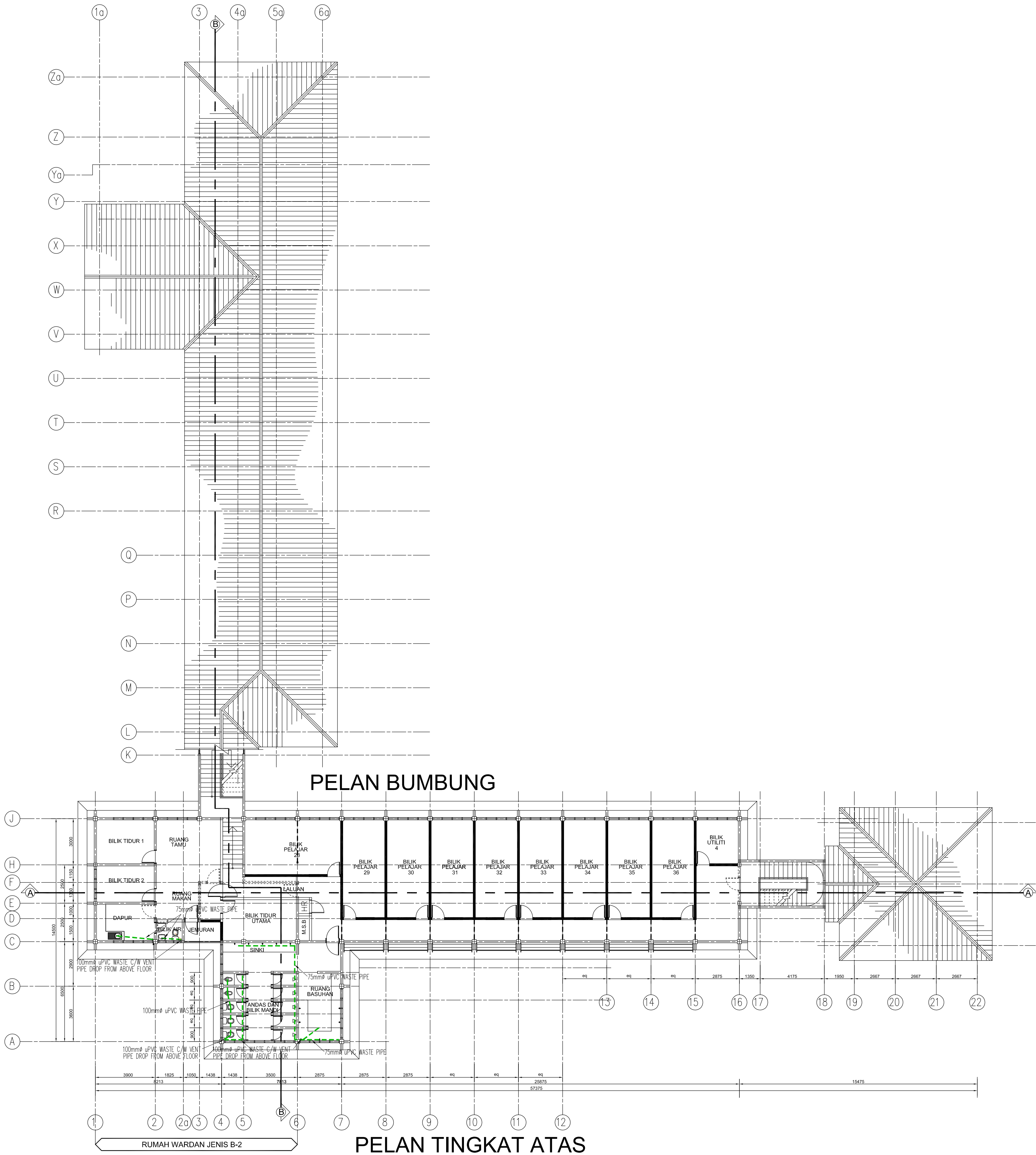
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK D/SP-04

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Mohd Roesli Hassan			MRH	No.



LEGEND :-	
	S SINK
	B BASIN
	WC WATER CLOSET
	WT WATER TUB
	FT FLOOR TRAP
	GT GULLY TRAP
	GRT GREASE TRAP
	MH MANHOLE
	W.P WASTE PIPE
	W.P WASTE PIPE
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PROJEK/PROJECT

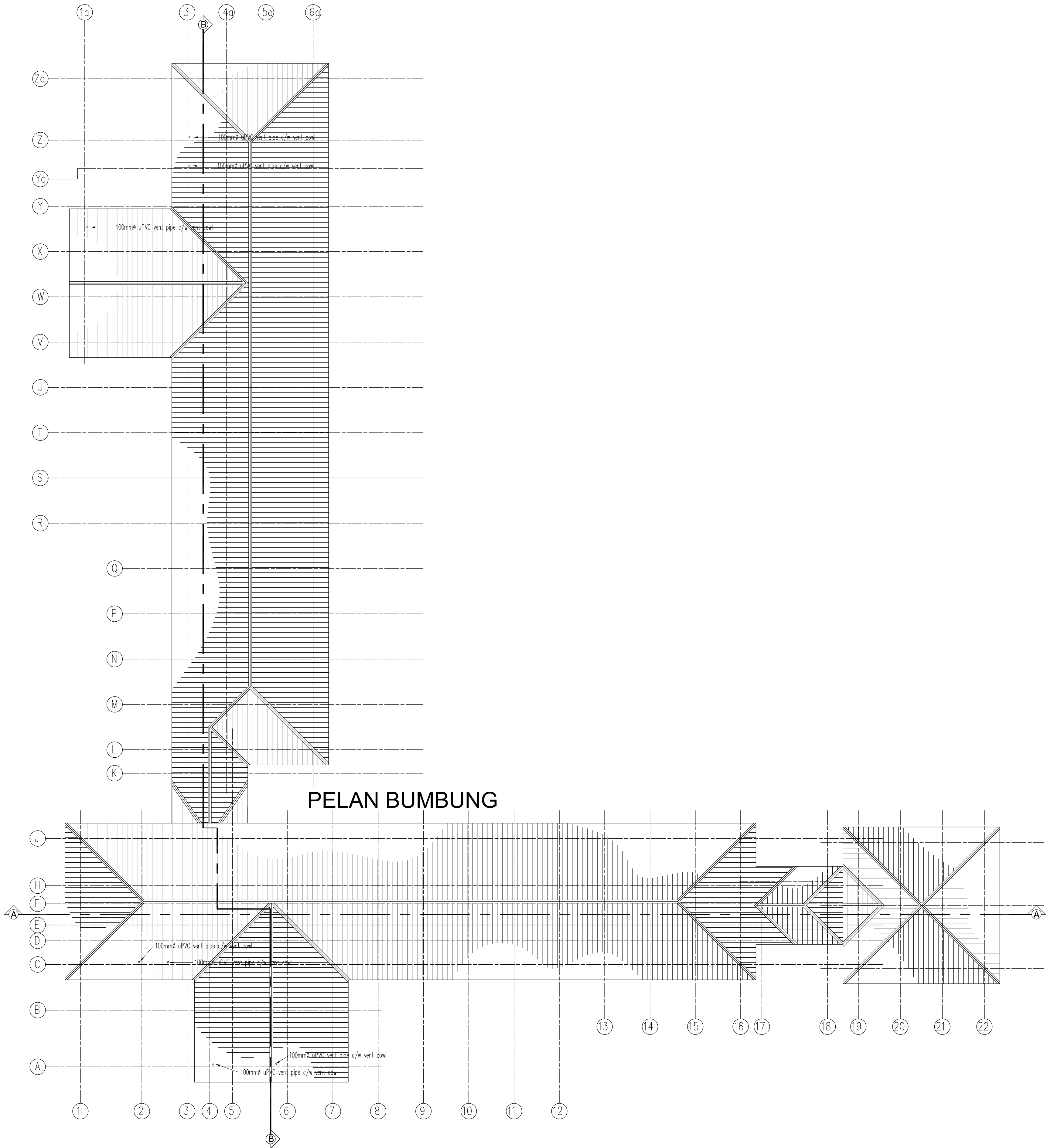
CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
PLUMBING SANITARY INSTALLATION
PELAN BUMBUNG

BLOK D				
Date	Rev. no.	Amendment	Initial	Approved

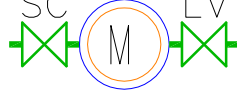
NO. LUKISAN/DRAWING NO.				
RHA25008/MARA/MS/BLOK D/SP-05				
Scale	1:150	Unit	mm	Initial Date
Drawn by	Siti Amirah			JULY 2026
Designed by	Nur Fadila			Sheet
Approved by	Ir. Md Isa Bin Daud			No.



LEGEND :-	
	S SINK
	B BASIN
	WC WATER CLOSET
	WT WATER TUB
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	GT GULLEY TRAP
	GRT GREASE TRAP
	MH MANHOLE
	W.P. WASTE PIPE
	S.P. SOIL PIPE
	BMH BRICK MANHOLE
	R/A RESTBEND CAP & ADAPTOR

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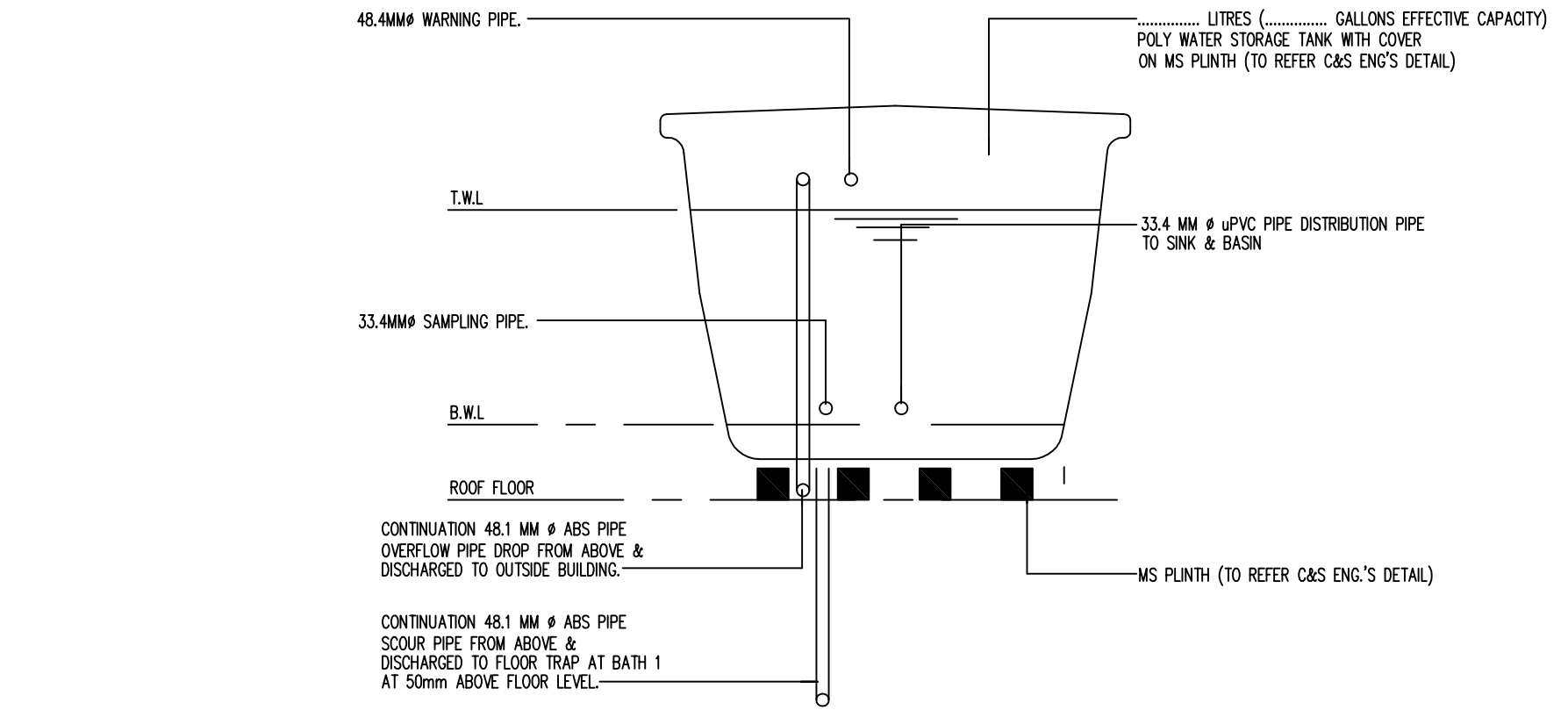
LEGEND

COLD WATER PIPING SYSTEM SERVICES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	STOPCOCK		WATER METER C/W LOCKABLE VALVE
	WATER TAP		SQUAT CLOSET
	GATE VALVE		BASIN / SINK
	SLUICE VALVE		PIPE
	WATER CLOSET		WATER TANK
	SHOWER		
	WATER PUMP		

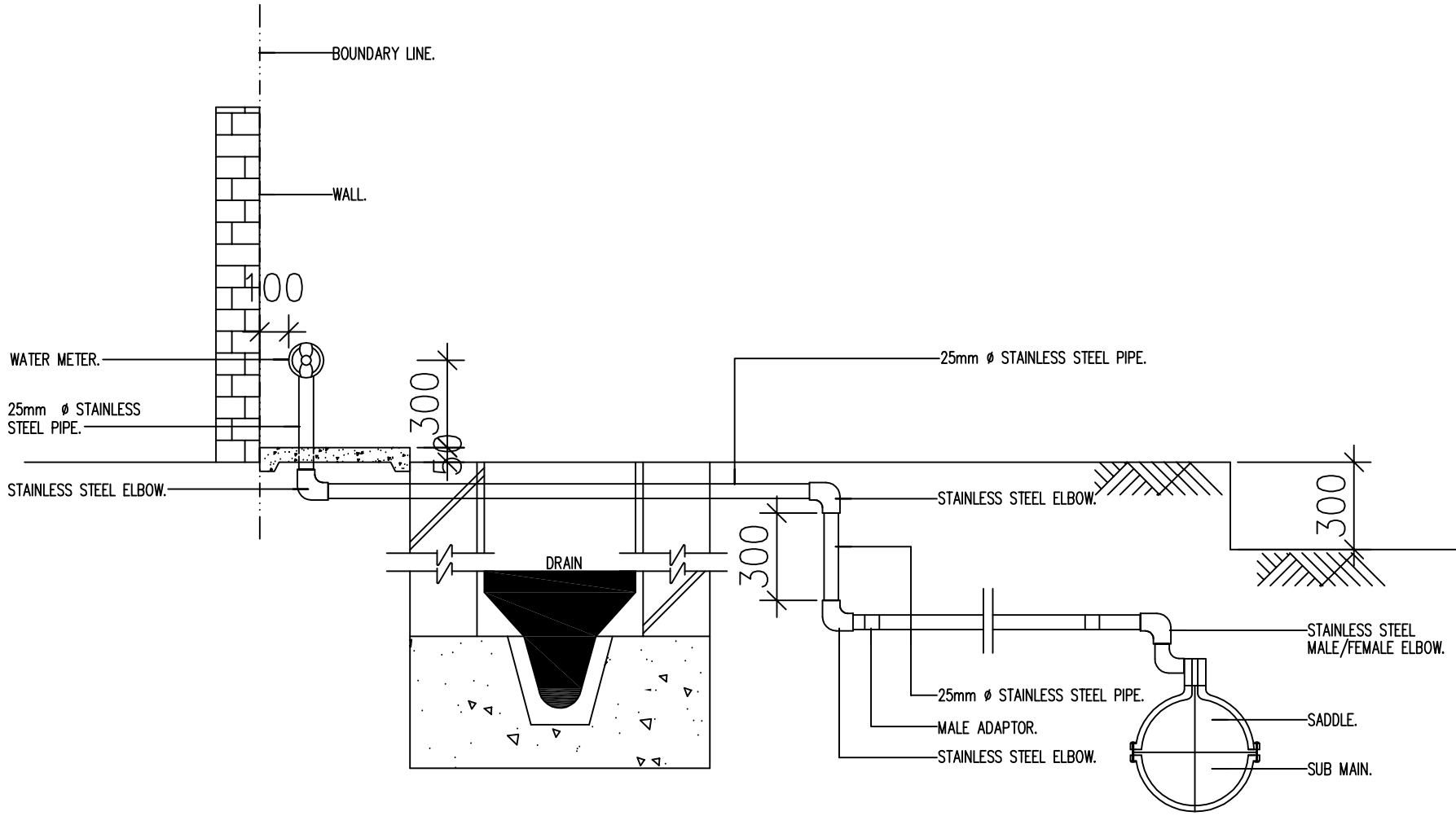
OUTSIDE DIAMETERS (OD) FOR HDPE & ABS PIPE

NORMINAL SIZE	OUTSIDE DIAMETER (mm)		
	HDPE (PN 12.5)	ABS (CLASS E)	uPVC (CLASS E)
1/2" (15mm)	20	21.40	
3/4" (20mm)	25	26.60	
1" (25mm)	32	33.40	
1.25" (32mm)		42.20	
1.5" (40mm)	50	48.10	
2" (50mm)	63	60.20	
3"	90	88.90	
4"	125	114.1	
6"	180	168.3	

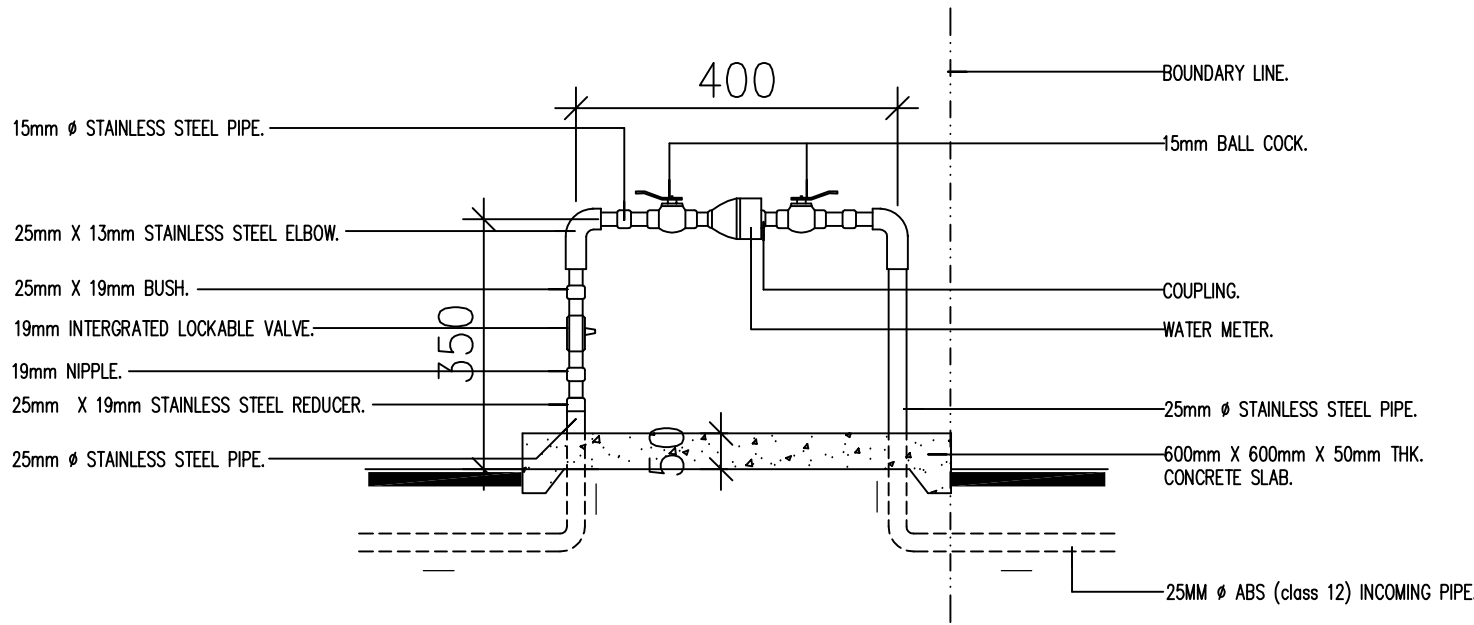
- NOTE :
- ALL METER & STOPCOCK TO BE OUTSIDE FENCING
 - CAPACITY OF WATER CLOSET CISTERN TO BE 6 LITRES



WATER TANK DETAIL
N.T.S



WATER METER POSITION DETAIL
N.T.S



WATER METER & LOCKABLE VALVE DETAIL

TENDER DRAWING

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PEMLIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21, JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

Contractors must check all dimensions and exactly location on site. Only figured dimensions are to be worked on. Discrepancies must be reported immediately to the engineer's before commencement of work.

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Manufacturer's catalogues, technical specifications and data for all equipments offered shall be submitted together with the tender. Tender without complete catalogues and technical details will be rejected.

JURUTERA PERUNDING/CONSULTANT ENGINEER



RHA Consulting Engineers Sdn Bhd
(692206-V)
(Mechanical & Electrical Consulting Engineers and Energy Manager)
186, Lorong Putra 1/D,
Pusat Perniagaan Putra,
Jalan Kilang Lama,
09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION
LEGEND & DETAILS FOR INTERNAL COLD WATER INSTALLATION

BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK D/CW-01

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadhlia			FL	Sheet
Approved by	Ir. Mohd Roesli Hassan			RS	No.

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



I hereby certify that the land/building is under owner's responsibility and deemed to have been taken place when the construction is substantially and sufficient completed in accordance with the contract.

PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJAJAR MARA,
No.21 JALAN MARA
50600 KUALA LUMPUR.

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RHA Consulting Engineers Sdn Bhd

(692206-V)

Mechanical & Electrical Consulting Engineers and Energy Manager

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Pusat Perniagaan Putra,

Jalan Kilang Lama,

09000 Kulim, Kedah Darul Aman

Tel. no: 04-4916610; Fax: 04-4916620

E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIK TARAF ASRAMA

BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION

PELAN TINGKAT ATAS
PELAN TINGKAT BAWAH
PELAN TINGKAT BAWAH (LOWER GROUND)

BLOK D

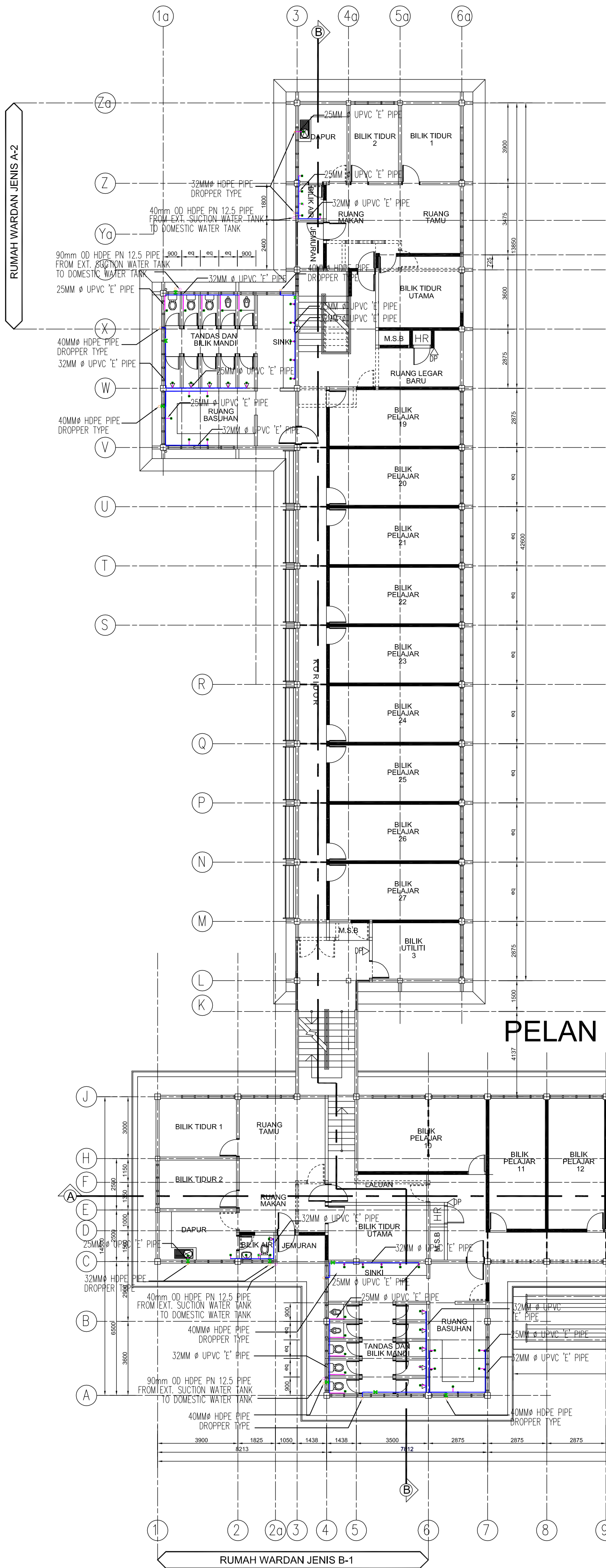
Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

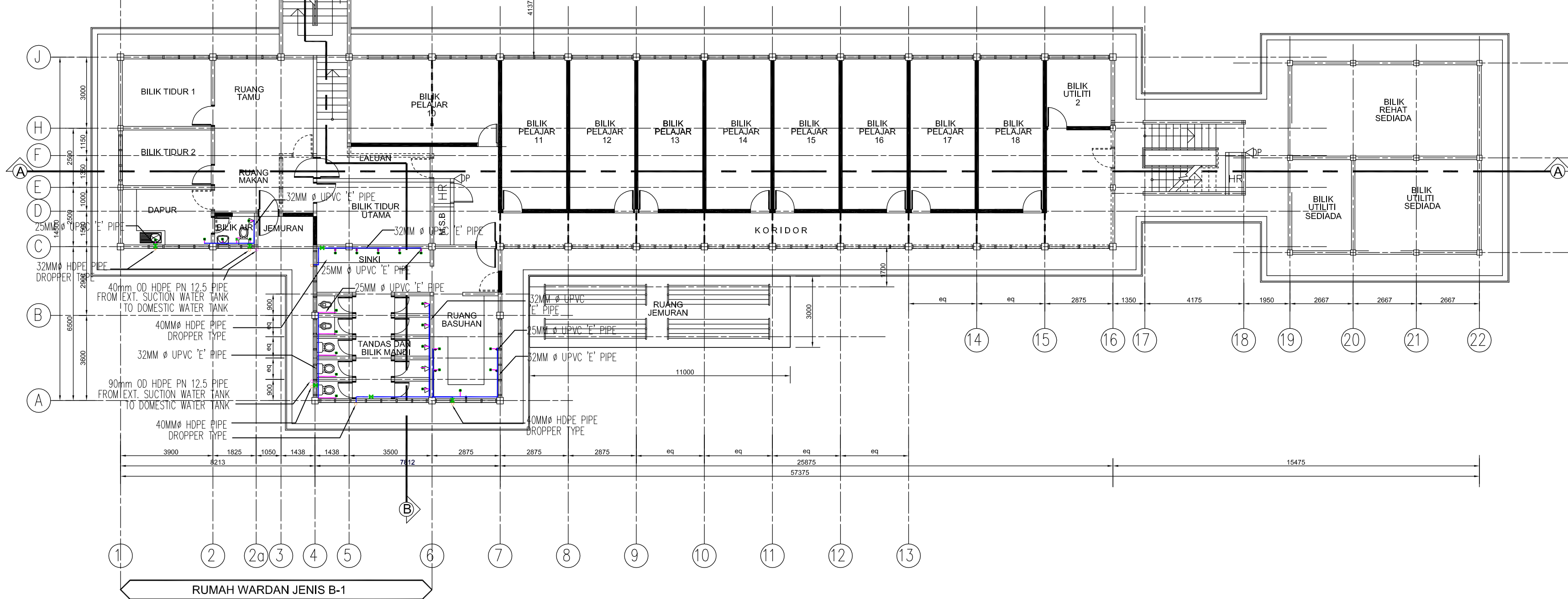
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Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			sk	JULY 2026
Designed by	Nur Fadila			hla	Sheet
Approved by	Ir. Mohd Roesli Hassan			Rsh	No.

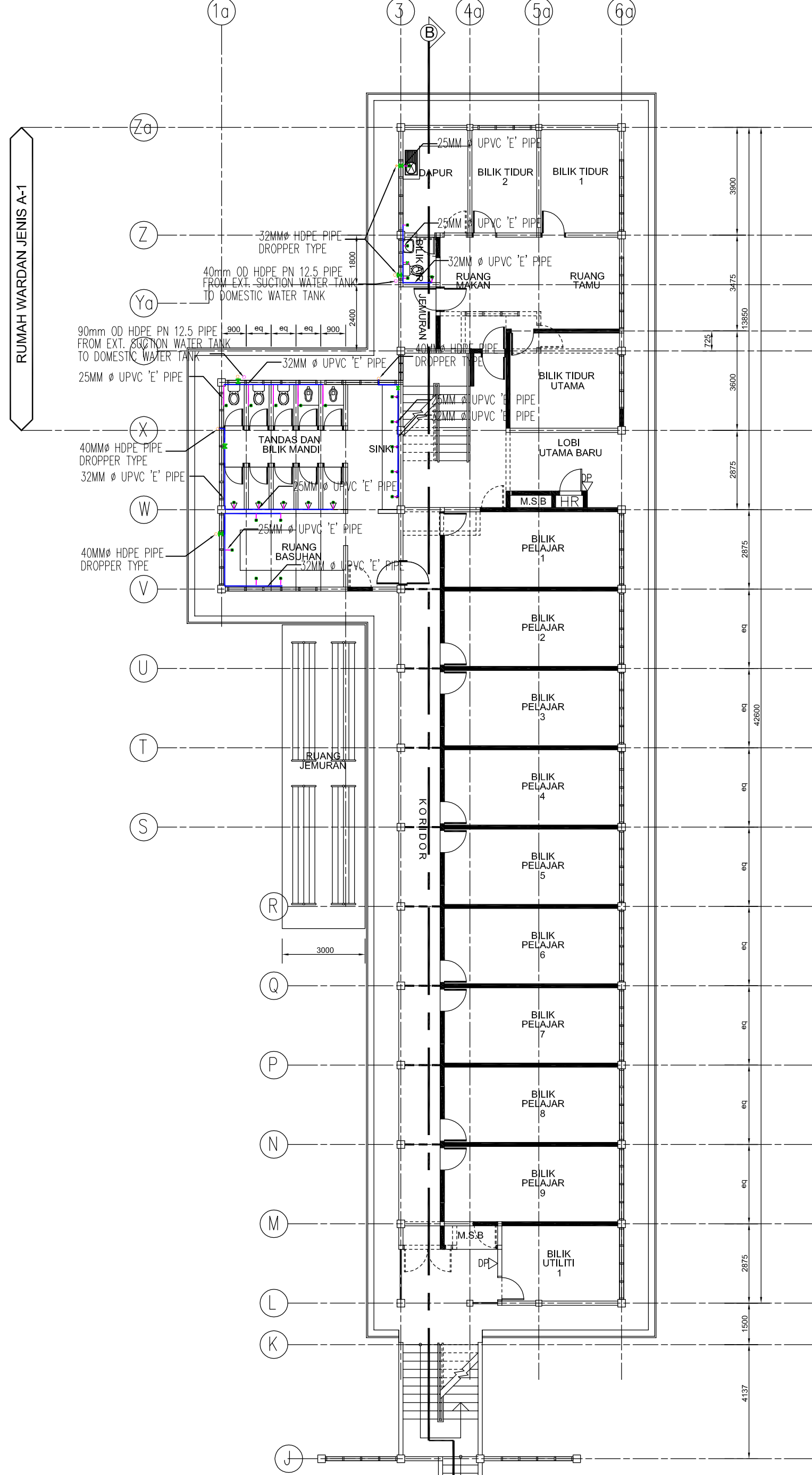
BLOK D



PELAN TINGKAT ATAS



PELAN TINGKAT BAWAH



PELAN TINGKAT BAWAH
(LOWER GROUND)

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



MAJLIS AMANAH RAKYAT
BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
No.21 JALAN MARA,
50600 KUALA LUMPUR.

NOTA/NOTE

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09000 Kulim, Kedah Darul Aman
Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION
PELAN BUMBUNG
PELAN TINGKAT ATAS

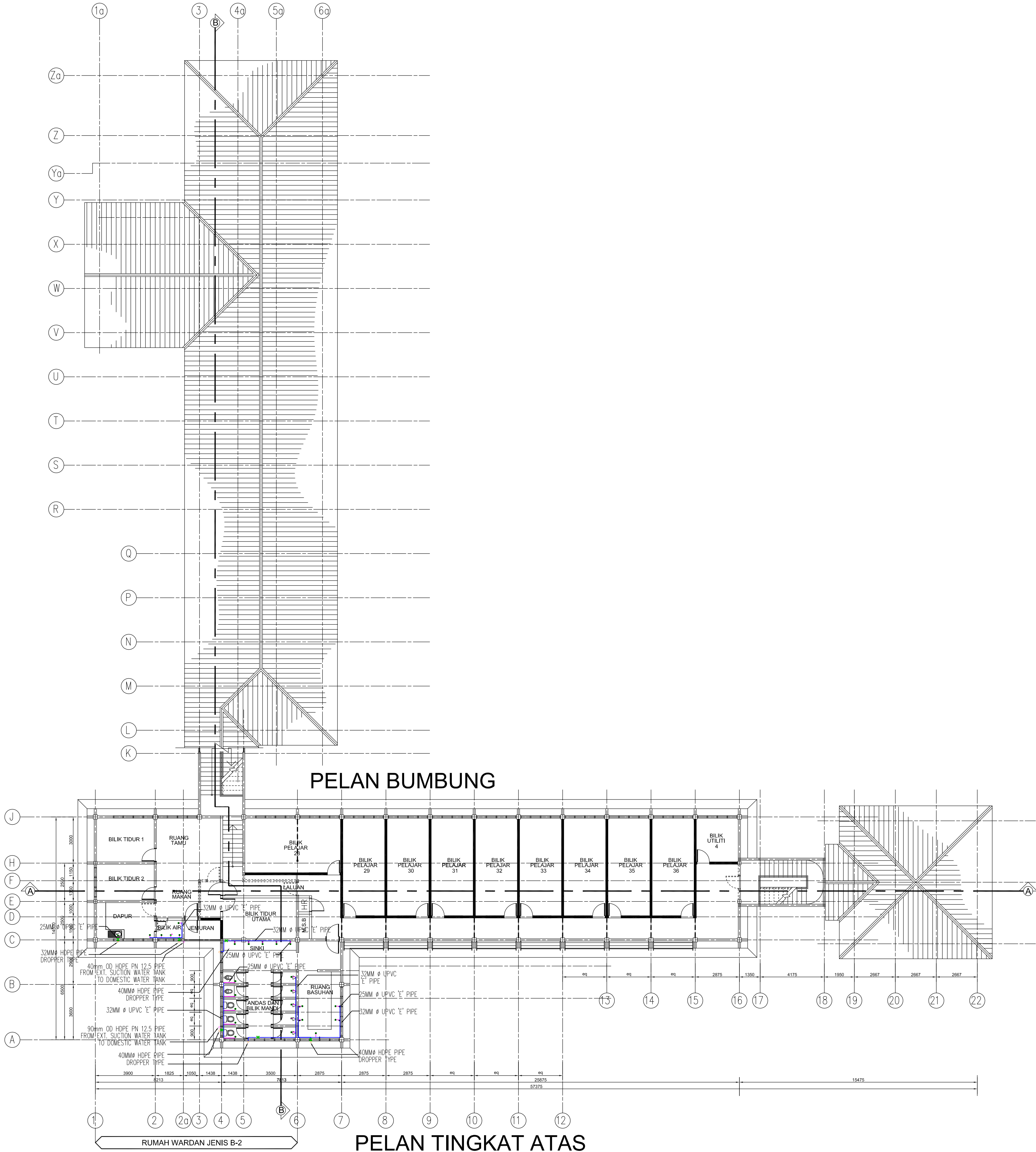
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

NO. LUKISAN/DRAWING NO.

RHA25008/MARA/MS/BLOK D/CW-03

Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			SA	JULY 2026
Designed by	Nur Fadila			NF	Sheet
Approved by	Ir. Mohd Roesli Hassan			RRH	No.



BLOK D

TENDER DRAWING

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All plumbing work should be carried out under my supervision.

TANDATANGAN JURUTERA PROFESIONAL



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PEMILIK BANGUNAN / TANAH:



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BAHAGIAN BINAAN DAN SELENGGARAAN,
TINGKAT 11, IBU PEJABAT MARA,
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Tel. no: 04-4916610; Fax: 04-4916620
E-mail: rhakd07@yahoo.com; rhakd07@gmail.com

PROJEK/PROJECT

CADANGAN KERJA NAIKTARAF ASRAMA
BLOK C & D DI KOLEJ MARA KULIM, KEDAH.

UNTUK
TETUAN MAJLIS AMANAH RAKYAT (MARA)

TAJUK LUKISAN/DRAWING TITLE
MECHANICAL SERVICES
COLD WATER INSTALLATION
PELAN BUMBUNG

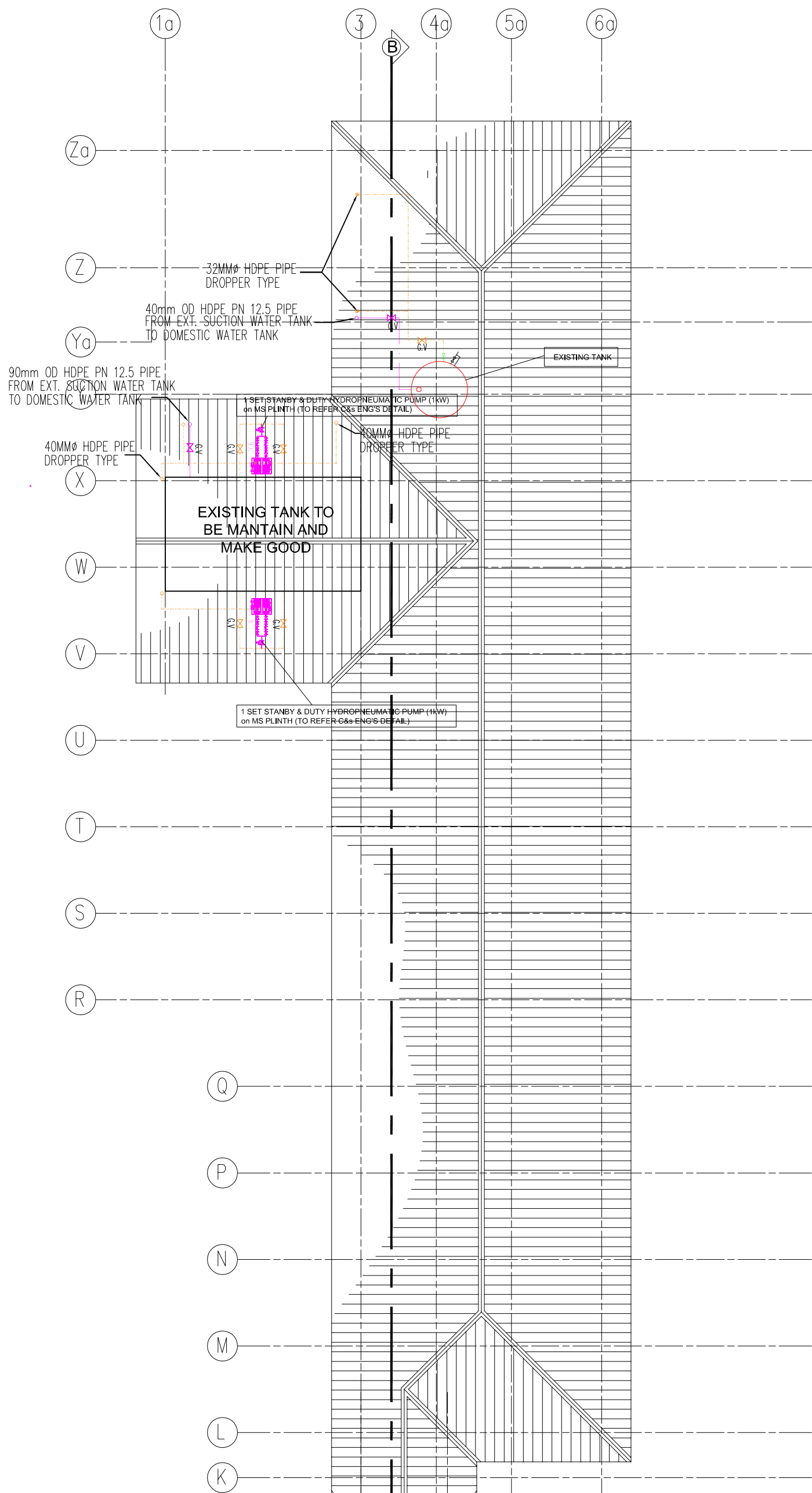
BLOK D

Date	Rev. no.	Amendment	Initial	Approved

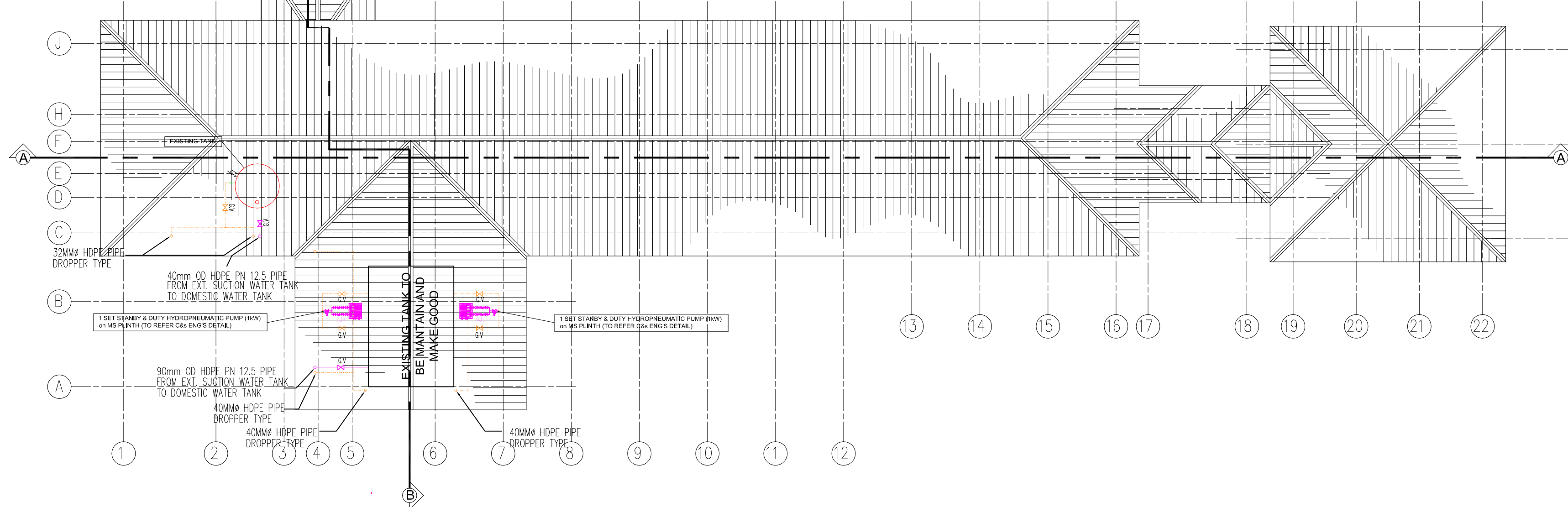
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RHA25008/MARA/MS/BLOK D/CW-04

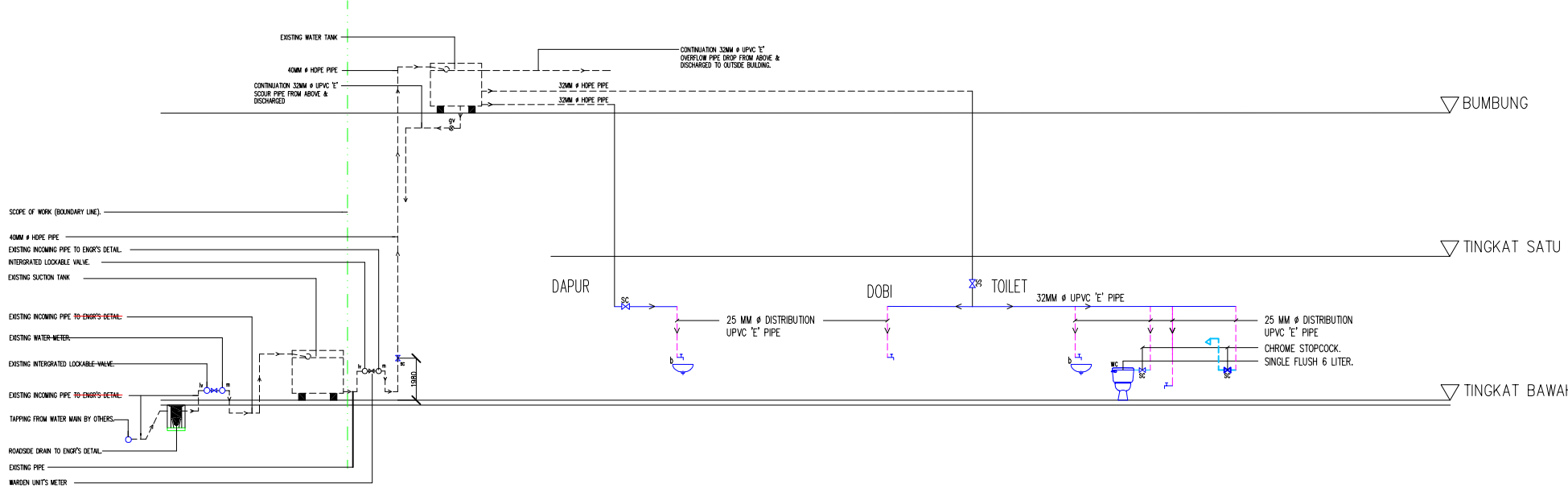
Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amiran				JULY 2026
Designed by	Nur Fadila				Sheet
Approved by	Ir. Md Isa Bin Daud				No.



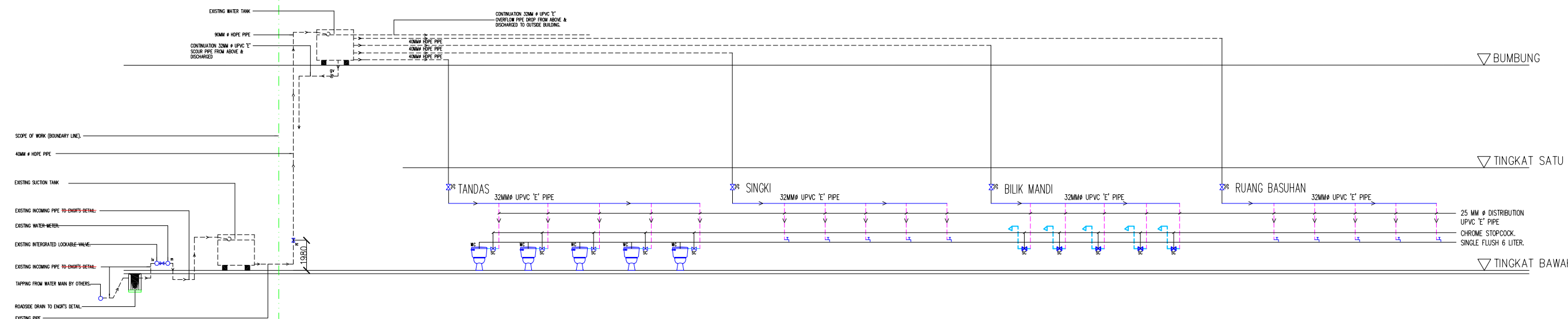
PELAN BUMBUNG



PELAN BUMBUNG



DIAGRAMMATIC SECTION OF WATER SUPPLY LAYOUT
(DAPUR & TANDAS- RUMAH WARDEN)



DIAGRAMMATIC SECTION OF WATER SUPPLY LAYOUT
(TANDAS- BLOK D)

BLOK D

I hereby certify that there is sufficient space to install the storage tank. I hereby certify that the storage tank capacity is enough for one day. All pumping work should be carried out under my supervision.

A circular professional stamp for a Mechanical Engineer. The outer ring contains the text "JURUTERA PROFESIONAL" at the top and "MALAYSIA" at the bottom. Inside the ring, the text "DENGAN PERAKUAN AMALAN" is written in a semi-circle at the top, and "MEKANIKAL" is written in the center. Below "MEKANIKAL", the name "Ir. MD ISA BIN DAUD" is printed. At the bottom of the stamp, the registration number "C112195" is printed. A horizontal line is drawn across the stamp, passing through the name and registration number.



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Scale	1:150	Unit	mm	Initial	Date
Drawn by	Siti Amirah			<i>si</i>	JULY 2026
Designed by	Nur Fadhila			<i>nl</i>	Sheet
Approved by	Ir. Mohd Roesli Hassan			<i>Roesli</i>	No.

