

PROJECT:

PROPOSED MODEL BLOCK OF 6-CLASSROOMS, E-LIB, NORMAL LIB, 3-OFFICES, CHILDREN ROOM, STORE AND 10WCs

FOR

UBEC/ BENUE-SUBEB

MECHANICAL SERVICES
DRAWING



GENERAL MECHANICAL SERVICES NOTES

PLUMBING NOTES

- * Cold water pipes are pressure pipes with associated fittings (Tigre standard brand) to withstand pressure to 10 bars
- * All branch, & feeder pipes to WC, WHB, Shower, & Kitchen Sink are to be Ø19 & 13mm respectively
- * All pipes leading to buildings are to be provided with appropriate sizes of gate valves.
- * Soil pipes are to be of thick upvc pipes with all accompanying fixtures such as bends, tees, clean outs plugs
- * Contractors shall comply with installation method such as to prevent leakages by using spigot and socket connections accompanied by slip rings
- * Waste water pipes to be installed are to be standard UPVC pipes to withstand pressure with associated fittings- elbows, tees, Y-bend, valves etc
- * Conduit valves of appropriate sizes to be provided to branch lines within buildings
- * Shower waste pipes are to be laid using a slope of 5°
- * Soil pipes along horizontal runs are to be laid using a slope of 1:100
- * Floor drains are to be connected to adjoining pipes using 50mmØ
- * All stack pipes for soil and waste pipes are to be vented along walls above the highest window positions
- * Separate lines are to be laid for soil and waste pipes

FIRE FIGHTING NOTES

Simple units of 9 Kg dry powder & carbondioxide fire external to be placed mostly along corridors are the predominant fire fighting system adopted. 6 Kg to be placed in kitchen



AIRCONDITIONING NOTES

Split unit airconditioners connected to external units through 75mmØ upvc pipes



Evaporator units - EV

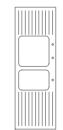


External units - EU

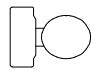
— upvc pipe Ø75mm carrying electrical & condensing lines

— Cold Water pipe

— Hot Water pipe



KS-Double Bowl Kitchen sink



WC-Water Closet



WC-Shower Tray



Whb-Wash hand basin



CV-Control valve

— GV-Gate Valve

CV - Conduit Valve

T/A - To Above

I.C - Inspection Chamber

T/B - To Below

M.H - ManHole

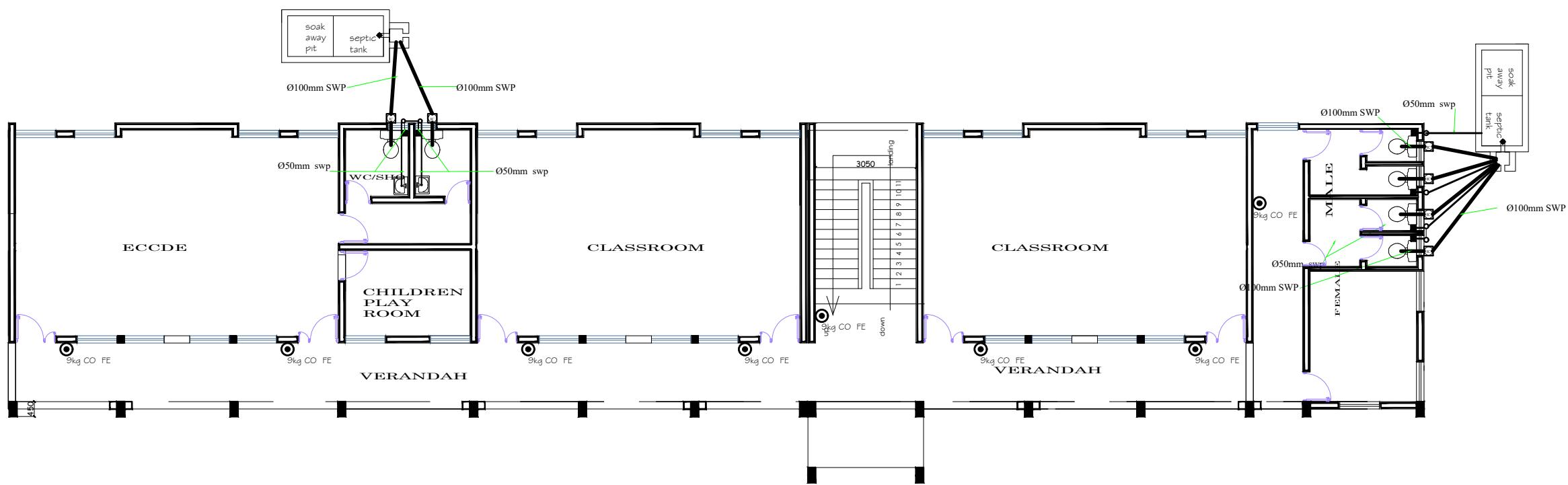
F/A - To Above

S.T - Septic Tank

F/B - To Below

SAP - Soak Away Pit

project	
PROPOSED MODEL BLOCK OF 6-CLASSROOMS, E-LIB, NORMAL LIB, 3-OFFICES, CHILDREN ROOM, STORE AND 10WCs FOR UBEC/ BENUE-SUBEB	
drawing title MECHANICAL DRAWING	
Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked:	ENGR. COMFORT ADADU MNSE
consultants: .	
Sheet title NOTES /LEGEND	
SCALE:	DATE
NTS	
SHEET NO M-01	



GROUND FLOOR PLAN
LAY-OUT OF WASTE REMOVAL & DISPOSAL

project
PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB

dring title
MECHANICAL DRAWING

Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked	ENGR. COMFORT ADADU MNSE

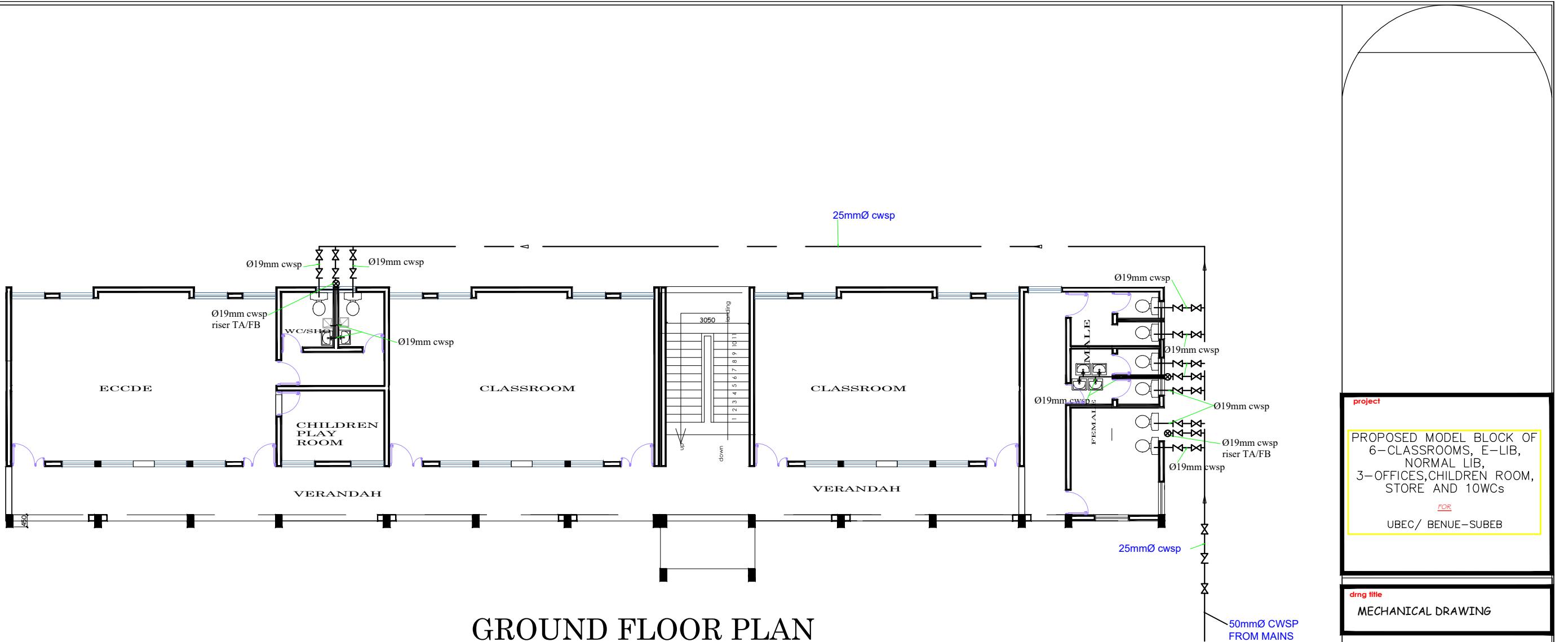
consultants:
.....

Sheet title
LAY-OUT OF WASTE & SOIL WASTE REMOVAL& DISPOSAL, FIRE ESTINGUISHE & AC
(GROUND & FIRST FLOOR)

SCALE:	DATE
NTS	

SHEET NO

M-02



project
PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB

dring title
MECHANICAL DRAWING

Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked	ENGR. COMFORT ADADU MNSE

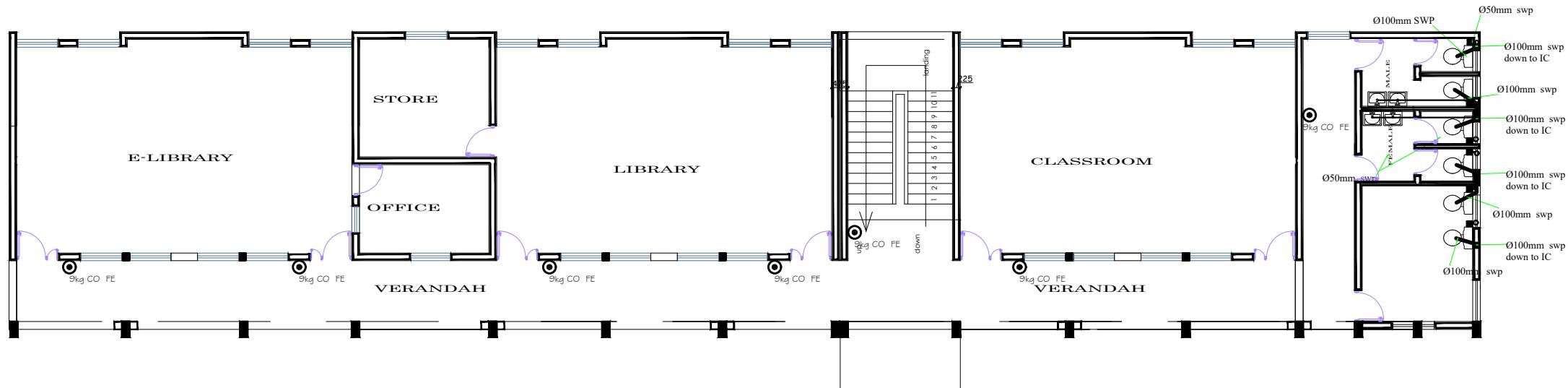
consultants:
.....

Sheet title
LAY-OUT OF COLD WATER SUPPLY/ DISTRIBUTION (ground & FIRST floor)

SCALE:	DATE
NTS	

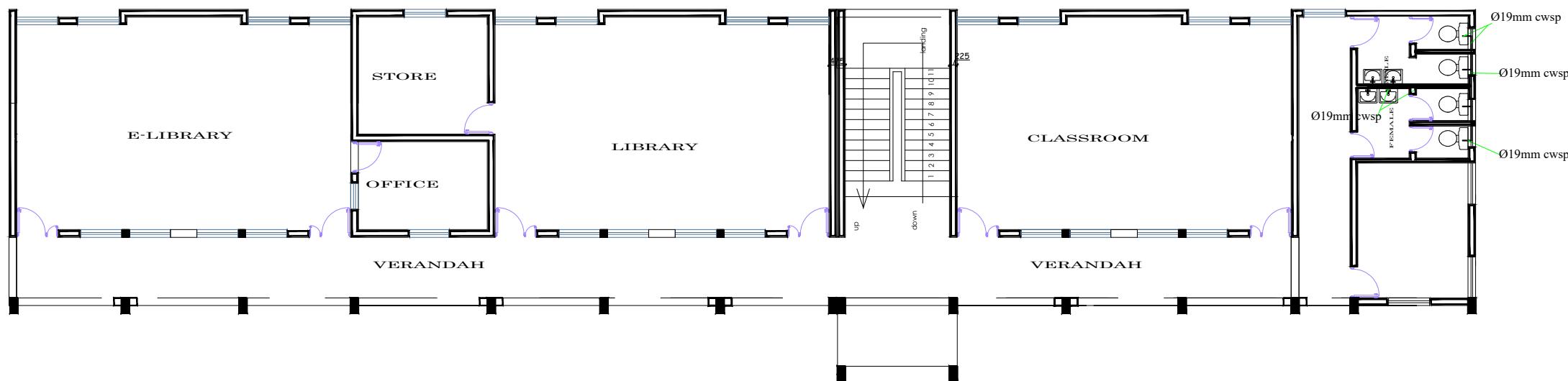
SHEET NO

M-03



FIRST FLOOR PLAN
LAY-OUT OF WASTE REMOVAL & DISPOSAL, FIRE EXTINGUISHERS

project
PROPOSED MODEL BLOCK OF 6-CLASSROOMS, E-LIB, NORMAL LIB, 3-OFFICES, CHILDREN ROOM, STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB



FIRST FLOOR PLAN
LAY-OUT OF COLD WATER SUPPLY/DISTRIBUTION

drwg title
MECHANICAL DRAWING

Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked	ENGR. COMFORT ADADU MNSE

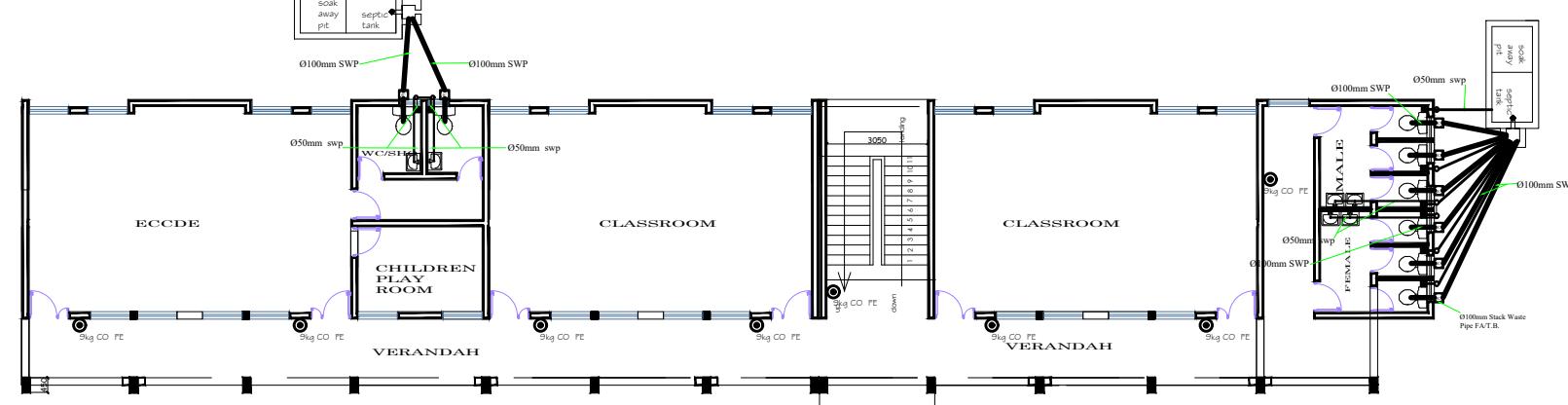
consultants:
.

Sheet title
LAY-OUT OF WASTE & SOIL WASTE REMOVAL& DISPOSAL, FIRE ESTINGUISHE & AC (FIRST FLOOR)

SCALE:	DATE
NTS	

SHEET NO

M-04



GROUND FLOOR PLAN
LAY-OUT OF WASTE REMOVAL & DISPOSAL

project
PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs

FOR
UBEC/ BENUE-SUBEB

drg title
MECHANICAL DRAWING

Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked	ENGR. COMFORT ADADU MNSE

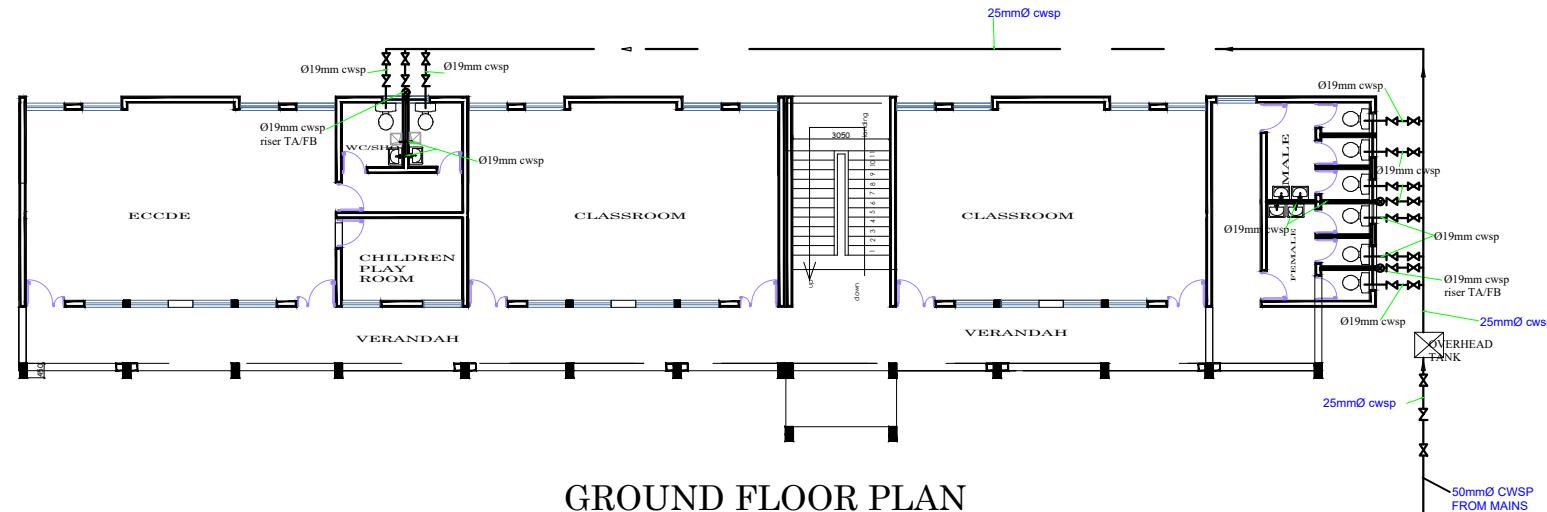
consultants:

Sheet title
SITE LAY-OUT OF WASTE & SOIL WASTE
REMOVAL & DISPOSAL

SCALE:	DATE
NTS	

SHEET NO

M-05



GROUND FLOOR PLAN
LAY-OUT OF COLD WATER SUPPLY/DISTRIBUTION

project
PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs

FOR
UBEC/ BENUE-SUBEB

dring title
MECHANICAL DRAWING

Designed:	JOB ENGR.
Drawn:	AGENA ISAAC
Checked	ENGR. COMFORT ADADU MNSE

consultants:

Sheet title
SITE LAY-OUT OF COLD & HOT WATER SUPPLY/ DISTRIBUTION

SCALE:	DATE
NTS	

SHEET NO

M-06

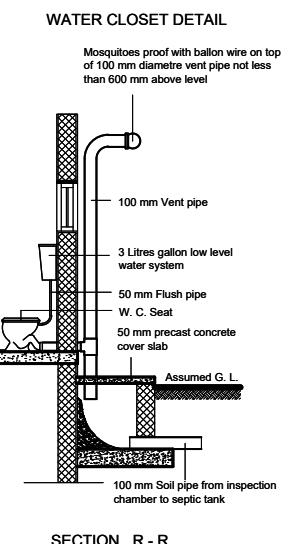
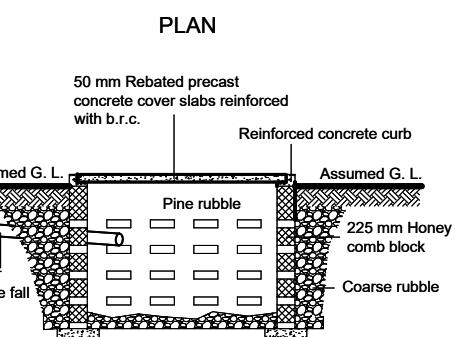
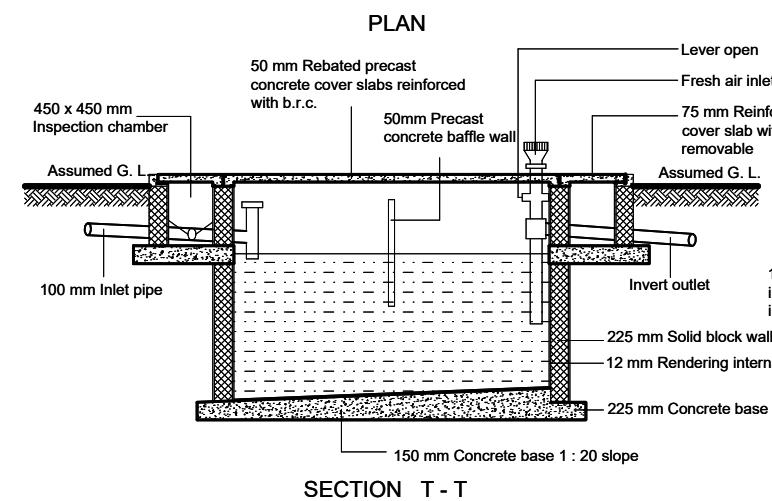
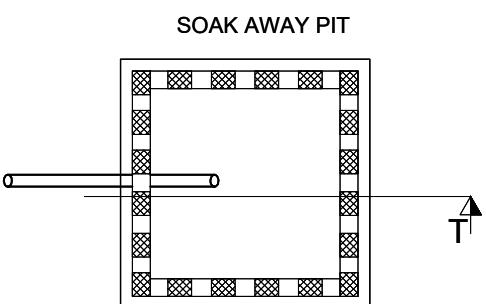
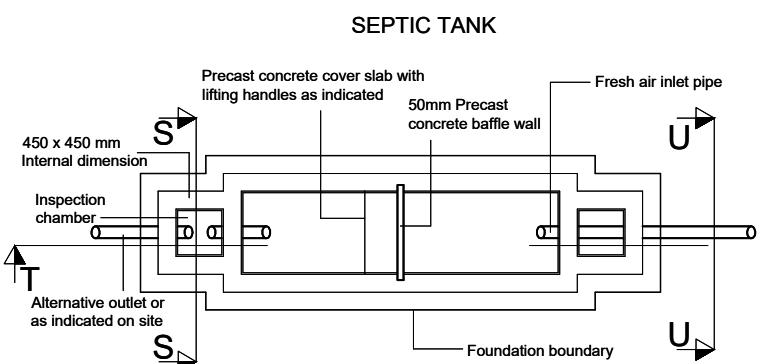
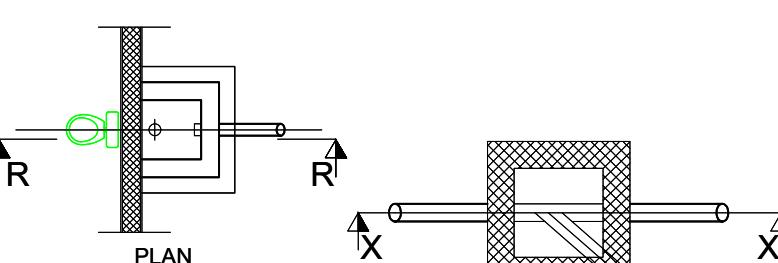
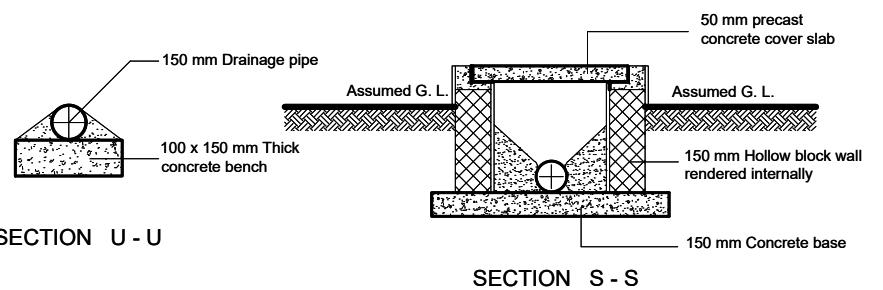
ACCESS ROAD

SEPTIC TANK SCHEDULE

1	2	3	4	5
	DIMMENSION		CAPACITY	NO OF USERS
	A	B	C	ALL WASTE SOIL WASTE ONLY
a	2400	2400	1800	1037
b	1800	1800	1800	583
				6 4
				2

SOAK AWAY PIT SCHEDULE

1	900	900
2	1200	1200
3	1800	1800



Designed: JOB ENGR.
Drawn: AGENA ISAAC
Checked: ENGR. COMFORT ADADU MNSE

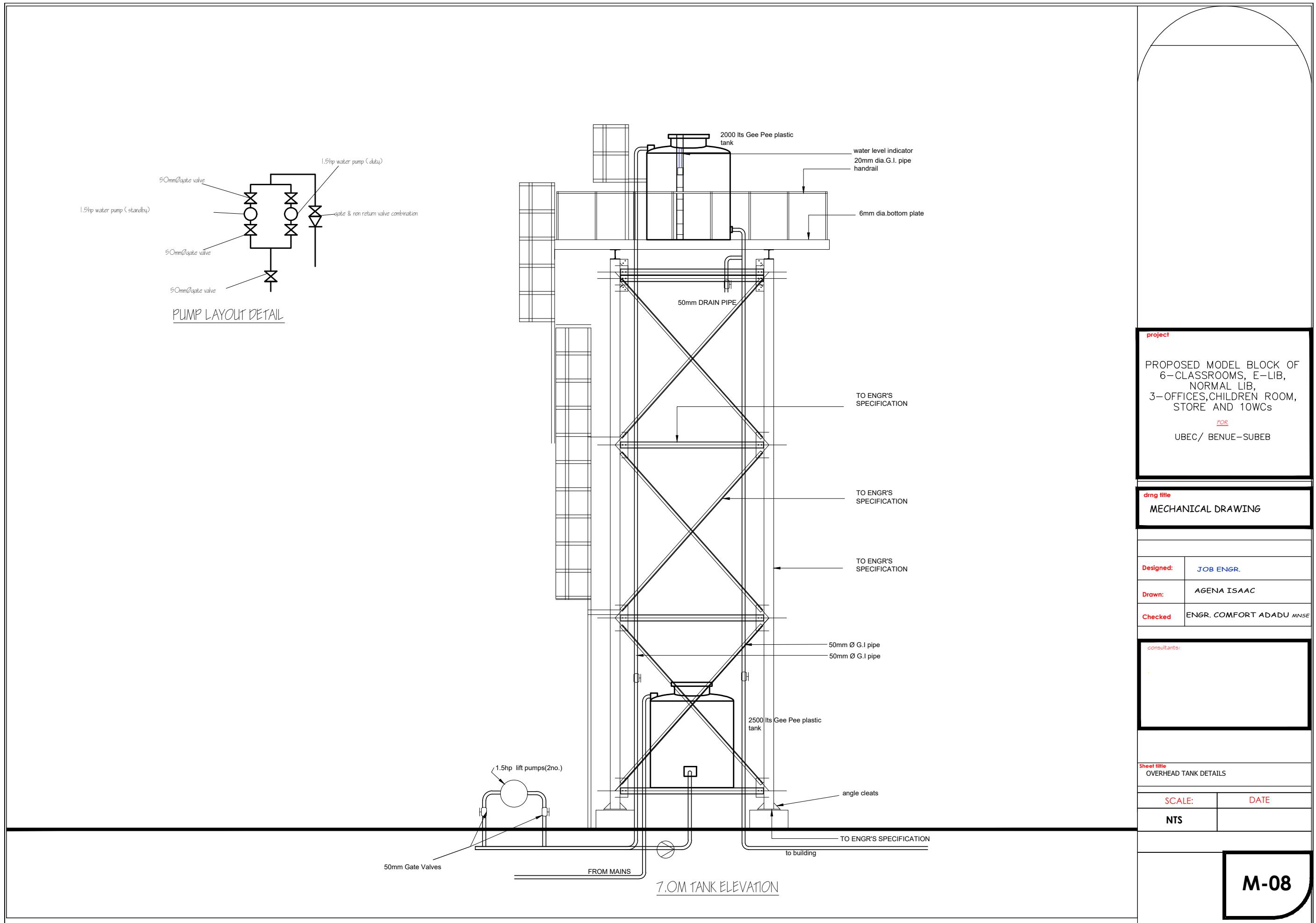
consultants:

Sheet title
SEPTIC TANK/ SOACKAWAY DETAILS

SCALE: DATE
NTS

SHEET NO

M-07



PROJECT:
**PROPOSED MODEL BLOCK
OF 6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs**

FOR

UBEC/ BENUE-SUBEB

ELECTRICAL SERVICES
DRAWING



LEGEND

ITEM	DESCRIPTION	RATING
◎	THRON CHALICE DOWN LIGHT	23W
●	RECESSED ENERGY CEILING LAMP FITTING.	23W
⊕	THRON NOVALINE CEILING LAMP FITTING CAT.NO.NVLVZ2D38CH.	IIW
●	THRON NOVALINE SCREW-NECK LAMP FITTING CAT.NO.NVLVZ2D38CH.	IIW
○	THRON BULK-HEAD LAMP FITTING CAT.NO.OLG100BC.	23W
OH	KENTILE WALL BRACKET LAMP FITTING CAT. NO.K6330(SINGLE).	IIW
LN	MEM ONE WAY ONE GANG SWITCH CAT.NO.2400.	15A
NS	MEM TWO WAY ONE GANG SWITCH CAT.NO.2401.	15A
NS	MEM TWO WAY TWO GANG SWITCH CAT.NO.2402.	15A
NS	MEM TWO WAY THREE GANG SWITCH CAT.NO.2403.	15A
LN	MEM ONE WAY TWO GANG SWITCH CAT.NO.2401.	15A
LN	MEM ONE WAY THREE GANG SWITCH CAT.NO.2402.	15A
●	SOLAR ENERGY LAMP FITTING	5W
⊖	56" SWEEP CEILING FAN WITH REGULATOR (UNION)	65W
OH	WALL FAN FITTING (NULEC)	50W
D+	13A SWITCHED SOCKET OUTLET(VOLEX)	300W
D+	15A SWITCHED SOCKET OUTLET(VOLEX)	1,500W
✉	KITCHEN COOKER CONTROL UNIT	2,500
TPN	TPN DISTRIBUTION BOARD (MEM)	125A
D	THRON WALL MOUNT LAMP FITTING.	23W
SH	SHAVER LAMP WITH SOCKET	70W
LEGRAND SALVENA	4-ZONE FIRE ALARM PANEL CAT.NO.6430 22	
LEGRAND	MANUAL CALL POINT CAT.NO.380 70	
LEGRAND	OPTICAL SMOKE DETECTOR CAT.NO.6430 72	
LEGRAND	SOUNDER CAT.NO.415 06	
✉	LIGHTING KIOSK	
D+	TWIN 13A SWITCHED SOCKET OUTLET(VOLEX)	600W
W	SOLIR WATER HEATER	1,200W
WO	WATER HEATER SWITCH	45A
*	KENTILE CHANDELIER LAMP FITTING	161W
CL	MEM MOULDED DIMMER CONTROL SWITCH CAT.NO.	45A
H	LEGRAND OPTICAL HEATER DETECTOR CAT.NO.6430 72	
✉	TELEPHONE/ INTERCOM DISTRIBUTION BOARD	
TEL	INTERCOM/ TELEPHONE SOCKET	
VID	VIDEO/ TELEVISION SOCKET	
DATA	LEGRAND DATA OUTLET	
●	1 X 100W GEMMA SIX FITTING MOUNTED ON FENCE	100W

ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø

Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project

PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs

FOR
UBEC/ BENUE-SUBEB

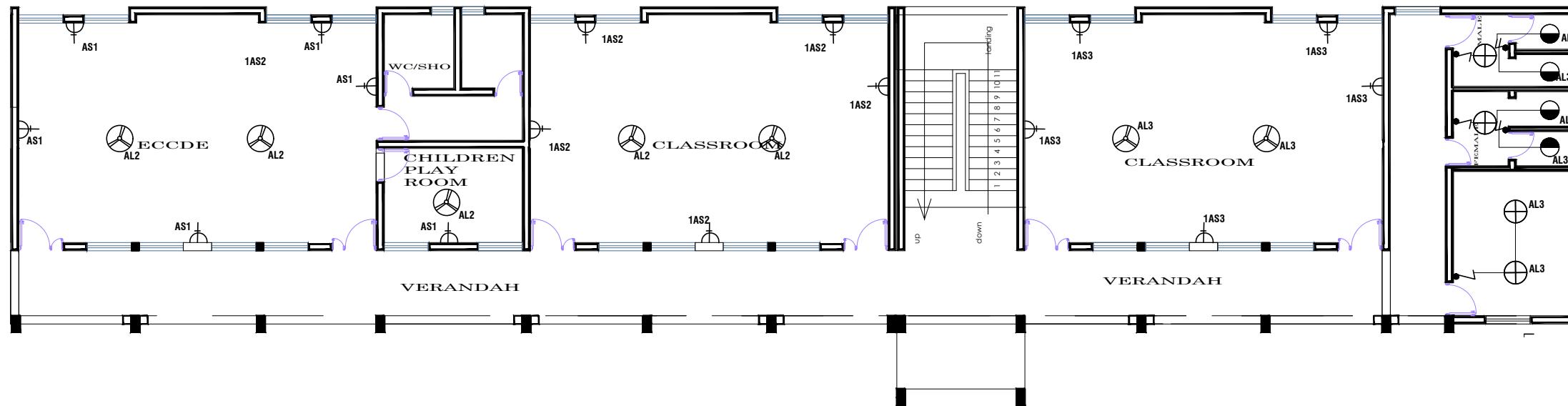
dring title
ELECTRICAL DRAWING

Designed: JOB ENGR.
Drawn: THOMAS KUMUN.
Checked:

consultants:

Sheet title
LEGEND
SCALE: DATE
NTS JANUARY, 2024

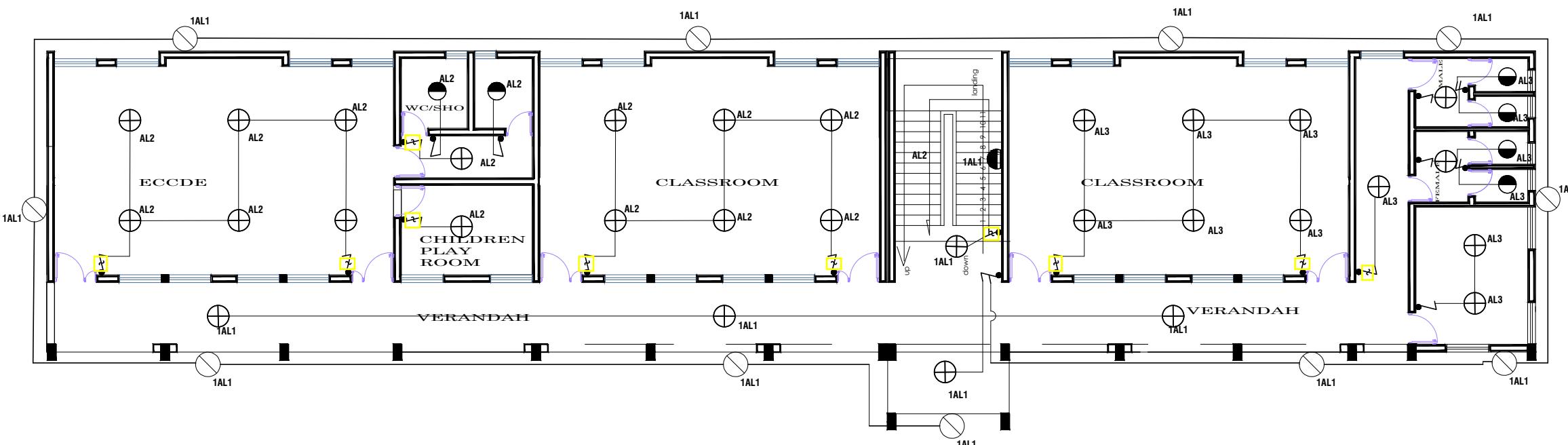
SHEET NO
E-01



POWER CIRCUITS FOR GROUND FLOOR PLAN

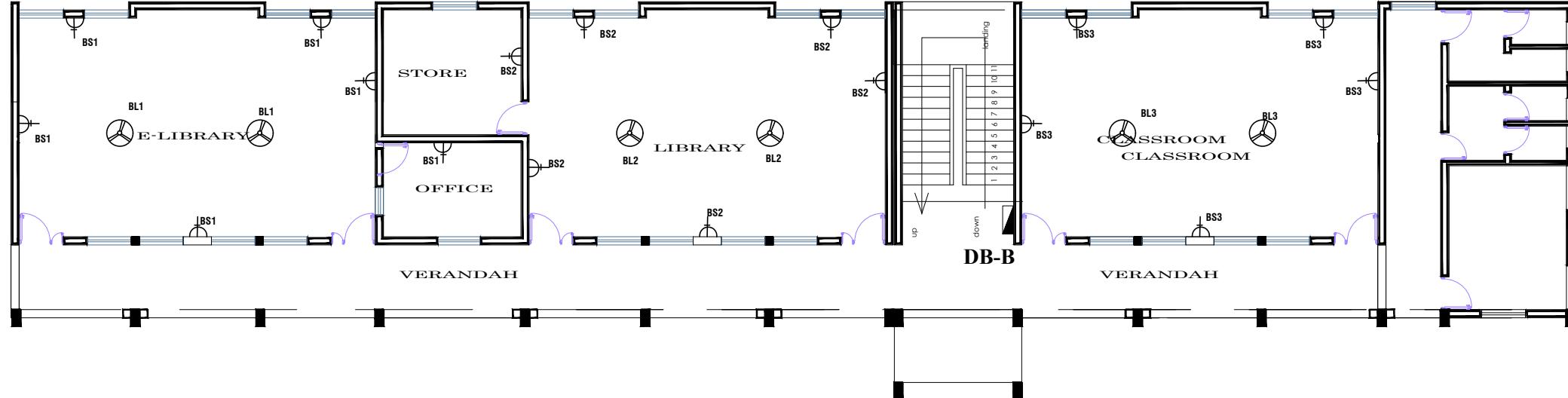
ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø
Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project
PROPOSED MODEL BLOCK OF 6-CLASSROOMS, E-LIB, NORMAL LIB, 3-OFFICES, CHILDREN ROOM, STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB



LIGHTING CIRCUITS FOR GROUND FLOOR PLAN

Designed:	JOB ENGR.
Drawn:	THOMAS KUMUN.
Checked	
consultants:	
Sheet title	
POWER/ LIGHTING CIRCUITS (GROUND FLOOR) CLASSROOMS	
SCALE:	DATE
NTS	
SHEET NO	
E-02	



ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø

Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project

PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB

drag title
ELECTRICAL DRAWING

Designed:	JOB ENGR.
Drawn:	THOMAS KUMUN.
Checked	

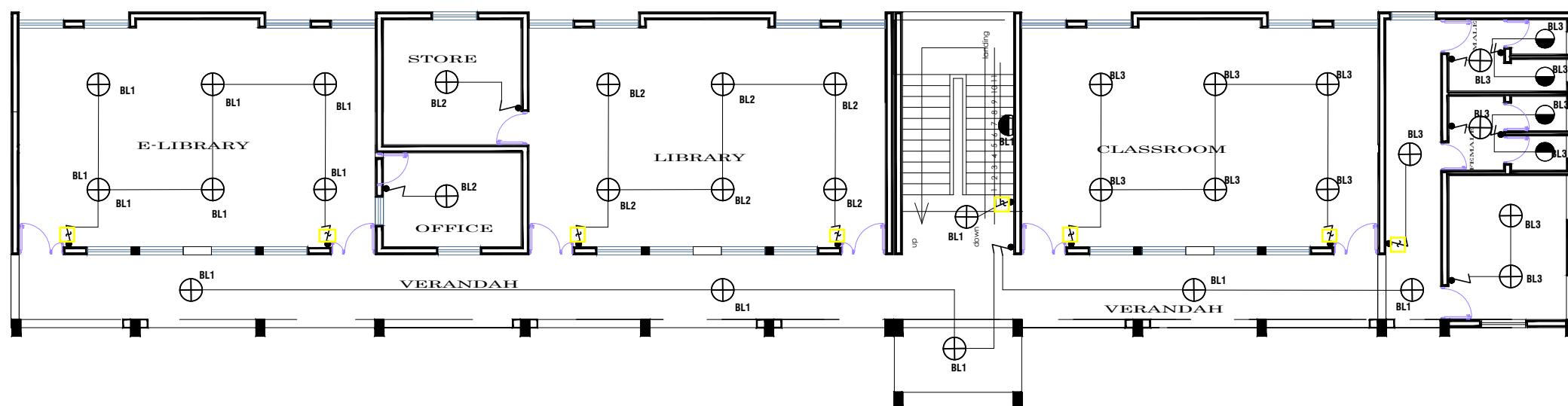
consultants:
.....

Sheet title
POWER/ LIGHTING CIRCUITS (FIRST FLOOR) CLASSROOMS

SCALE:	DATE
NTS	

SHEET NO

E-03



POWER CIRCUITS FOR FIRST FLOOR PLAN

LIGHTING CIRCUITS FOR FIRST FLOOR PLAN

LOAD ANALYSIS DB-B:FIRST FLOOR (CLASS ROOM BLOCK)

4WAY TP&N LOAD DISTRIBUTION BOARD									
WAY NO.	PHASE	CIRCUIT CODE	MCB RATING	CABLE SIZE (SQR. MM)	LOCATION/ REMARKM)	NUMBER OF POINTS	R (W)	Y (W)	B (W)
1	R	BL1	20A	2X1.5 PVC CU	LIGHTING: VERANDAH, STAIRCASES, CLASSROOM 1	15	285		
	Y	BL2	20A	2X1.5 PVC CU	LIGHTING& FAN: CLASSROOM 2, OFFICE, STORE	10		218	
	B	BL3	20A	2X1.5 PVC CU	LIGHTING& FAN: CLASSROOM3, TOILETS	17			295
2	R	BS1	30A	3X2.5 PVC CU	POWER RING:13A SSO FOR CLASSROOM 1, OFFICE	6	1,800		
	Y	BS2	30A	3X2.5 PVC CU	POWER RING:13A SSO FOR CLASSROOM 2, STORE	6		1,800	
	B	BS3	25A	3X4.0 PVC CU	POWER RING:13A SSO FOR CLASSROOM 3	5			1,500
3	R	S P A R	E		C I R C U I T R Y.				
	Y	S P A R	E		C I R C U I T R Y.				
	B	S P A R	E		C I R C U I T R Y.				
4	R	S P A R	E		C I R C U I T R Y.				
	Y	S P A R	E		C I R C U I T R Y.				
	B	S P A R	E		C I R C U I T R Y.				
PHASE LOAD TOTAL (W)						2,085	2,018	1,795	
TOTAL LOAD (W) GROUND FLOOR						5,898			
LOAD CURRENT (A) FIRST & SECOND FLOOR						10.26			

ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø

Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project

PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs

FOR
UBEC/ BENUE-SUBEB

LOAD ANALYSIS DB-A:GROUND FLOOR (CLASS ROOM BLOCK)

4WAY TP&N LOAD DISTRIBUTION BOARD									
WAY NO.	PHASE	CIRCUIT CODE	MCB RATING	CABLE SIZE (SQR. MM)	LOCATION/ REMARKM)	NUMBER OF POINTS	R (W)	Y (W)	B (W)
1	R	AL1	20A	2X1.5 PVC CU	LIGHTING: SECURITY, VERANDAH, STAIRCASES,	17	331		
	Y	AL2	20A	2X1.5 PVC CU	LIGHTING& FAN: ECCDE CLASSROOM 1	20		501	
	B	AL3	20A	2X1.5 PVC CU	LIGHTING& FAN: CLASSROOM3, TOILETS	17			295
2	R	AS1	30A	3X2.5 PVC CU	POWER RING:13A SSO FOR ECCDE	6	1,500		
	Y	AS2	30A	3X2.5 PVC CU	POWER RING:13A SSO FOR CLASSROOM 1	5		1,500	
	B	AS3	25A	3X4.0 PVC CU	POWER RING:13A SSO FOR CLASSROOM 2	5			1,800
3	R	S P A R	E		C I R C U I T R Y.				
	Y	S P A R	E		C I R C U I T R Y.				
	B	S P A R	E		C I R C U I T R Y.				
4	R	S P A R	E		C I R C U I T R Y.				
	Y	S P A R	E		C I R C U I T R Y.				
	B	S P A R	E		C I R C U I T R Y.				
PHASE LOAD TOTAL (W)						1,831	2,001	2,095	
TOTAL LOAD (W) GROUND FLOOR						5,927			
LOAD CURRENT (A) FIRST & SECOND FLOOR						10.31			

Designed: JOB ENGR.
Drawn: THOMAS KUMUN.
Checked:

consultants:

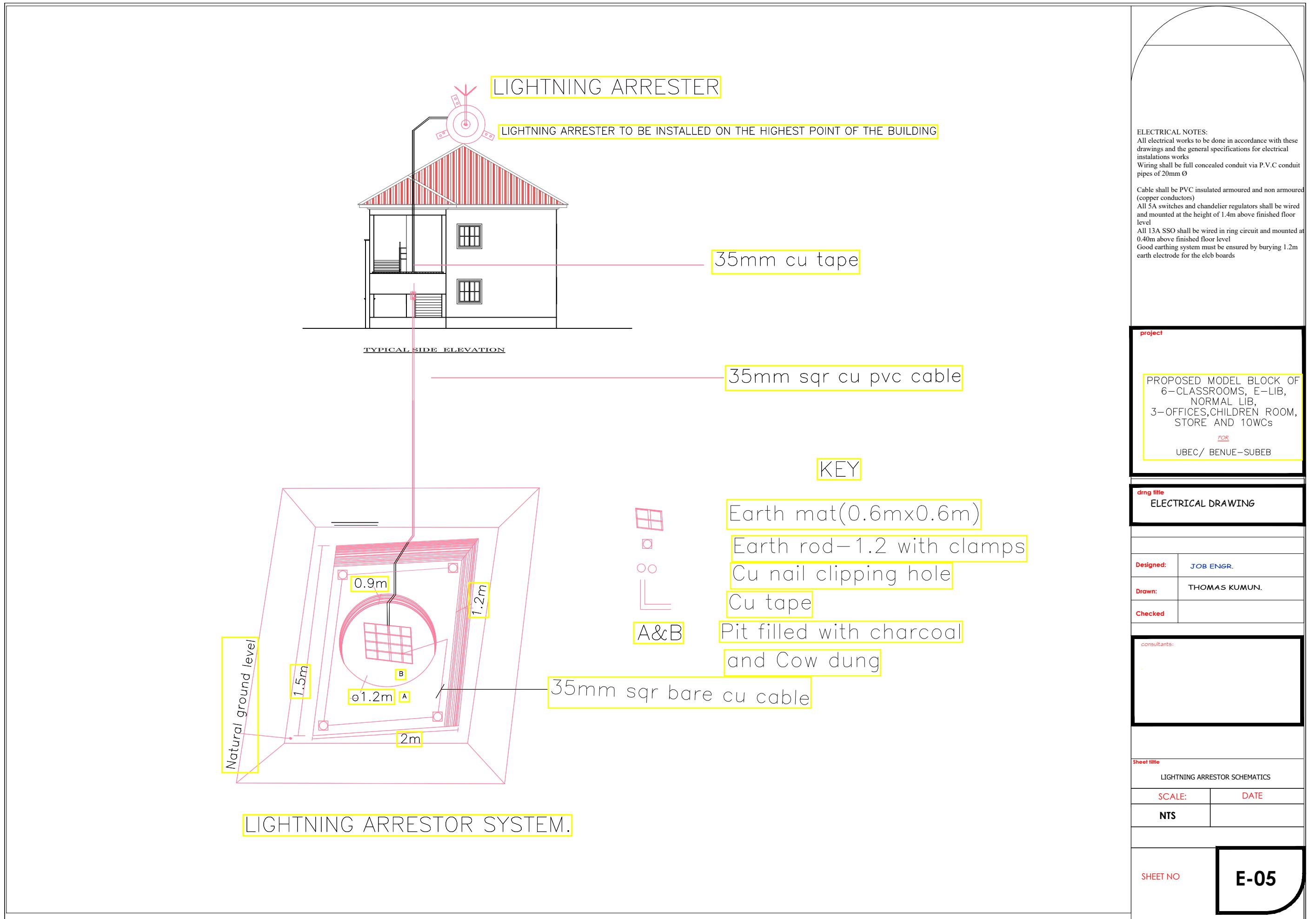
Sheet title
LOAD ANALYSIS- CLASSROOMS

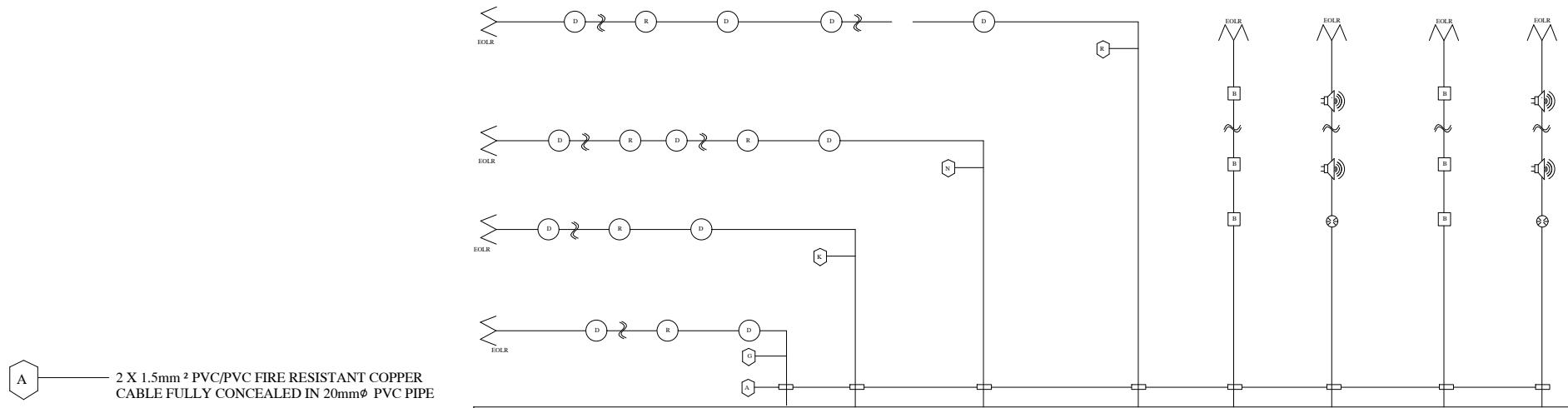
SCALE: DATE

NTS

SHEET NO

E-04





A — 2 X 1.5mm² PVC/PVC FIRE RESISTANT COPPER CABLE FULLY CONCEALED IN 20mmØ PVC PIPE

G — GROUND FLOOR

K — FIRST FLOOR

N — SPARE

R — SPARE

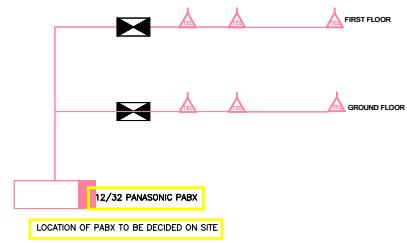
EOLR — END OF LINE RESISTOR

4-ZONE FIRE ALARM PANEL



24V AC,
50HZ

FIRE ALARM POWER SCHEMATICS



12/32 PANASONIC PABX
LOCATION OF PABX TO BE DECIDED ON SITE

ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø

Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project

PROPOSED MODEL BLOCK OF
6-CLASSROOMS, E-LIB,
NORMAL LIB,
3-OFFICES, CHILDREN ROOM,
STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB

dring title
ELECTRICAL DRAWING

Designed:	JOB ENGR.
Drawn:	THOMAS KUMUN.
Checked	

consultants:

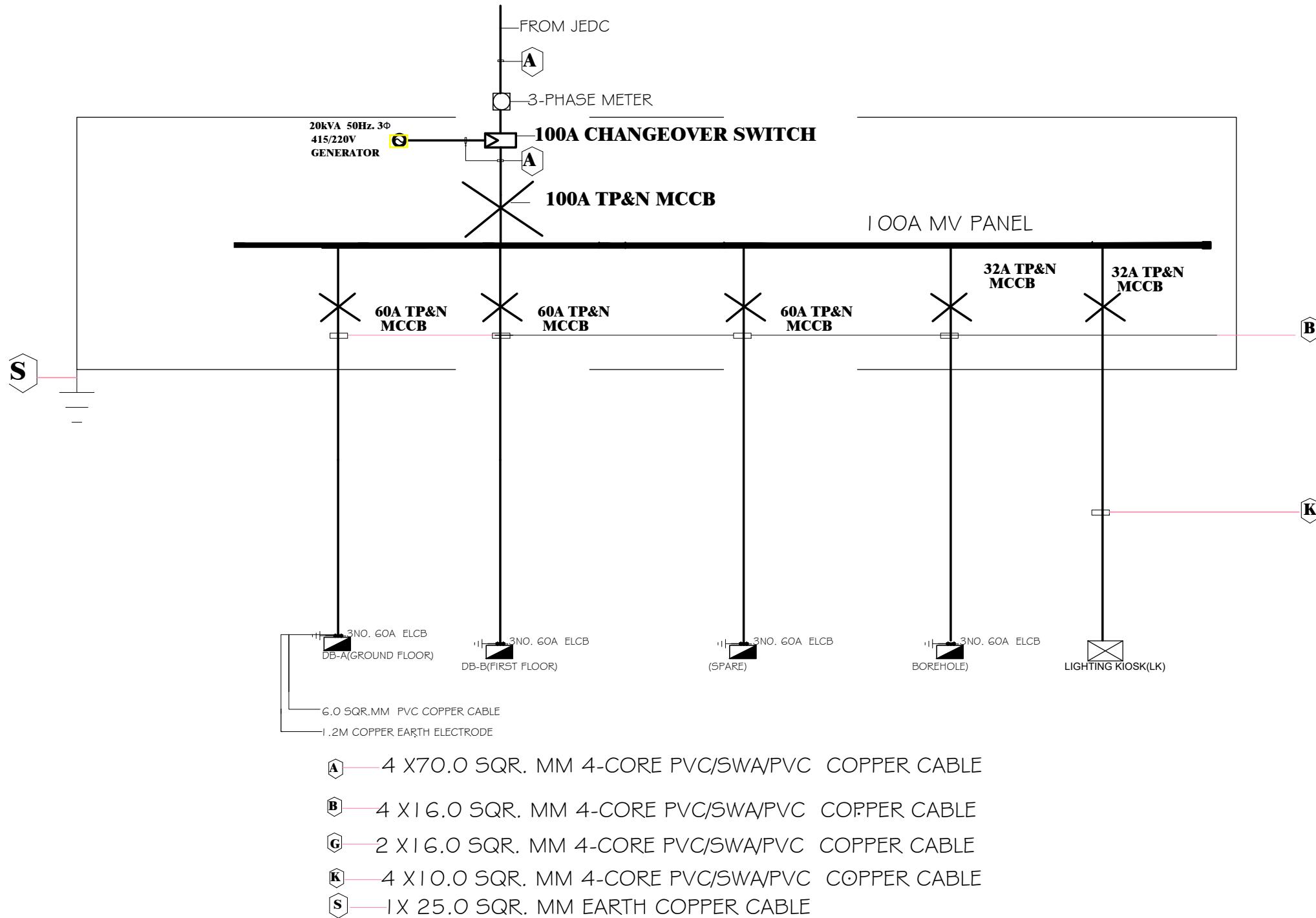
Sheet title
FIRE ALARM SCHEMATICS

SCALE:	DATE
NTS	

SHEET NO

E-06

GENERAL POWER SCHEMATICS



ELECTRICAL NOTES:
All electrical works to be done in accordance with these drawings and the general specifications for electrical installations works
Wiring shall be full concealed conduit via P.V.C conduit pipes of 20mm Ø

Cable shall be PVC insulated armoured and non armoured (copper conductors)
All SA switches and chandelier regulators shall be wired and mounted at the height of 1.4m above finished floor level
All 13A SSO shall be wired in ring circuit and mounted at 0.40m above finished floor level
Good earthing system must be ensured by burying 1.2m earth electrode for the elcb boards

project
PROPOSED MODEL BLOCK OF 6-CLASSROOMS, E-LIB, NORMAL LIB, 3-OFFICES, CHILDREN ROOM, STORE AND 10WCs
FOR
UBEC/ BENUE-SUBEB

dring title
ELECTRICAL DRAWING

Designed:	JOB ENGR.
Drawn:	THOMAS KUMUN.
Checked:	

consultants:
.....

Sheet title
GENERAL POWER SCHEMATICS

SCALE:	DATE
NTS	

SHEET NO

E-07