



Republic of the Philippines  
**GOVERNMENT PROCUREMENT POLICY BOARD**  
**TECHNICAL SUPPORT OFFICE**

**Project: Supply, Delivery, and Installation of Audio and Video Equipment for the GPPB Boardroom, Auditorium, Training Rooms, and Meeting Rooms**

**Bid Bulletin No.: 03**

**TO ALL INTERESTED BIDDERS:**

A. Please be advised on the following clarifications to the requirements specified in the Bidding Documents issued for the above-mentioned project.

Questions/Concerns on the requirements	Clarifications/Answers
<p>1. Is OEM Authority Certificate required for all equipment or for major equipment only?</p>	<p>Relative to the requirements under Item 4.4 of the Terms of Reference (TOR) and Item I(f)(iii) of Section VIII. Checklist of Technical and Financial Documents, the bidder shall submit a copy of its authority certificate issued by the OEM to distribute, sell, install, service, and/or maintain the equipment in the Philippines for the following equipment:</p> <ol style="list-style-type: none"> <li>1. PTZ Camera</li> <li>2. Digital Matrix Processors</li> <li>3. Power Amplifier</li> <li>4. Control Processor</li> <li>5. Digital Signal Processor</li> <li>6. Indoor LED Wall Display</li> <li>7. Touch Panels</li> <li>8. Projector</li> <li>9. Teleprompter</li> <li>10. Speakers</li> <li>11. POE Switches</li> <li>12. Access Point</li> <li>13. Monitor Display</li> </ol>

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<p>2. Can you give us a list of major equipment that requires Eco Label Certification?</p>	<p>Please refer to the following requirements under the Terms of Reference:</p> <ol style="list-style-type: none"> <li>1. Monitor Display:             <ol style="list-style-type: none"> <li>a. Items 5.2.1.14 and 5.3.1.14 Energy efficient and with Energy Star Rating of at least 4 Stars</li> </ol> </li> <li>2. Power Amplifier:             <ol style="list-style-type: none"> <li>a. Items 5.1.14.1, 5.2.14.1, and 5.3.10.1 Compact mono amplifier with 200 watts RMS power output into a 70-volt line and Energy Star qualification or any eco label certification</li> </ol> </li> </ol>
<p>3. Can you provide a Single Line Diagram for this project?</p>	<p>The Single Line Diagram is provided under <b>Annex A</b> of the Bid Bulletin.</p>
<p>4. Do you have a floor plan provided?</p>	<p>The Floor Plan is provided under <b>Annex B</b> of the Bid Bulletin.</p>
<p>5. Is the project related to Background Music and Public Address can be considered as similar contract for SLCC?</p>	<p>Please refer to ITB Clause 5.3 of the Bid Data Sheet.</p>
<p>6. Can we provide ROHS or environmental standards like ISO 14001 or equivalent.</p>	<p>Please refer to the above provided answer under Item No. 2.</p> <p>Any eco or green label or environmental compliance certificate or standard is acceptable.</p>
<p>7. Is it possible to omit the specification under 5.1.13. Ceiling Speaker 5.1.13.8 Energy Efficient and with any eco label certification? This is not applicable in the ceiling speaker,</p>	<p>Please refer to Item B (4) of the Bid Bulletin.</p>

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<p>and this is supposed to be applicable especially to the power amplifiers.</p>	
<p>8. Can we request for scaled floor plan and electrical plan for the rooms/locations?</p>	<p>Please refer to <b>Annex B</b> of the Bid Bulletin.</p>
<p>9. Is there an available power for all the areas where we can plug the equipment to power up? The power outlet should be beside the location and no additional electrical works.</p>	<p>Yes. Please refer to <b>Annex B</b> of the Bid Bulletin.</p>
<p>10. Since the GPPB-TSO Building is new and to avoid any possible violation of the warranty on the contractors works, we would like to recommend that wall moldings and rubber floor moldings will be use special for finish locations (with tiles).</p>	<p>Please refer to the requirement under Item 3.4.2 of the TOR.</p> <p>Under Item 3.2 of the TOR, the Service Provider shall submit, within ten (10) calendar days upon receipt of the Notice to Proceed, a detailed work plan, including the lay-out design, to the GPPB-TSO for approval of the duly authorized representative of the GPPB-TSO, with schedule of activities, details of activities, and monitoring tool as a reference of the GPPB-TSO in evaluating the work accomplishments and status of the implementation of the project.</p>
<p>11. What is the use of Power Controller? As per checking, this is not necessary for the system requirement of GBBB-TSO. If end-users insist that this is needed, may we request a Single-Line Diagram (SLD) from the end-users?</p>	<p>The Power Controller will be used to control the power of the Audio Visual (AV) equipment. This control will be executed via the user interface. The Power Controller will be used to protect the AV equipment and conserve energy.</p> <p>For SLD, please refer to <b>Annex A</b> of the Bid Bulletin.</p>

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B. The following requirements shall be read as follows:

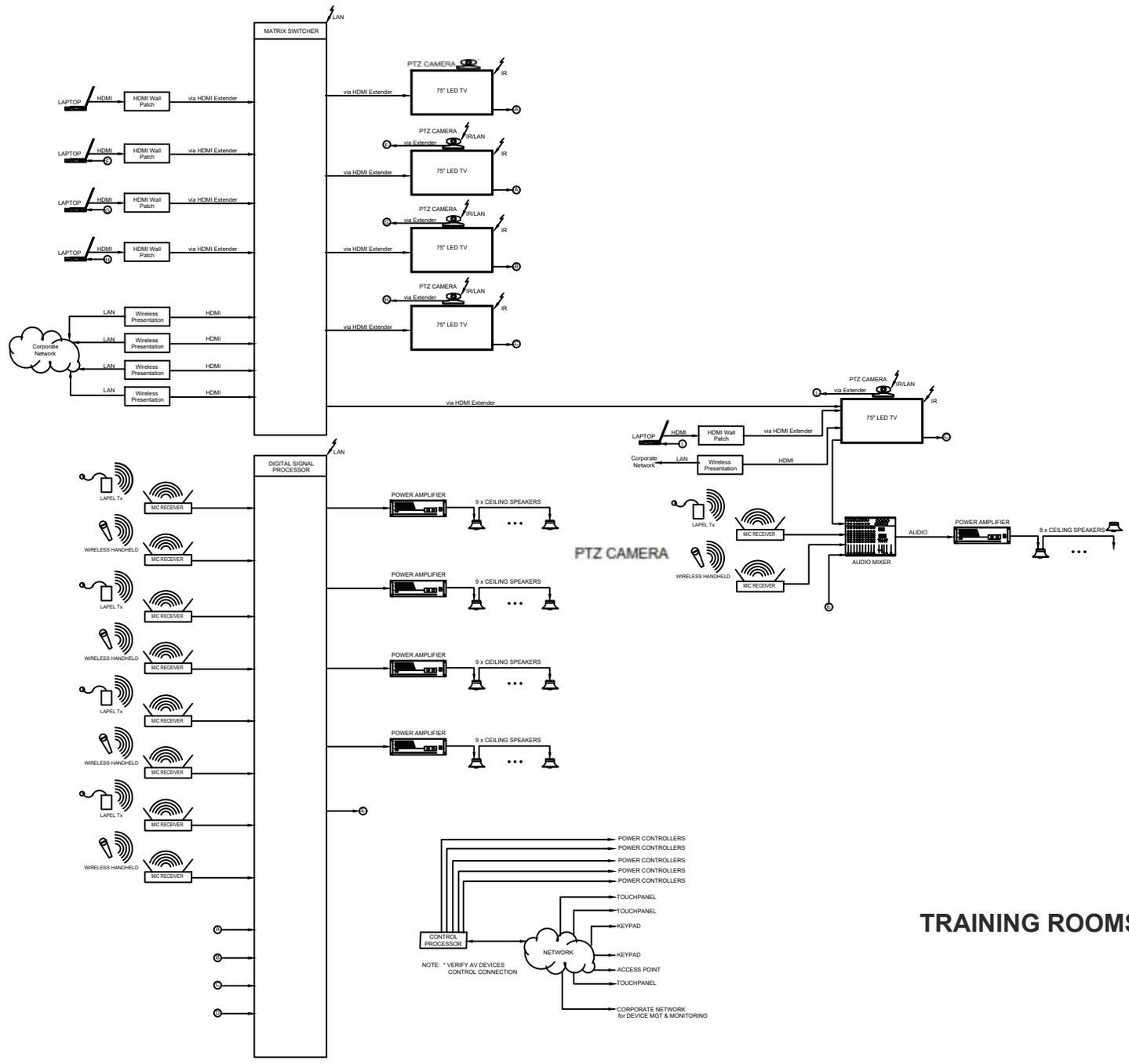
Item No.	Amended Requirement
1. Section VIII. Checklist of Technical and Financial Documents Item f(iv)	Any eco or green label or environmental compliance certificate or standard for the Monitor Display and Power Amplifier.
2. Item 3.1.2 of the TOR	The SP shall install and configure all the hardware, audio and video equipment, devices, components, and peripherals for this project, including all the necessary wiring and data cabling in the identified locations/rooms of the buildings.
3. Item 5.6.1 and Item No. 122 of the Bill of Quantities of the TOR	7" Wall Mount Touch Screen Scheduling Panel
4. Item 5.1.13 of the TOR	<p>Item 5.1.13 Ceiling Speakers</p> <p>5.1.13.1. 8" full range transducer delivers up to 10W in either 70V or 100V mode using wiring taps on the transformer</p> <p>5.1.13.2. Transformer tap 2.5, 5, 10W</p> <p>5.1.13.3. 490, 1k, 2k Ohms input impedance</p> <p>5.1.13.4. 100 Hz ~ 20 kHz frequency response</p> <p>5.1.13.5. 98 dB SPL (1W/1m)</p> <p>5.1.13.6. Metal frame and metal grille</p> <p>5.1.13.7. Shallow depth</p>

Please be guided accordingly.

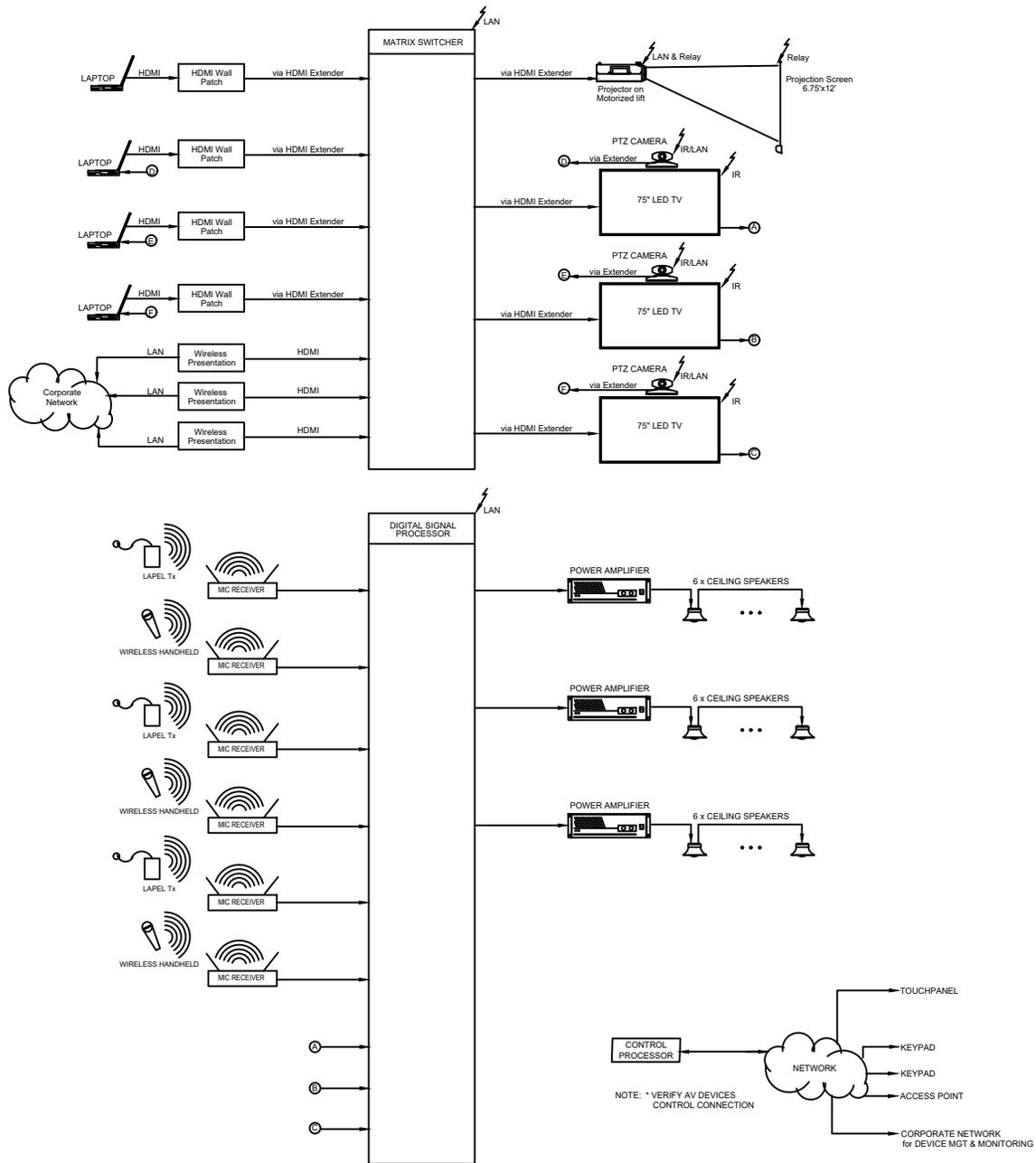
*Issued this 10th day of November 2023.*

**ATTY. MA. JOZZENNE CLAIRE M. BELTRAN-CARANDANG**  
*Chairperson, Bids and Awards Committee*

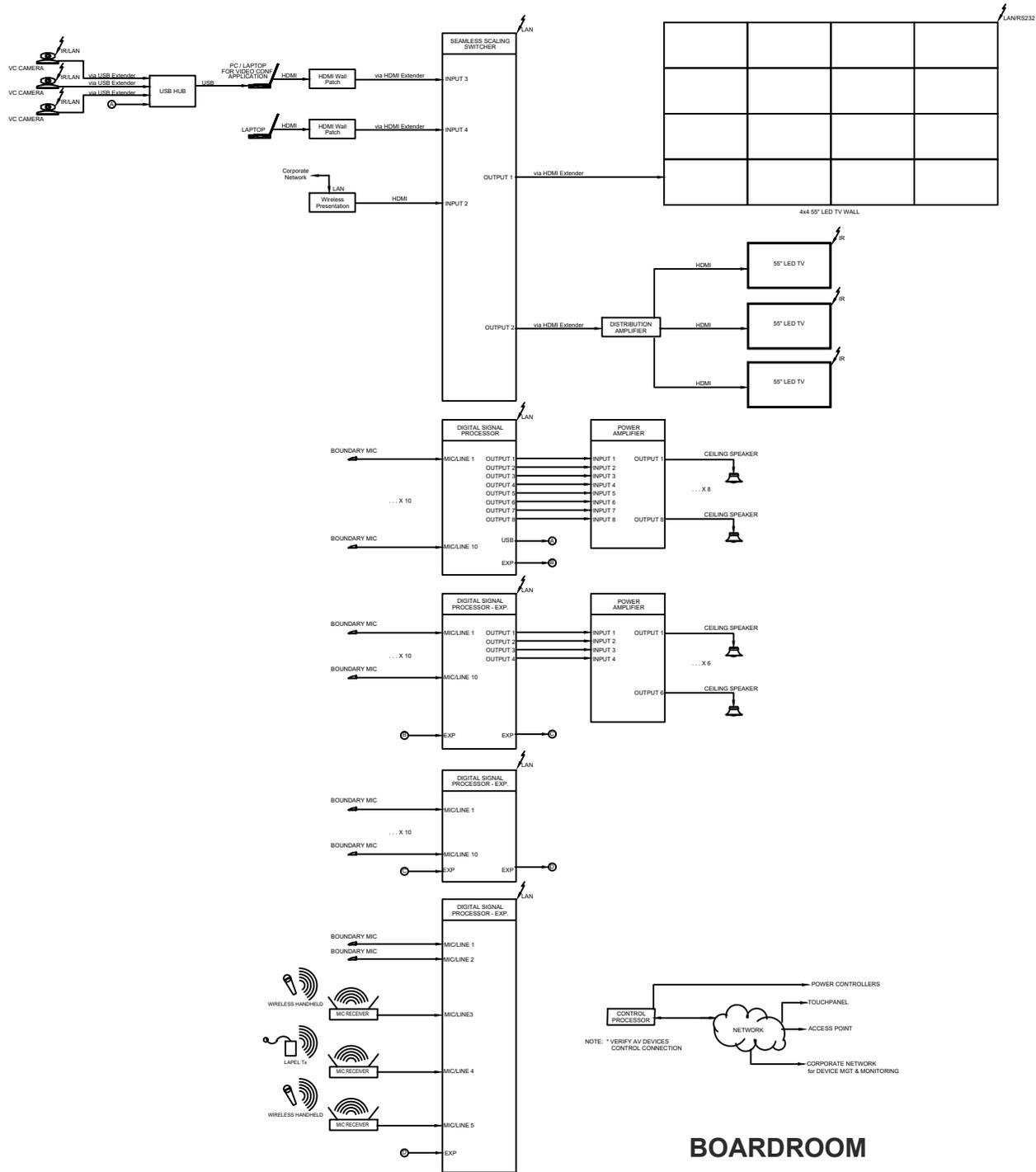
# ANNEX A



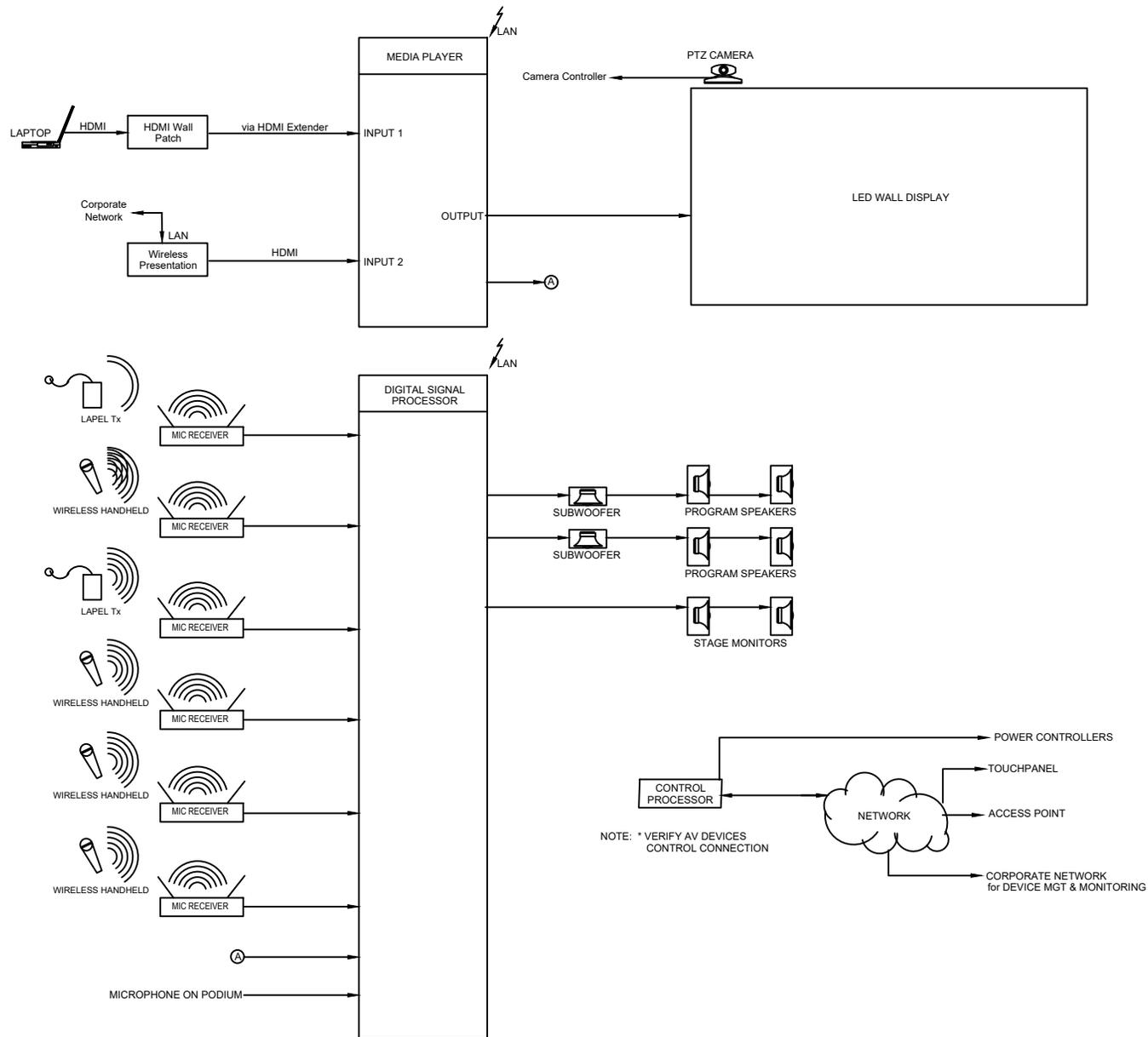
TRAINING ROOMS 1,2,3,4 and 5



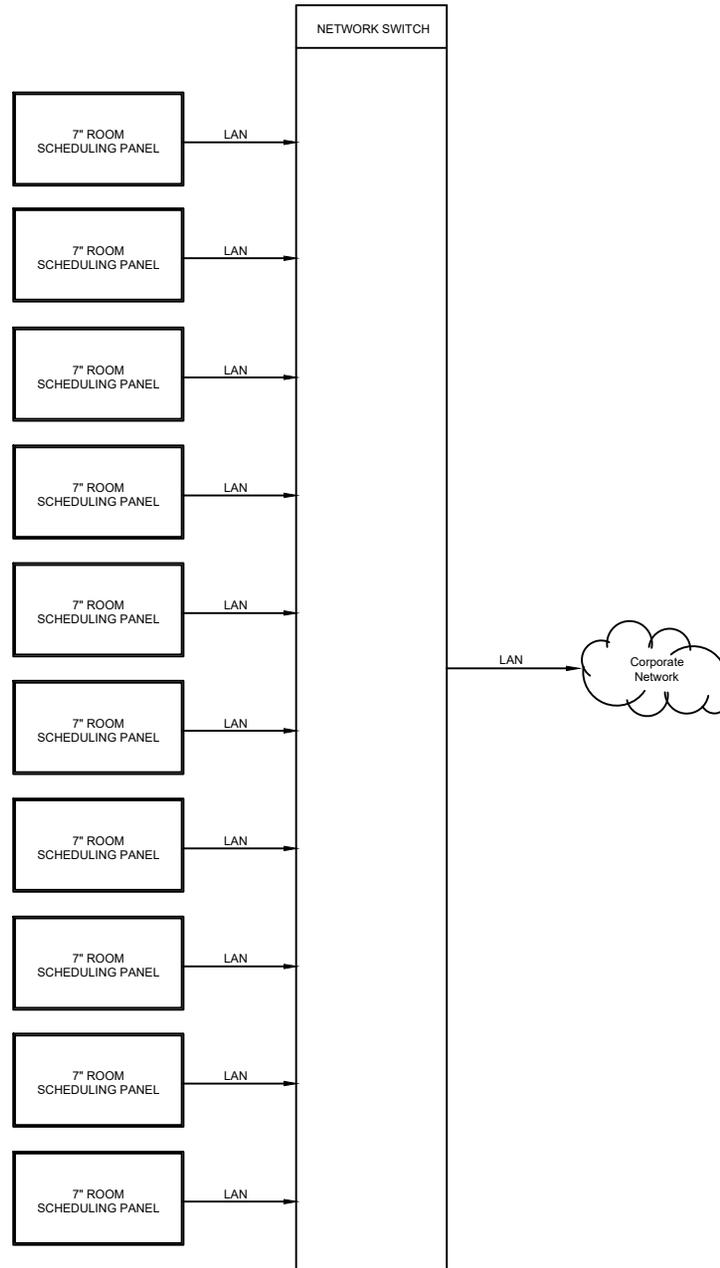
## MEETING ROOMS 1,2 and 3



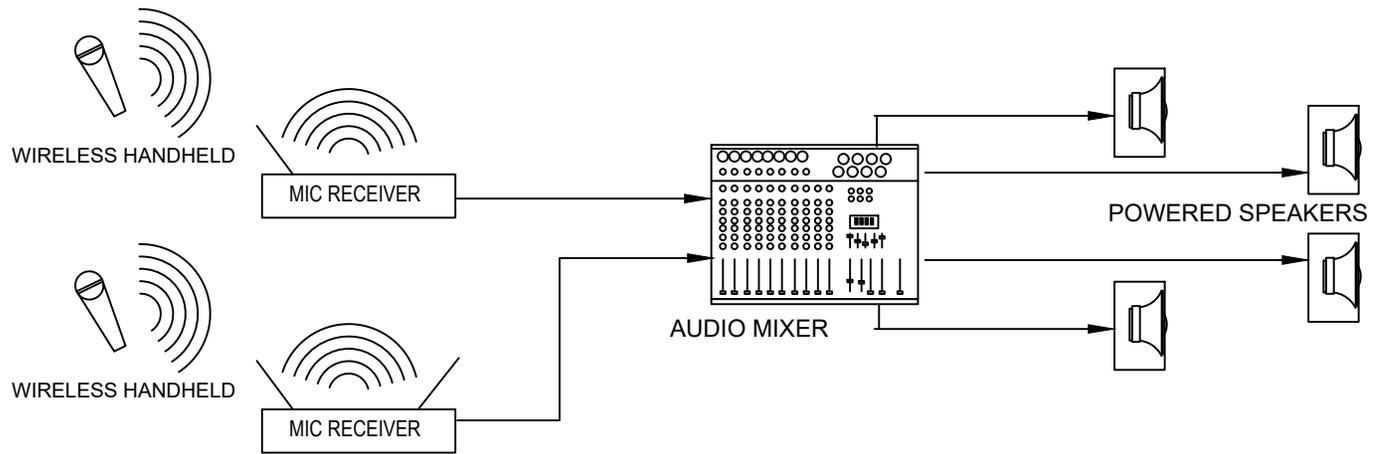
NOTE: \* VERIFY AV DEVICES CONTROL CONNECTION



## AUDITORIUM



**ROOM SCHEDULING SYSTEM**



**COVERED COURT**

# GENERAL NOTES

1. ALL ELECTRICAL WORKS SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF THE LATEST EDITION OF THE PHILIPPINE ELECTRICAL CODE, THE LAWS AND ORDINANCES OF THE LOCAL CODE, ENFORCING AUTHORITIES AND THE REQUIREMENTS OF THE LOCAL POWER AND TELEPHONE UTILITY COMPANIES.
2. THE CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE WORK AND SHALL FURNISH THE OWNER THROUGH THE ENGINEER'S FINAL CERTIFICATES OF ELECTRICAL INSPECTION AND APPROVAL FROM PROPER GOVERNMENT AUTHORITIES FOR COMPLETION OF WORK.
3. ALL MATERIALS TO BE USED SHALL BE NEW AND INSTALLED IN APPLICATIONS FOR WHICH THEY ARE INTENDED.
4. ALL CONDUITS SHALL BE POLYVINYL CHLORIDE CONDUIT (PVC) EXCEPT AS NOTED ON THE PLANS AND SPECIFICATIONS. REFER TO SPECIFICATION FOR INSTALLATION REQUIREMENT.
5. MINIMUM SIZE OF CONDUIT SHALL BE 20mm DIAMETER.
6. ALL CONDUITS SHALL BE CONCEALED UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. EXPOSED CONDUIT RUNS SHALL BE INSTALLED PARALLEL TO OR PERPENDICULAR WITH THE BUILDING LINE AND SUPPORTED BY CONDUIT CLAMPS EVERY 1.5 METERS.
7. PROVIDE GALVANIZED PULLING WIRE GA. 18 FOR ALL EMPTY CONDUITS.
8. PULL BOXES SHALL BE PROVIDED BY THE CONTRACTOR WHENEVER NECESSARY TO FACILITATE WIRE PULLING EVEN IF THESE ARE NOT INDICATED ON THE PLANS.
9. FOR BOXES WITH MORE THAN FOUR WIRES ENTERING USE 0.10M X 0.10M SQUARE BOX WITH ONE ADAPTER RING (TYPICAL FOR RECEPTACLE BOXES).
10. ALL LIGHTING AND CONVENIENCE OUTLET CIRCUITS SHALL BE 3 WIRE 3.5 SQ. MM THHN UNLESS OTHERWISE NOTED. MINIMUM SIZE OF WIRE SHALL BE 3.5 SQ. MM THHN.
11. ALL DUPLEX RECEPTACLE OUTLETS SHALL BE GROUNDING TYPE WITH PARALLEL SLOTS FOR 220V.
12. PROVIDE GROUND FAULT CIRCUIT INTERRUPTER CIRCUIT BREAKER FOR LOADS MARKED "GFCI" ON THE PLAN.
13. ALL METALLIC CONDUITS CABINETS AND EQUIPMENTS SHALL BE PROPERLY GROUNDED AND BONDED.
14. UNPROTECTED CONDUIT RISERS AND EXPOSED CONDUIT SHALL BE RIGID STEEL CONDUIT.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION OF SHOP OR CONSTRUCTION DRAWINGS REQUIRED.
16. REFER TO MECHANICAL, PLUMBING AND FIRE PROTECTION DRAWINGS FOR RATINGS AND LOCATIONS OF EQUIPMENT AS WELL AS THEIR CONTROL SEQUENCES AS SPECIFIED AND DRAS SHOWN UNDER THEIR RESPECTIVE SECTIONS.
17. PROVIDE ALL SUPPLEMENTARY SUPPORT STEEL IN CLOSETS, SHAFTS, PIPE SPACES, ETC. TO SPAN BUILDING STRUCTURAL ELEMENTS AND SUPPORT ELECTRICAL RACEWAYS AND EQUIPMENT. ALL ELECTRICAL WORKS SHALL BE SUPPORTED INDEPENDENTLY AND NOT ON INSTALLATIONS OF OTHER TRADES.
18. IDENTIFICATIONS OF SYMBOLS APPROPRIATE FOR EACH BID PACKAGE IS NOTED TO ASSIST CONTRACTOR FOR QUICK DEVICE AND EQUIPMENT IDENTIFICATION AND REFERENCE ONLY. CONTRACTOR MUST FAMILIARIZE WITH ALL SYMBOLS FOR PROPER EXECUTION OF HIS WORK.
19. POWER SUPPLY TO THE BUILDING SHALL BE 400/230 VOLTS, THREE PHASE, 4-WIRE, 60Hz.
20. WIRES SHALL BE COLOR CODED AS FOLLOWS:
  - Phase A - Black
  - Phase B - Red
  - Phase C - Blue
  - Neutral - Yellow
  - Ground - Green
21. ALL ELECTRICAL WORKS SHALL BE DONE UNDER THE DIRECT AND IMMEDIATE SUPERVISION OF A DULY REGISTERED ELECTRICAL ENGINEER.

# LEGENDS AND SYMBOLS

S	SINGLE POLE WALL SWITCH 15AMP., 240VOLTS
S <sub>2</sub>	DUPLEX SWITCH, 2 SINGLE POLE SWITCHES ON GANG SWITCH PLATE 15AMP., 240 VOLTS
S <sub>3</sub>	TRIPLEX SWITCH, 3 SINGLE POLE SWITCHES ON GANG SWITCH PLATE 15AMP., 240 VOLTS
S <sub>3</sub> W	THREE-WAY SWITCH 15AMP., 240 VOLTS
S <sub>4</sub> W	FOUR-WAY SWITCH 15AMP., 240 VOLTS
S <sub>0</sub>	LIGHT DIMMING SWITCH
⊖	SINGLE CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS
⊖	DUPLEX CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS
⊖ CH	DUPLEX CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS "CH" DENOTES COUNTER HEIGHT
⊖ GFCI	DUPLEX CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS "GFCI" DENOTES GROUND FAULT CIRCUIT INTERRUPTER
⊖ FL	DUPLEX CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS "FL" DENOTES FLOOR OUTLET
⊖ WP	DUPLEX CONVENIENCE OUTLET, GROUNDING TYPE, 15AMP., 240 VOLTS "WP" DENOTES WEATHER PROOF
⊖ SPO	SINGLE CONVENIENCE OUTLET, GROUNDING TYPE, 20AMP., 240 VOLTS "SPO" SPECIAL PURPOSE OUTLET
A	MOTION SENSOR MODEL BMSA2202 OR APPROVED EQUAL
B	MOTION SENSOR MODEL BMSA1204 OR APPROVED EQUAL
—	CONCEALED OR EMBEDDED CONDUIT RUN
—	UNDERGROUND OR UNDER FLOOR CONDUIT RUN
→	CIRCUIT HOMERUN
⊖	GROUNDING SYSTEM
⊖	CIRCUIT BREAKER
⊖	DISTRIBUTION PANELBOARD
⊖	ELECTRIC SERVICE METER
⊖	GENERATOR SET
⊖	SERVICE ENTRANCE
⊖	REINFORCED CONCRETE PEDESTAL

# LEGENDS AND SYMBOLS

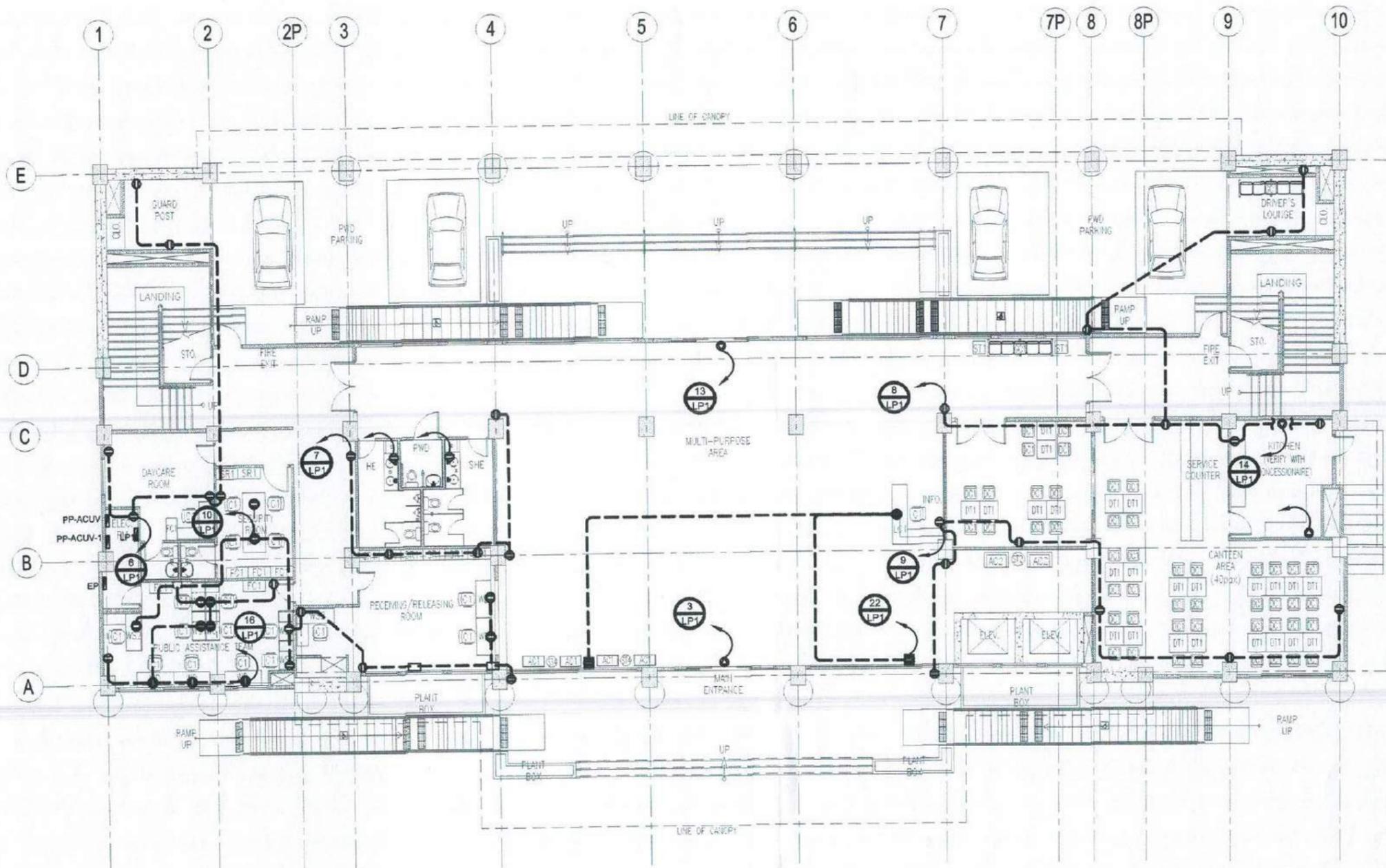
SCHEDULE OF LIGHTING FIXTURES					
TYPE	SYMBOL	WATTAGE	BULB/TUBE TYPE	WATTAGE	MODEL
1		1X10	LED	DUST PROOF SURFACE TYPE	FLSSDP1X20 OR APPROVED EQUAL
2		1X20	LED	T8 GRID FIXTURE WITH ALUMINUM REFLECTOR, POWDER COATED BASE, SCRATCH PROOF, 12"X48", RECESSED TYPE	GPL7362WD OR APPROVED EQUAL
3		2X20	LED	DUST PROOF SURFACE TYPE	FLSSDP2X40 OR APPROVED EQUAL
4		2X20	LED	T8 GRID FIXTURE WITH ALUMINUM REFLECTOR, POWDER COATED BASE, SCRATCH PROOF, 12"X48", RECESSED TYPE	GPL7362WD OR APPROVED EQUAL
5		2X20	LED	INDUSTRIAL TYPE WITH ALUMINUM REFLECTOR, SURFACE MOUNTED	ESLIA 2X40/1 OR APPROVED EQUAL
6		7.5	LED COB MR16 DIMMABLE	DOWNLIGHT CASING, RECESSED TYPE, 95mm x 30mm	DLR-MR16S1 OR APPROVED EQUAL
7		10	LED	RECESS ROUND DOWNLIGHT FIXTURE WITH GLASS, 4"Ø	LL-2.5 701-4WHT OR APPROVED EQUAL
8		13.5	LED DIMMABLE	RECESS ROUND DOWNLIGHT FIXTURE WITH GLASS, 6"Ø	LL-5701-4 WHT OR APPROVED EQUAL
9		15	LED	RECESS ROUND DOWNLIGHT FIXTURE WITH GLASS, 6"Ø	LL-5701-4 WHT OR APPROVED EQUAL
10		18	LED	VERTICAL DOWNLIGHT RECESSED TYPE WITH GLOSSY REFLECTOR, 8"Ø	FD10WH6 OR APPROVED EQUAL
11		18	LED	OUTDOOR FIXTURE, GLOBE SERIES, PLAIN WHITE OPAL	FOGLS33/12" OR APPROVED EQUAL
12		18	LED	DRUM PENDANT LIGHTING FIXTURE WITH WHITE COTTON SHADE AND MATCHING FABRIC DIFFUSER, DIAMETER=19.75", HEIGHT=8"	EDEN WHITE PENDANT OR APPROVED EQUAL
13		18	LED PAR COB DIMMABLE	PAR 30 ALUMINUM HOUSING	PAR30TH OR APPROVED EQUAL
14		50	LED FLOODLIGHT	LED WEATHERPROOF ROUND FLOODLIGHT	LWFL-50WDL OR APPROVED EQUAL
15		100	LED	LED ROAD LIGHT, 150 DEGREE BEAM ANGLE ACCURATE IN LIGHT DISTRIBUTION FOR BETTER ILLUMINATION AND 20FT HIGH STEEL POST	LRL-100WDL OR APPROVED EQUAL
16		150	LED	HIGH BAY LIGHTING FIXTURE, IP65, 150X33X320	EHD3150DL OR APPROVED EQUAL
17		8W/m	LED	STRIP LIGHT, 350lm/m, 220V	LSAC-8W-WW OR APPROVED EQUAL
18		2X3W	LED	EMERGENCY LIGHT, 12V, 9.0Ah, 8 HOURS PERFORMANCE TIME	AEL-9032L OR APPROVED EQUAL
19			LED	LED EXIT SIGN, ACRYLIC, TRANSPARENT/GREEN, SINGLE FACE	LEDX-300 OR APPROVED EQUAL
20		18	LED	SQUARE COMMERCIAL DOWNLIGHT WITH HOUSING	DLH31-191-AR111 WHT OR APPROVED EQUAL

## ABBREVIATIONS:

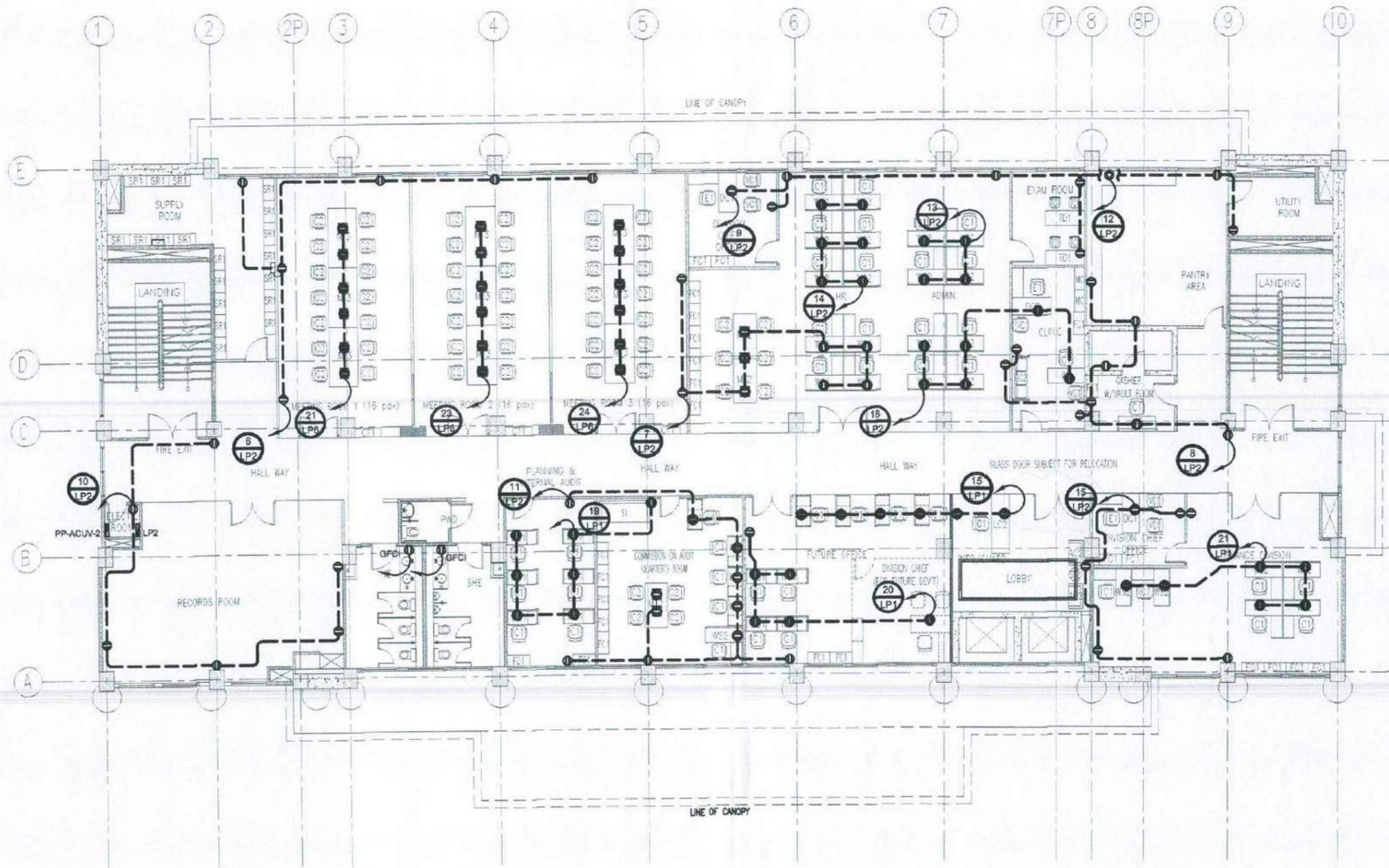
A, AMP	AMPERE
AF	AMPERE FRAME
AT	AMPERE TRIP
BCW	BARE COPPER WIRE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
P	CONCRETE PEDESTAL
Ø/DIA.	DIAMETER
ENCL	ENCLOSURE, ENCLOSED
G, GND	GROUND
PS	HIGH PRESSURE SODIUM
Hz	HERTZ
IC	INTERRUPTING CAPACITY
KAIC	KILOAMPERE INTERRUPTING CAPACITY
KVA	KILOVOLT-AMPERE
KWHM	KILOWATT-HOUR METER
L	LENGTH
LED	LIGHT EMITTING DIODE LUMINAIRE

## ABBREVIATIONS:

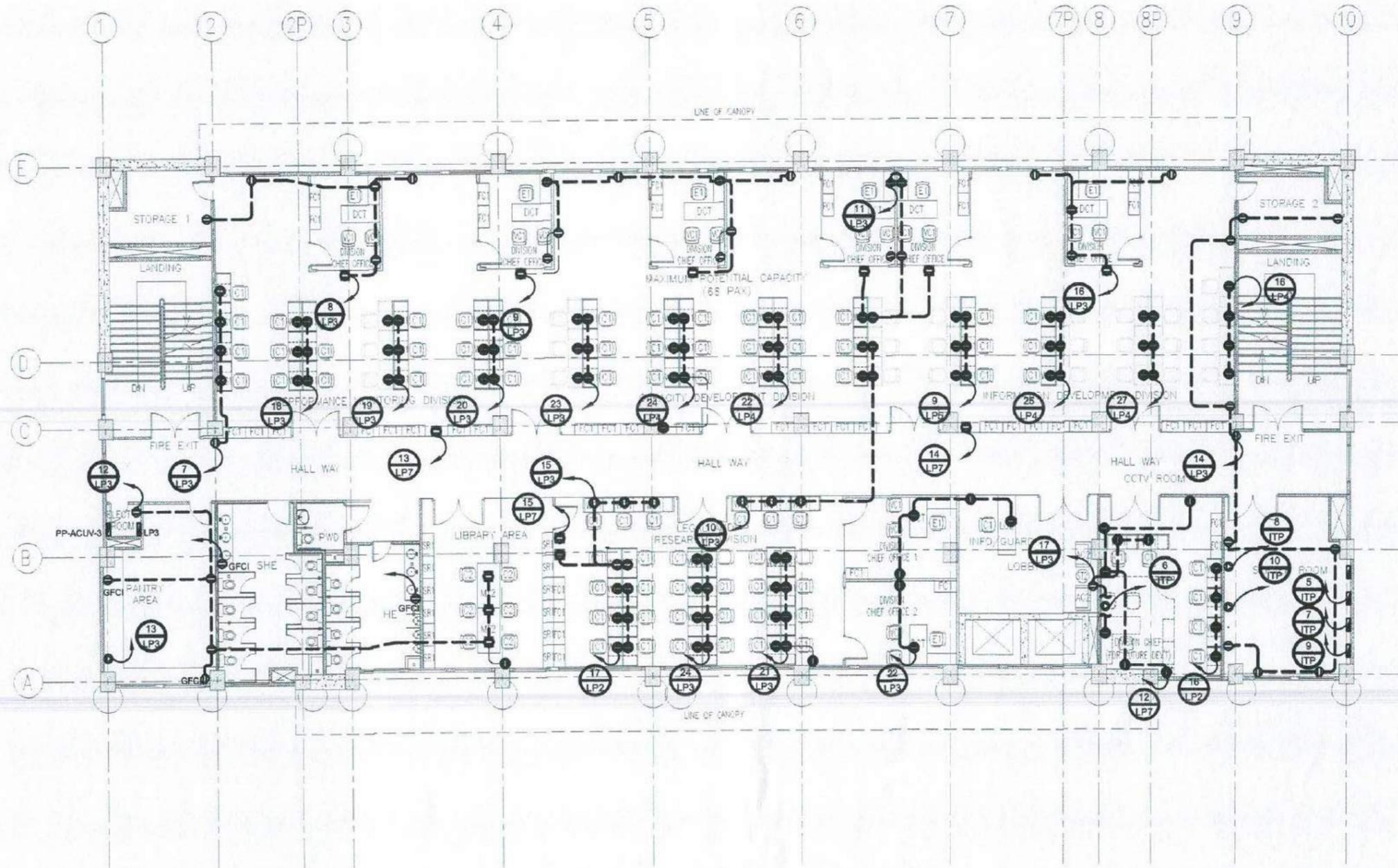
M	METER
mm.	MILLIMETER
NEMA	NATIONAL ELECTRIC MANUFACTURES ASSOCIATION
P	POLE
PNL	PANEL
PH	PHASE
UPVC PMS14	UNPLASTICIZED POLYVINYL CHLORIDE PHILIPPINE NATIONAL STANDARDS 14
RSC	RIGID STEEL CONDUIT
SLP	STREET LIGHT PANELBOARD
THW	MOISTURE AND HEAT RESISTANT THERMOPLASTIC
TYP.	TYPICAL
TW	MOISTURE AND HEAT THERMOPLASTIC
THHN	FLAME RETARDANT, MOISTURE & HEAT RESISTANCE
V	VOLT



**REVISED GROUND FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.




**REVISED SECOND FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.

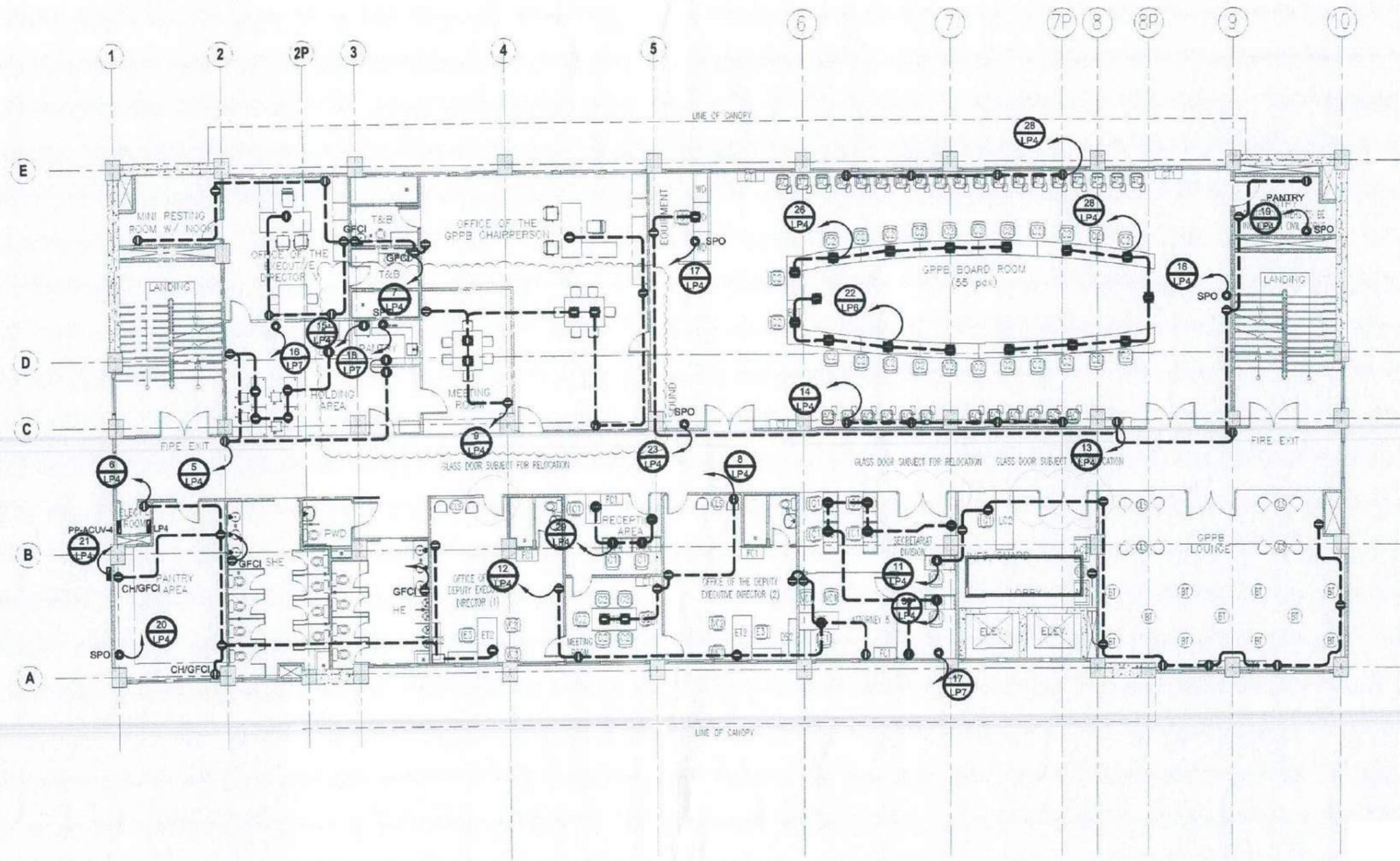



**REVISED THIRD FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.

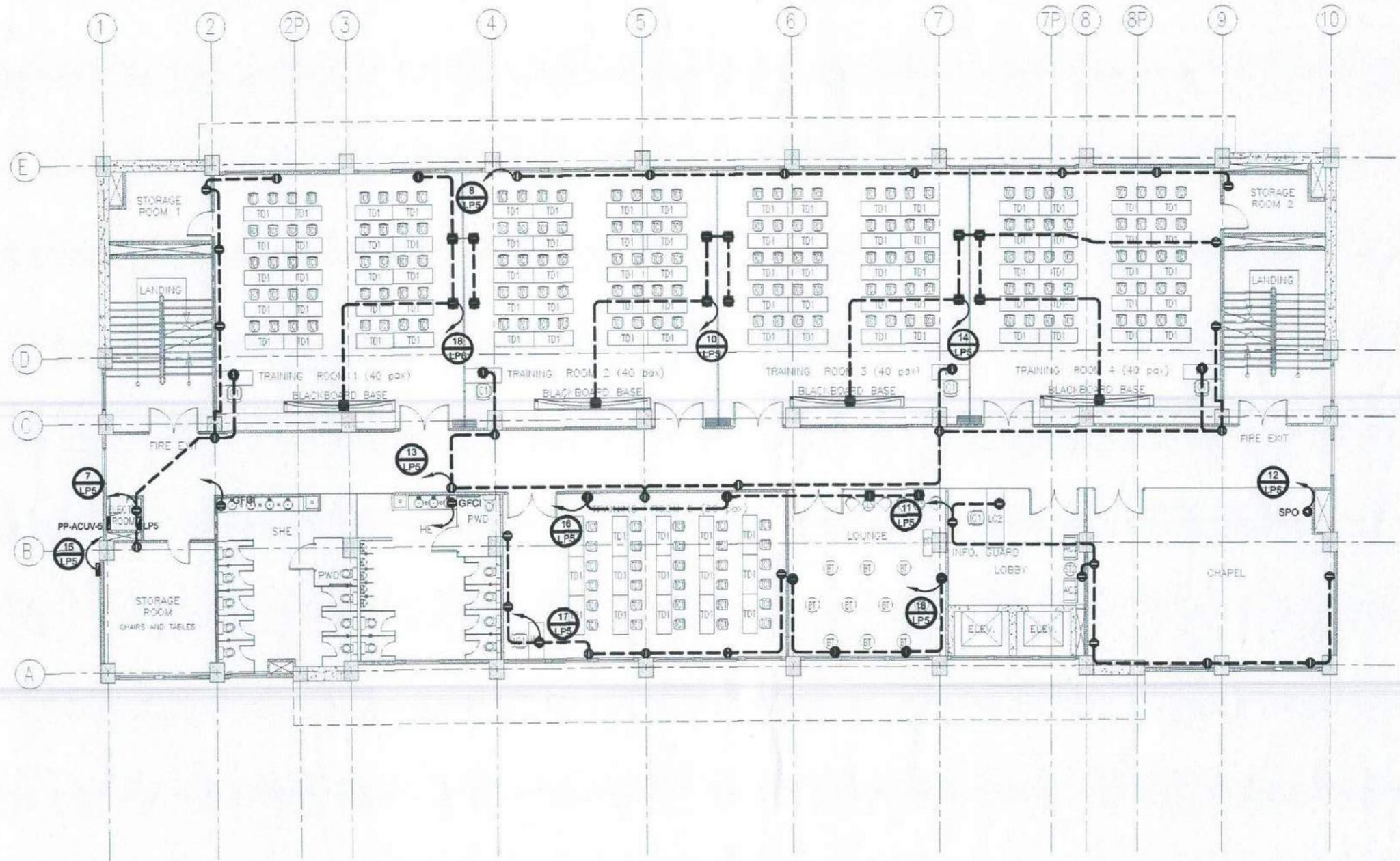
**NOTE:**  
 PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9164, APPROVAL BY THE AUTHORIZED OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE RESPONSIBILITY TO APPROVING OFFICIALS.

THE DESIGN CONSULTANT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT THE OF THE DESIGNER.

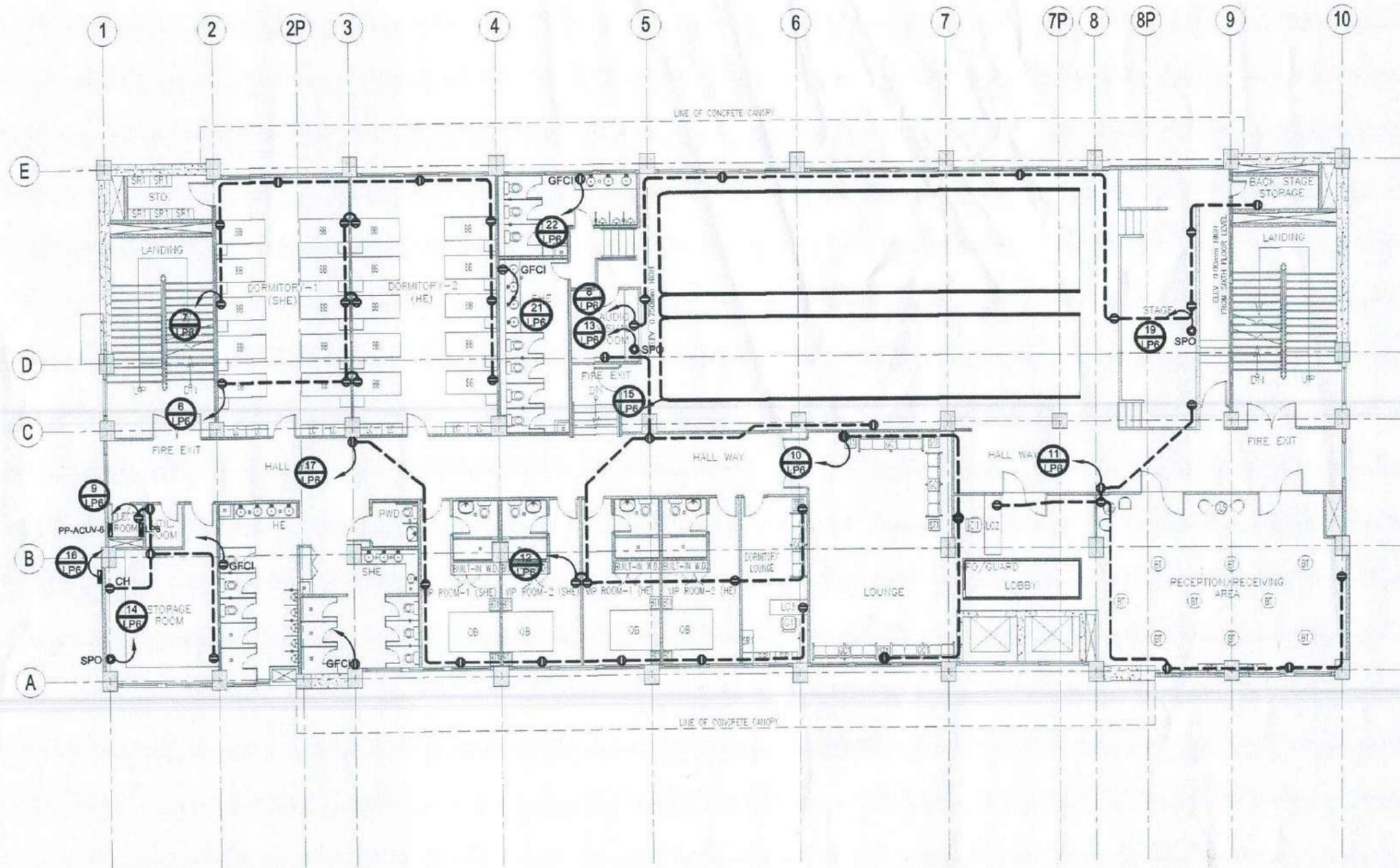
**ORVILLE R. SINGSON**  
 ELECTRICAL DESIGN  
 POSITION: ELECTRICAL ENGINEER  
 PRC No.: 0004017PTR TIN No.: 155-838-103  
 PTR No.: 7222893, 01-03-18, MARIKINA CITY



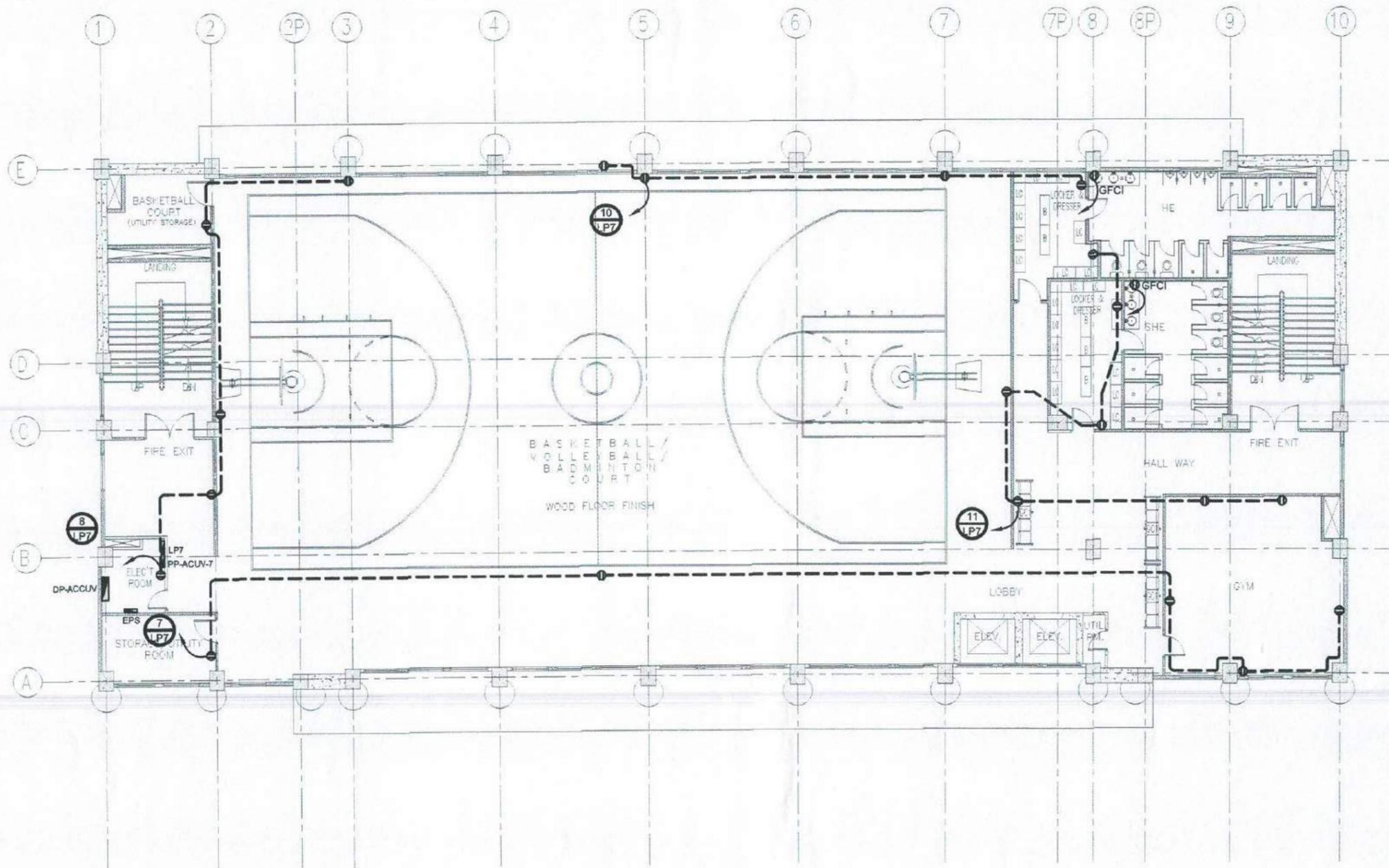
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**REVISED FOURTH FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.



REVISED FIFTH FLOOR POWER LAYOUT PLAN  
 SCALE: 1:100 M.

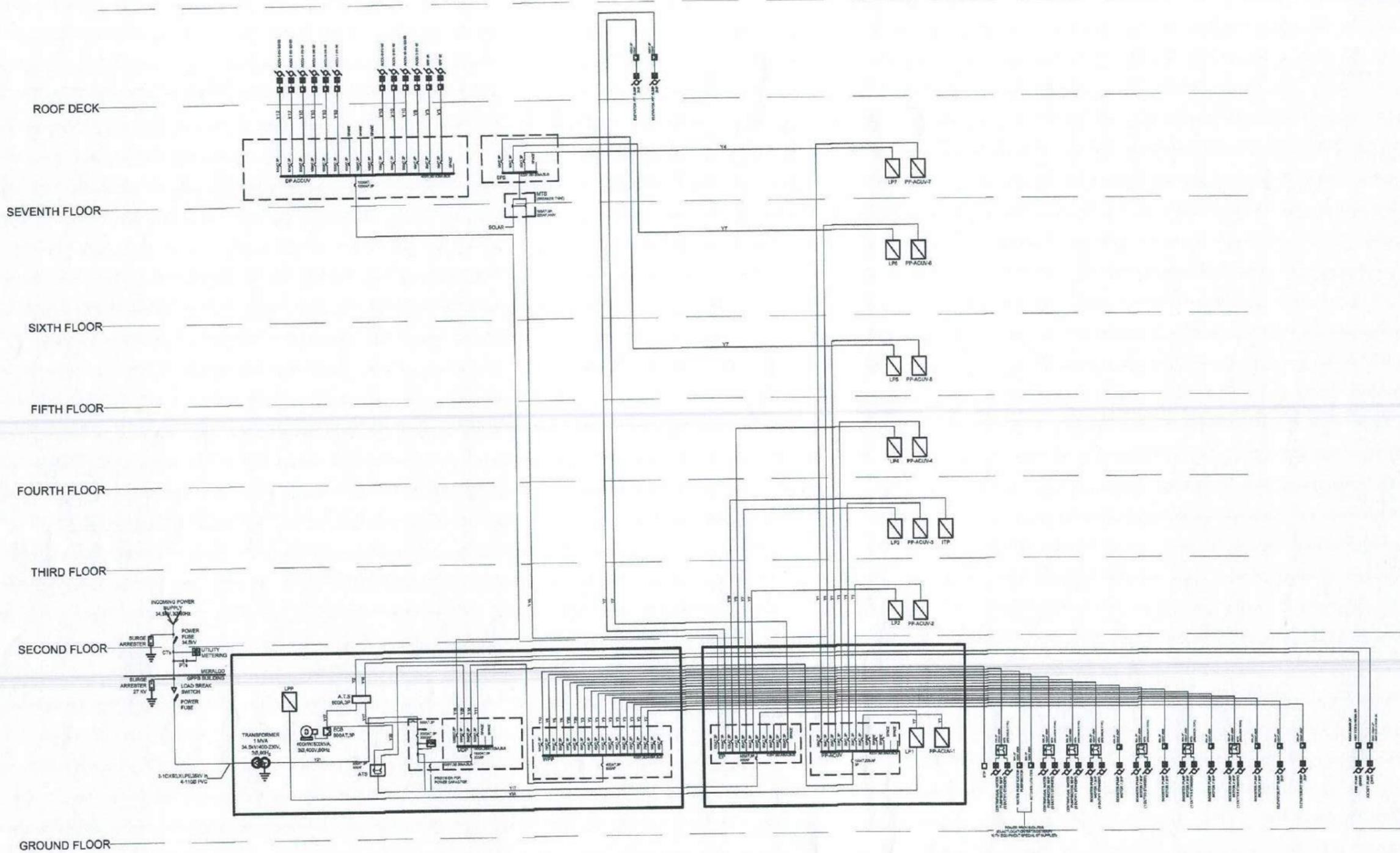


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**REVISED SIXTH FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.




**REVISED SEVENTH FLOOR POWER LAYOUT PLAN**  
 SCALE: 1:100 M.

**NOTE:**  
 ALL MCCB'S WITH 225 AF AND UP SHALL BE OF INTERCHANGEABLE THERMAL MAGNETIC TRIP UNIT TYPE.



SYMBOL	SIZES OF WIRES & CONDUIT
Y1	4-6.5mm <sup>2</sup> THHN, 1-5.5mm <sup>2</sup> TW in 20mm $\varnothing$ RSC
Y2	3-5.5mm <sup>2</sup> THHN, 1-5.5mm <sup>2</sup> TW in 25mm $\varnothing$ PVC
Y3	3-6.0mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 25mm $\varnothing$ RSC
Y3A	2-6.0mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 32mm $\varnothing$ PVC
Y3B	2-6.0mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 32mm $\varnothing$ PVC
Y4	4-6.0mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 25mm $\varnothing$ RSC
Y5	3-14.0mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 40mm $\varnothing$ RSC
Y6	3-14mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 40mm $\varnothing$ PVC
Y7	4-14mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 32mm $\varnothing$ RSC
Y8	3-22mm <sup>2</sup> THHN, 1-8.0mm <sup>2</sup> TW in 32mm $\varnothing$ RSC
Y9	4-22mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 32mm $\varnothing$ RSC
Y10	3-30mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 32mm $\varnothing$ RSC
Y11	4-30mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 50mm $\varnothing$ PVC
Y12	3-38mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 40mm $\varnothing$ RSC
Y13	4-38mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 50mm $\varnothing$ PVC
Y14	4-38mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 50mm $\varnothing$ RSC
Y15	3-50mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 53mm $\varnothing$ PVC
Y16	4-50mm <sup>2</sup> THHN, 1-14mm <sup>2</sup> TW in 50mm $\varnothing$ RSC
Y17	3-80mm <sup>2</sup> THHN, 1-56mm <sup>2</sup> TW in 75mm $\varnothing$ PVC
Y18	2 SETS 4-100mm <sup>2</sup> THHN, 1-30mm <sup>2</sup> TW in 85mm $\varnothing$ RSC
Y19	4 SETS 3-150mm <sup>2</sup> THHN, 1-30mm <sup>2</sup> TW in 85mm $\varnothing$ RSC
Y20	2 SETS 4-150mm <sup>2</sup> THHN, 1-38mm <sup>2</sup> TW in 90mm $\varnothing$ PVC
Y21	6 SETS 4-200mm <sup>2</sup> THHN, 1-100mm <sup>2</sup> TW in 110mm $\varnothing$ PVC

**SINGLE LINE DIAGRAM**  
 SCALE: NTS

SCHEDULE OF LOAD

PANEL LP1: SURFACE MOUNTED, NEMA 1 ENCLOSURE WITH NEUTRAL AND GROUND TERMINAL

CKT NO.	LOAD DESCRIPTION	VA	VOLTS	VA PER PHASE			BRANCH CKT. BREAKER	SIZE OF WIRE AND CONDUIT
				AN	BN	CN		
1	LIGHTINGS	1044	400/230	1044			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
2	LIGHTINGS	1471	400/230	1471			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
3	AUTOMATED SLIDING DOOR	250	400/230		250		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
4	LIGHTINGS	1341	400/230		1341		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
5	LIGHTINGS	574	400/230			574	15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
6	CONVENIENCE OUTLET (6X180VA)	1080	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
7	CONVENIENCE OUTLET (7X180VA)	1260	400/230	1260			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
8	CONVENIENCE OUTLET (7X180VA)	1260	400/230	1260			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
9	CONVENIENCE OUTLET (7X180VA)	1260	400/230		1260		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
10	CONVENIENCE OUTLET (11X180VA)	1980	400/230		1980		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
11	SPECIAL PURPOSE OUTLET	1500	400/230			1500	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
12	LIGHTINGS	1984	400/230			1984	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
13	AUTOMATED SLIDING DOOR	250	400/230	250			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
14	SPECIAL PURPOSE OUTLET	1500	400/230	1500			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
15	CONVENIENCE OUTLET (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
16	CONVENIENCE OUTLET (6X180VA)	1440	400/230		1440		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
17	FACP	250	400/230			250	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
18	LPP	5604	400/230			5604	40 50 1P 10	2-8.0mm2 THHN WIRE STRANDED, + 1-8.0mm2 TW (G) WIRE STRANDED, 32mmDIA PVC
19	CONVENIENCE OUTLET (7X180VA)	1260	400/230	1260			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
20	CONVENIENCE OUTLET (6X180VA)	1080	400/230	1080			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
21	CONVENIENCE OUTLET (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
22	CONVENIENCE OUTLET (6X180VA)	540	400/230		540		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
23	SPACE	400	230					
24	SPACE	400	230					
TOTAL		29088		9125	8971	10992	60 100 3P 14	4-14mm2 THHN WIRE STRANDED, + 1-8.0mm2 TW (G) WIRE STRANDED, 32mmDIA RSC

CONNECTED LOAD = 10992 VA X 3 = 32976 VA  
 IF = 32976 VA / (400 X 1.732) = 47.60 A  
 IDF = 90% DF (47.60) = 42.84 A  
 ICB = 1.15(42.84) = 49.26 A  
 USE : 60AT, 100AF, 3P, 400V, 14KAIC

IF = 1.25(42.84) = 53.55 A

USE : 4-14mm2 THHN WIRE + 1-8.0mm2 TW (G) WIRE in 32mmDIA RSC (53.55A/70A)

SCHEDULE OF LOAD

PANEL LP2: SURFACE MOUNTED, NEMA 1 ENCLOSURE WITH NEUTRAL AND GROUND TERMINAL

CKT NO.	LOAD DESCRIPTION	VA	VOLTS	VA PER PHASE			BRANCH CKT. BREAKER	SIZE OF WIRE AND CONDUIT
				AN	BN	CN		
1	LIGHTINGS	1382	400/230	1382			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
2	LIGHTINGS	1630	400/230	1630			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
3	LIGHTINGS	1297	400/230		1297		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
4	LIGHTINGS	1436	400/230		1436		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
5	LIGHTINGS	640	400/230			640	15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
6	CONVENIENCE OUTLET (6X180VA)	1260	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
7	CONVENIENCE OUTLET (9X180VA)	1620	400/230	1620			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
8	CONVENIENCE OUTLET (9X180VA)	1620	400/230	1620			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
9	CONVENIENCE OUTLET (8X180VA)	1440	400/230		1440		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
10	CONVENIENCE OUTLET (8X180VA)	1440	400/230		1440		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
11	CONVENIENCE OUTLET (11X180VA)	1980	400/230			1980	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
12	SPECIAL PURPOSE OUTLET	1500	400/230			1500	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
13	CONVENIENCE OUTLET (4X180VA)	720	400/230	720			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
14	CONVENIENCE OUTLET (6X180VA)	1080	400/230	1080			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
15	CONVENIENCE OUTLETS (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
16	CONVENIENCE OUTLET (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
17	CONVENIENCE OUTLET (7X180VA)	1260	400/230			1260	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
18	CONVENIENCE OUTLET (6X180VA)	1080	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
TOTAL		23545		8052	7773	7540	60 100 3P 14	1-8.0mm2 TW (G) WIRE STRANDED, 32mmDIA RSC

CONNECTED LOAD = 8052 VA X 3 = 24,156 VA  
 IF = 24156 VA / (400 X 1.732) = 34.87 A  
 IDF = 100% DF (34.87) = 37.87 A  
 ICB = 1.15(34.87) = 40.20 A  
 USE : 60AT, 100AF, 3P, 400V, 14KAIC

IF = 1.25(34.87) = 43.58 A

USE : 4-14mm2 THHN WIRE + 1-8.0mm2 TW (G) WIRE in 32mmDIA RSC (43.58A/70A)

SCHEDULE OF LOAD

PANEL LP3: SURFACE MOUNTED, NEMA 1 ENCLOSURE WITH NEUTRAL AND GROUND TERMINAL

CKT NO.	LOAD DESCRIPTION	VA	VOLTS	VA PER PHASE			BRANCH CKT. BREAKER	SIZE OF WIRE AND CONDUIT
				AN	BN	CN		
1	LIGHTINGS	1244	400/230	1244			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
2	LIGHTINGS	1198	400/230	1198			15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
3	LIGHTINGS	1244	400/230		1244		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
4	LIGHTINGS	1483	400/230		1483		15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
5	LIGHTINGS	869	400/230			869	15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
6	LIGHTINGS	1120	400/230			1120	15 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
7	CONVENIENCE OUTLET (5X180VA)	900	400/230	900			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
8	CONVENIENCE OUTLET (6X180VA)	1080	400/230	1080			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
9	CONVENIENCE OUTLET (7X180VA)	1800	400/230		1800		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
10	CONVENIENCE OUTLET (7X180VA)	1260	400/230	1260			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
11	CONVENIENCE OUTLET (8X180VA)	1440	400/230			1440	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
12	CONVENIENCE OUTLET (9X180VA)	1620	400/230			1620	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
13	SPECIAL PURPOSE OUTLET	1500	400/230	1500			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
14	CONVENIENCE OUTLET (10X180VA)	1800	400/230	1800			20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
15	CONVENIENCE OUTLET (5X180VA)	900	400/230		900		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
16	CONVENIENCE OUTLET (5X180VA)	900	400/230		900		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
17	CONVENIENCE OUTLET (7X180VA)	1260	400/230			1260	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
18	CONVENIENCE OUTLET (6X180VA)	1080	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
19	CONVENIENCE OUTLET (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
20	CONVENIENCE OUTLET (6X180VA)	1080	400/230		1080		20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
21	CONVENIENCE OUTLET (8X180VA)	1620	400/230			1620	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
22	CONVENIENCE OUTLET (6X180VA)	1080	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
23	CONVENIENCE OUTLET (6X180VA)	1080	400/230			1080	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
24	CONVENIENCE OUTLET (8X180VA)	1440	400/230			1440	20 50 1P 10	2-3.5mm2 THHN WIRE STRANDED, + 1-3.5mm2 TW (G) WIRE STRANDED, 20mmDIA PVC
TOTAL		30078		9882	9909	60	100 3P 14	1-8.0mm2 TW (G) WIRE STRANDED, 32mmDIA RSC

CONNECTED LOAD = 10287 VA X 3 = 30,861 VA  
 IF = 30861 VA / (400 X 1.732) = 44.55 A  
 IDF = 100% DF (44.55) = 44.55 A  
 ICB = 1.15(44.55) = 51.23 A  
 USE : 60AT, 100AF, 3P, 400V, 14KAIC

IF = 1.25(44.55) = 55.68 A

USE : 4-14mm2 THHN WIRE + 1-8.0mm2 TW (G) WIRE in 32mmDIA RSC (55.68A/70A)

