



ACOUTECH
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SYSTEMS &
ENGINEERING

Acoustics | Audiovisual | ELV | Design & Engineering

PROPOSED OFFICE FIT-OUT FOR FLUTTERWAVE @ KINGSTOWER, IKOYI LAGOS - NIGERIA

Proposed Extra-Low Voltage Design

By:
Acoutech Integrated Systems
& Engineering (AISE)

Doc Ref: AISE_FW_ELV. 22-06-01. Rev.00
Date: June 2022

Client	Date	Acoustics & ELV Engineers
Flutterwave Technologies Solutions Limited 983A, Saka Jojo Street, Victoria Island, Lagos, NIGERIA.	MARCH 2022	ACOUTECH INTEGRATED SYSTEMS & ENGINEERING (AISE) 4 Owolabi Omotoye, Crescent, Ojodu-Akute Road, Lagos, NIGERIA. Tel: +234 (0) 809 893 7201 info@acoutech-associates.com www.acoutechengineering.com

Revision History

Issue/Revision	Notes	Date	Prep. By	Auth. By

NOTE

KEY

SYMBOLS LEGEND			SYMBOLS LEGEND			SYMBOLS LEGEND			SYMBOLS LEGEND		
DEVICE	SYMBOL	MOUNTING/REMARKS	DEVICE	SYMBOL	MOUNTING/REMARKS	DEVICE	SYMBOL	MOUNTING/REMARKS	DEVICE	SYMBOL	MOUNTING/REMARKS
FIRE DETECTION & ALARM SYSTEM											
MANUAL CALL POINT (ADDRESSABLE)		MOUNTED ON WALL (1.4 meters A.F.F.)	PTZ - IP CAMERA		MOUNTED ON CEILING TILE OR POLE (REFER TO LAYOUT)	VIDEO CONFERENCING PTZ USB CAMERA		MOUNTED ON WALL BELOW LED SCREEN	NO-FLIGHT ZONE		REFER TO LAYOUT
INTELLIGENT LOOP-POWERED SOUNDER BEACON (ADDRESSABLE)		MOUNTED ON WALL (2.5 meters A.F.F.) CEILING MOUNTED	DOME TYPE IP CAMERA		MOUNTED ON CEILING TILE	CEILING MOUNT PROJECTOR		MOUNTED ON POLE FIXED TO CEILING	LECTERN WITH EQUIPMENT RACK		REFER TO LAYOUT
OPTICAL SMOKE DETECTOR W/BUILT-IN ISOLATORS (ADDRESSABLE)		MOUNTED ON CEILING TILE	BULLET TYPE - IP CAMERA		MOUNTED ON WALL OR POLE (REFER TO LAYOUT)	CEILING MIC ARRAY		MOUNTED IN CEILING TILE	UNDER DESK CABLE BASKET 100MM WIDE		REFER TO LAYOUT
HEAT DETECTOR W/BUILT-IN ISOLATORS (ADDRESSABLE)		MOUNTED ON CEILING TILE	360° WIDE ANGLE PANORAMIC CAMERA OR 4-DIRECTIONAL MULTISENSOR CAMERA		MOUNTED ON CEILING - 360° OVERVIEW OR QUAD VIEW TO PROVIDE DEWARPING CAPTURE IF FISH EYE TYPE	CEILING MICROPHONE (NON-ARRAY TYPE)		MOUNTED ON CEILING TILE	SPIRAL CABLE TRUNKING OR SPINE WIRE MANAGER		REFER TO LAYOUT
CODETECTOR W/BUILT-IN ISOLATORS (ADDRESSABLE)		MOUNTED ON CEILING TILE	RJ45 PORT/OUTLET		REFER TO LAYOUT	WIRELESS LAVALIERE MICROPHONE		MOUNTED ON LAPEL OR CLOTHING	FLUSH FLOOR TRUNKING (150mm x 50mm)		REFER TO LAYOUT
FIRE ALARM CONTROL UNIT (SINGLE LOOP ADDRESSABLE)		REFER TO FLOOR LAYOUT	NETWORK VIDEO RECORDER		REFER TO FLOOR LAYOUT	ROOM TOOL BOOKING/SCHEDULING SYSTEM		REFER TO FLOOR LAYOUT	LEAK DETECTOR		TO MOUNT UNDER VRV INDOOR UNIT
FIRE ALARM ANNUNCIATOR PANEL		REFER TO FLOOR LAYOUT	POE SWITCH		REFER TO LAYOUT	AV CONTROL PROCESSOR		MOUNTED UNDER TABLE	FM200 SYSTEM		
FIRE ALARM REPEATER PANEL		REFER TO FLOOR LAYOUT	PAVA SYSTEM			AV MATRIX SWITCHER / AV SCALING SWITCHER W/HDBT TRANSMITTER		MOUNT UNDER TABLE	MAIN CYLINDER FM200		REFER TO LAYOUT
FIRE FIGHTER TELEPHONE		REFER TO FLOOR LAYOUT	SOUND PROJECTOR-TYPE LOUDSPEAKER (5-6.5"LF)		MOUNTED ON CEILING TILE	OCCUPANCY SENSOR		CEILING MOUNT	DISCHARGE NOZZLE		360° 4-PORT NOZZLE, 50MM FLUSH MOUNTED ON CEILING TILE (REFER TO LAYOUT)
ZONE/LINE ISOLATOR MODULE		REFER TO SINGLE LINE DIAGRAM	CEILING-MOUNT LOUDSPEAKER (6.5-8"LF)		MOUNTED IN CEILING	HDBT TRANSMITTER HUB		REFER TO LAYOUT	CONTROL PANEL FIRE SUPPRESSION		REFER TO LAYOUT
ACCESS CONTROL SYSTEM											
ACCESS CONTROL CARD READER		ON DOOR HANDLE (INTEGRATED)	MICROPHONE PAGING CONSOLE		REFER TO FLOOR LAYOUT	HDBT RECEIVER MODULE		ON DOOR HANDLE (INTEGRATED)	PHOTO-ELECTRIC SMOKE DETECTOR		REFER TO LAYOUT
ELECTRIC LOCK		MORTISED OR CYLINDRICAL - EL560/EL561	PAVA CONTROL UNIT		REFER TO FLOOR LAYOUT	HDBT RECEIVER WALL PLATE		MOUNTED ON BACK BOXES	PRESSURE SWITCH		REFER TO LAYOUT
REQUEST TO EXIT LOCK HANDLE		INPUT FROM ELECTRIC LOCK	DIGITAL SIGNAL PROCESSING		REFER TO FLOOR LAYOUT	AUDIO DSP WITH DANTE, AEC & AE567		REFER TO LAYOUT	DISCONNECT SWITCH		REFER TO LAYOUT
DOOR CONTACT		CONCEALED ON DOOR FRAME SURFACE MOUNTED	TV SYSTEM & DISTRIBUTION			WIRELESS MICROPHONE RECEIVER		REFER TO LAYOUT	MULTITONE		REFER TO LAYOUT
REQUEST TO EXIT BUTTON		MOUNTED ON WALL (800mm A.F.F.) TABLE MOUNTED	TV OUTLET		MOUNTED ON WALL (1.2 METERS A.F.F.)	TV OUTLET		MOUNTED ON TABLE	SOUNDER BEACON		REFER TO LAYOUT
MAGNETIC LOCK		MOUNTED ON DOOR	HDBT DISTRIBUTION AMPLIFIER/TRANSMITTER		REFER TO LAYOUT	10" TABLETOP TOUCHPANEL		MOUNTED ON TABLE	MANUAL CALL POINT		REFER TO LAYOUT
ACCESS CONTROL CARD READER		MOUNTED ON WALL (1.2 meters A.F.F.)	HDBT RECEIVER		REFER TO LAYOUT	AV FLOOR PASS-THROUGH FLOOR BOX		MOUNTED ON FLOOR	MANUAL ABORT STATION		REFER TO LAYOUT
JUNCTION BOX		REFER TO LAYOUT	OTHERS			CABLE CUBBY - ASSORTED CABLE ACCESS ENCLOSURE FOR CONNECTIVITY AND POWER (HDMI, GA, DP, USB-C)		EMBEDDED IN TABLE	GAS DISCHARGE "SIGN LAMP"		REFER TO LAYOUT
EXIT RIM OR PUSH BAR		MOUNT ON EMERGENCY DOORS & GROUND FLOOR	STANDARD NETWORK RACK W/GLOSS DOOR & LOCK		ON FLOOR	POWER POLE FOR PCs (FED WITH CLEAN POWER)		THIRD PARTY INTEGRATION	EVACUATE AREA "SIGN LAMP"		REFER TO LAYOUT
AUTOMATIC DOOR OPERATOR		SURFACE MOUNTED (ON DOOR)	WALL-MOUNTED TYPE NETWORK RACK W/GLOSS DOOR & LOCK		MOUNTED ON WALL (1.2M A.F.F.)	MINI IPC		MOUNTED UNDER TABLE OR BEHIND LED SCREEN			
VOICE & DATA						200MM X 50MM GALVANIZED CABLE TRAY			TWO-INPUT USB SWITCHER		MOUNTED UNDER TABLE OR BEHIND LED SCREEN
WIFI ACCESS POINT (OMNI)		MOUNTED ON CEILING TILE	IN-WALL ELECTRICAL METALLIC TUBING (EMT) - Number of Conduits - 2" - Conduit Size		REFER TO LAYOUT	4K SEAMLESS SCALING SWITCHER		MOUNTED UNDER TABLE	LOGITECH RALLY DISPLAY HUB		MOUNTED BEHIND LED SCREEN
DESKTOP TELEPHONE BOX		REFER TO LAYOUT	FLOOR JUNCTION BOX		REFER TO LAYOUT	HDMI-TO-USB BRIDGE		MOUNTED UNDER TABLE	LOGITECH RALLY TABLE HUB		MOUNTED UNDER TABLE
TELEPHONE + DATA SOCKET (NUMBER DENOTES PORTS REQUIRED)		MOUNTED ON WALL (450mm A.F.F.)	FLOOR BOX & CABLE EXIT		REFER TO LAYOUT	USB EXTENDER R		MOUNTED BEHIND TV	INTERACTIVE TV W/INTEGRATED VC CAMERA 65"/75"/86"		MOUNTED ON WALL
TELEPHONE SOCKET (NUMBER DENOTES PORTS REQUIRED)		MOUNTED ON WALL (450mm A.F.F.)	CALL OUT DETAILS		DETAILS						
PBX		MOUNTED ON WALL (1.2M A.F.F.)									
EXISTING 230V 13A SOCKET AND RJ45 DATA POINTS		REFER TO LAYOUT									

No. Revision By Chkd Date

1

2

3

Client: FLUTTERWAVE TECHNOLOGIES SOLUTIONS LIMITED 8 Providence Street, Lekki Phase 1, Lagos, Nigeria

Title: ELV SERVICES DESIGN

Architects: SpaceFinish Africa 4, Idowu Martins Street Victoria Island, Lagos, Nigeria www.spacefinish.com

Consultant Engineers (Acoustics & ELV): ACOUTECH Integrated Systems & Engineering

4, Oluwalana Crescent, Ojodu-Akute Rd, Lagos, Nigeria Tel: +234 (0) 809 893 7201 www.acoustechnengineering.com

Sheet: SYMBOLS LEGEND

Date	June 2022	Drawn by:
Scale	Approval: O.A.	
Drg. No.	Rev00.	Rev00.
AISE_FW0016		

NOTE

KEY



No.	Revision	By	Chkd	Date
1				
2				
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Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title:
ELV SERVICES DESIGN

Architects:
SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

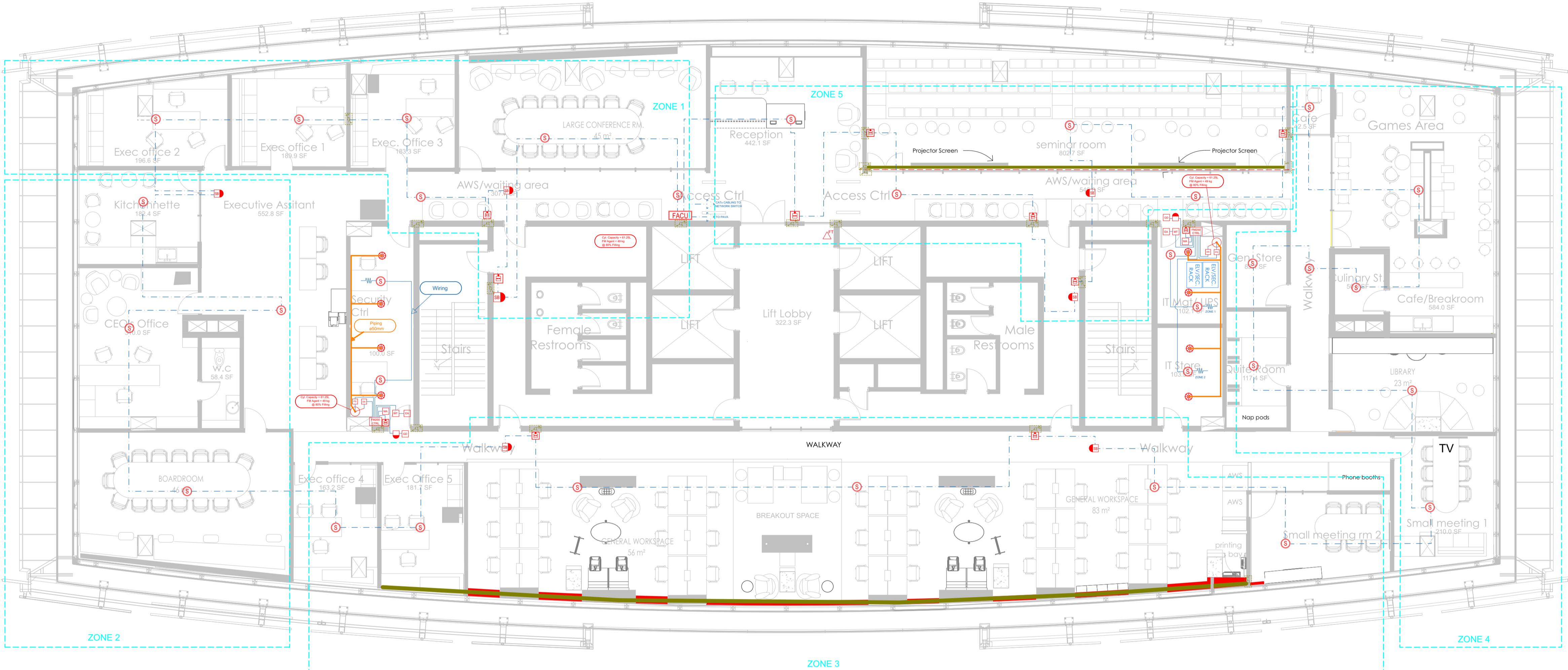
Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Oluwalana Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 993 2201
www.acoutechengineering.com

Sheet: ELV DEVICES LAYOUT

Design by:	
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June 2022	
Scale	Approval:
O.A.	
Dr. No.	Rev. No.
AISE_FW0017	Rev00

NOTE

KEY



No. Revision By Chkd Date

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2			
3			

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

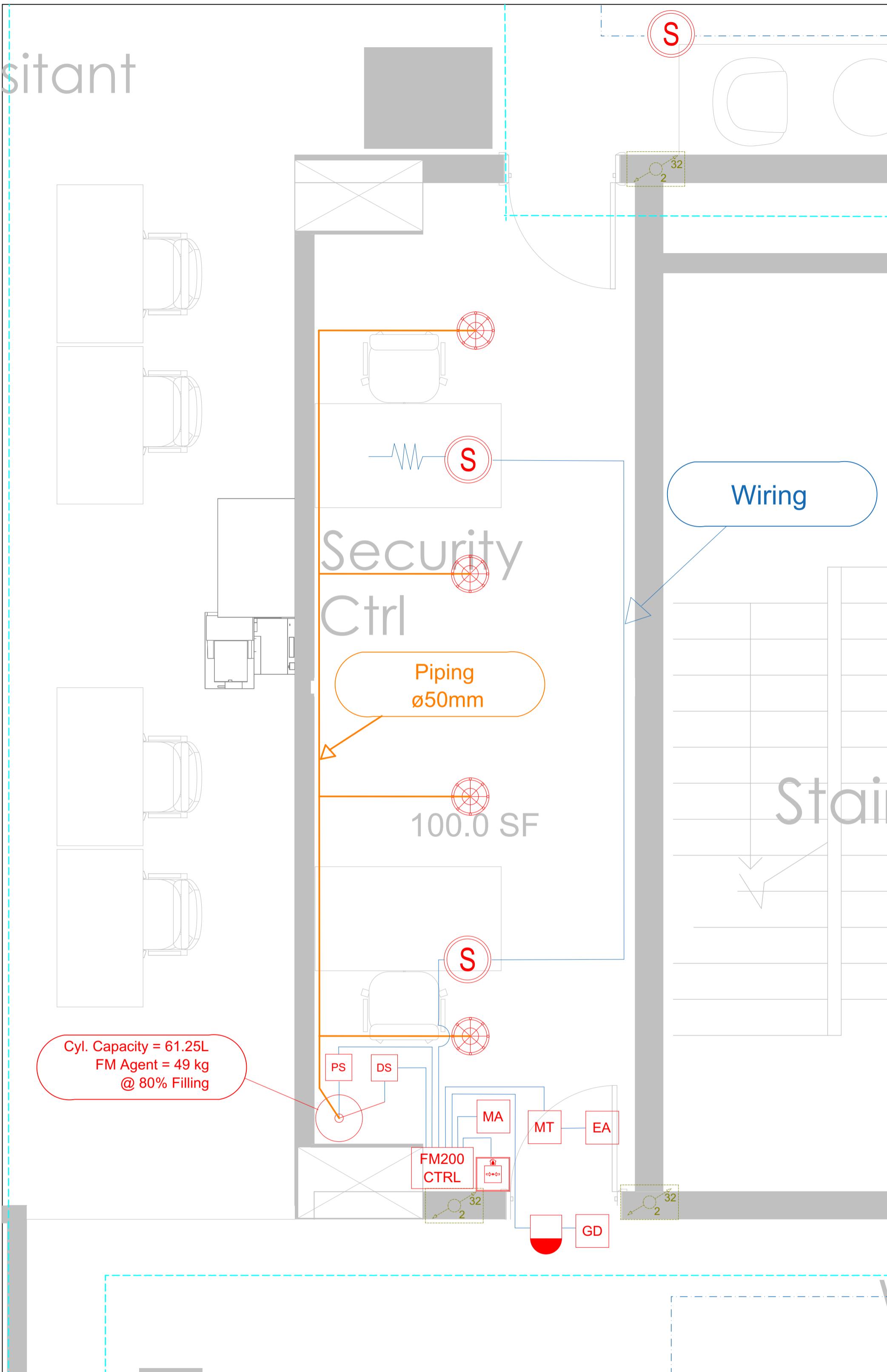
Title
ELV SERVICES DESIGN

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Oluwalana Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 993 2201
www.acoutechengineering.com

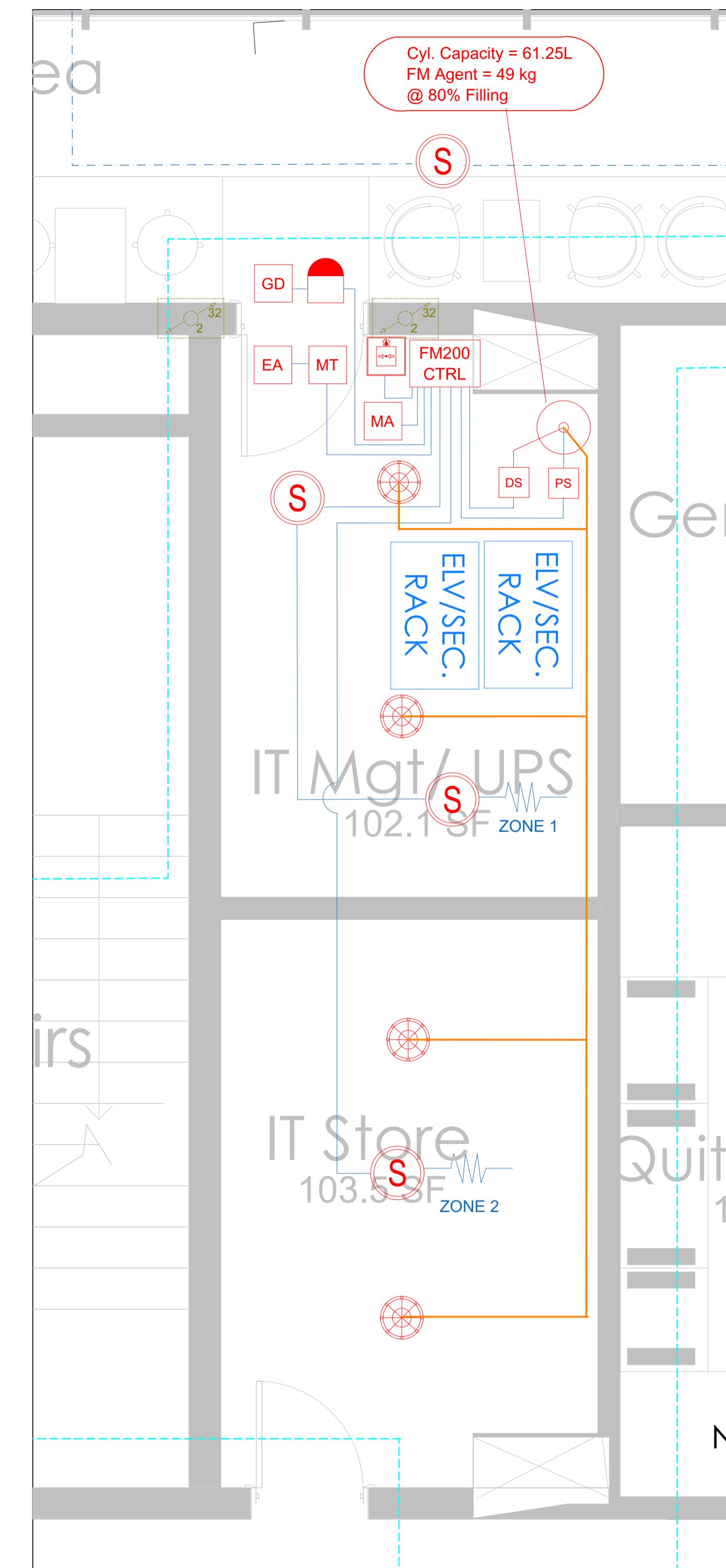
Sheet: FIRE ALARM DEVICES LAYOUT

Design by:	
Date June 2022	Drawn by:
Scale	Approval: O.A.
Drg. No. AISE_FW018	Rev. No. Rev00



SECURITY CONTROL ROOM

FM200 FIRE SUPPRESSION SYSTEM



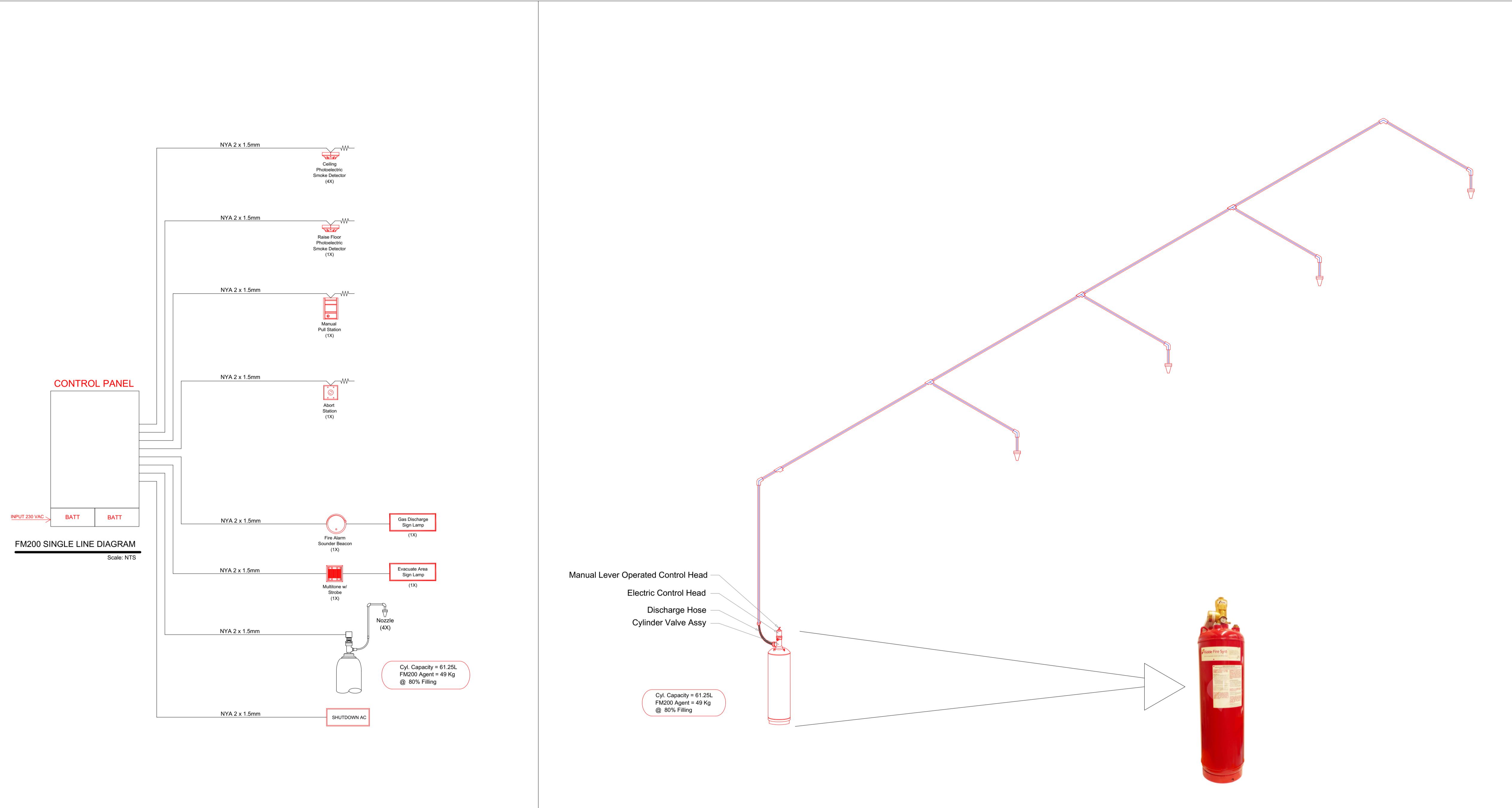
RACK/UPS ROOM & IT STORE FM200 FIRE SUPPRESSION SYSTEM

NOTE

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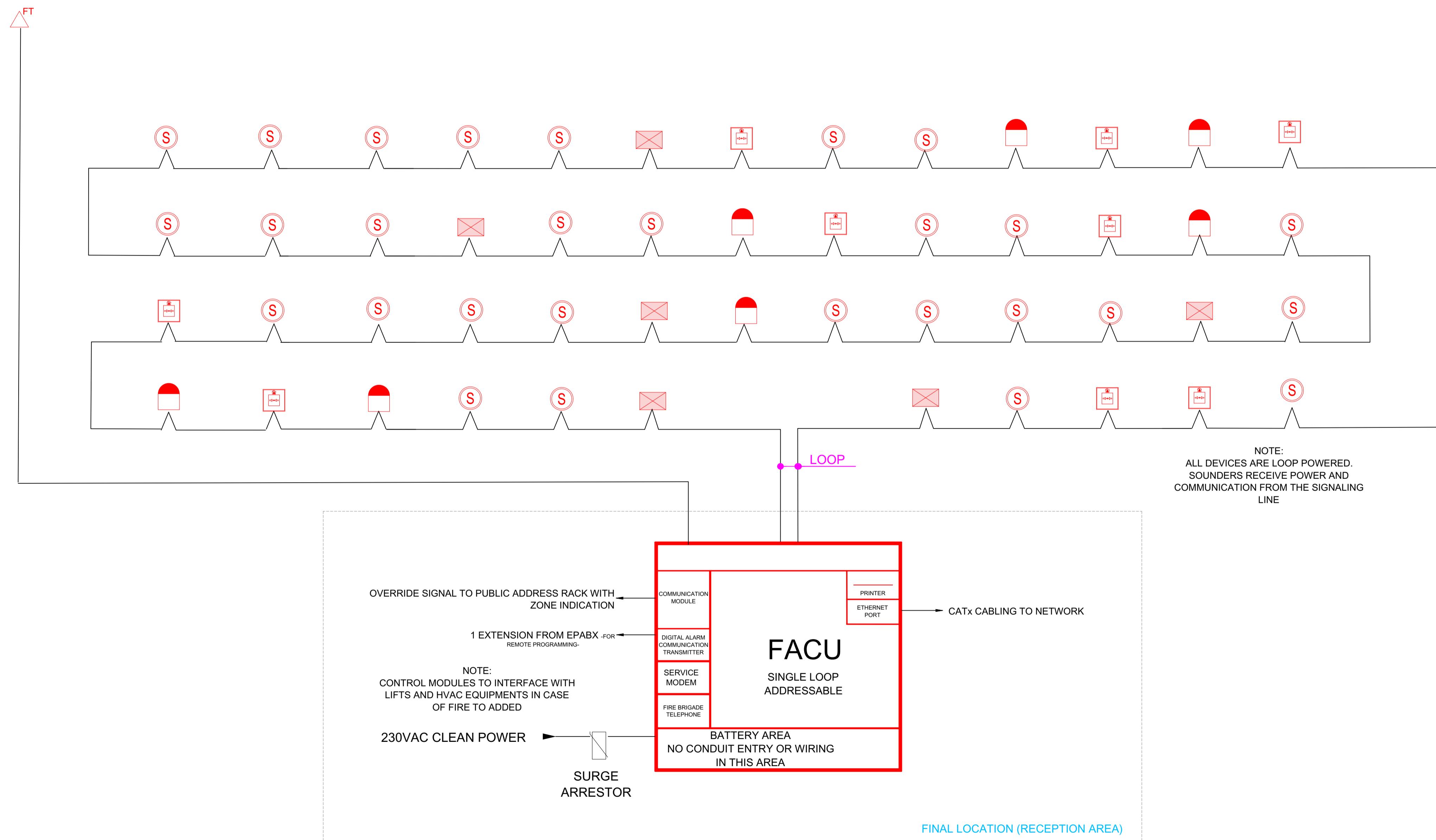


NOTE

NOTES:

1. FOR SYMBOLS AND ABBREVIATIONS, REFER TO LEGEND DRAWING.
2. FAULT ISOLATOR MODULES SHALL BE USED IN EVERY INDICATED ZONE. A SINGLE FAULT ON A PATHWAY CONNECTED TO THE ADDRESSABLE DEVICES SHALL NOT CAUSE THE LOSS OF DEVICES IN MORE THAN ONE ZONE.
3. ALL CLASS A CIRCUITS SHALL BE INSTALLED SUCH THAT THE OUTGOING AND RETURNING CONDUCTORS FROM AND TO THE FIRE ALARM CONTROL PANEL ARE ROUTED SEPARATELY. THE OUTGOING AND RETURN CIRCUIT CONDUCTORS SHALL NOT BE RUN IN THE SAME CABLE RACEWAY.
4. AUXILIARY POWER SUPPLIES SHALL BE LOCATED ON SITE TO FEED MAINLY THE STROBES AND HORMS. THEIR NUMBER SHALL BE DECIDED AS PER SUPPLIERS' REQUIREMENTS AND RESTRICTIONS.
5. CAPACITY OF THE BATTERY: 24 HOURS UNDER QUIESCENT LOAD AND AT THE END OF THAT PERIOD, 30 MINUTES FOR OPERATION OF ALL ALARM NOTIFICATION APPLIANCES USED FOR EVACUATION.
6. CONTRACTOR SHALL REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL CONTROL MODULES AND MONITORING MODULES WHERE WATER FLOW SWITCH, TAMPER SWITCH, SMOKE DAMPER, DELUGE VALVE, ZONE VALVE, DUCT SMOKE DETECTOR AND GAZ DETECTORS ARE INSTALLED.

KEY



No.	Revision	By	Chkd	Date
1				
2				
3				

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title:
ELV SERVICES DRAWING

Architects:
SpaceFinish Africa
4, Idowu Martins Street
Victoria Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Omosa Onnogbo Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 893 7201
www.acoutechengineering.com

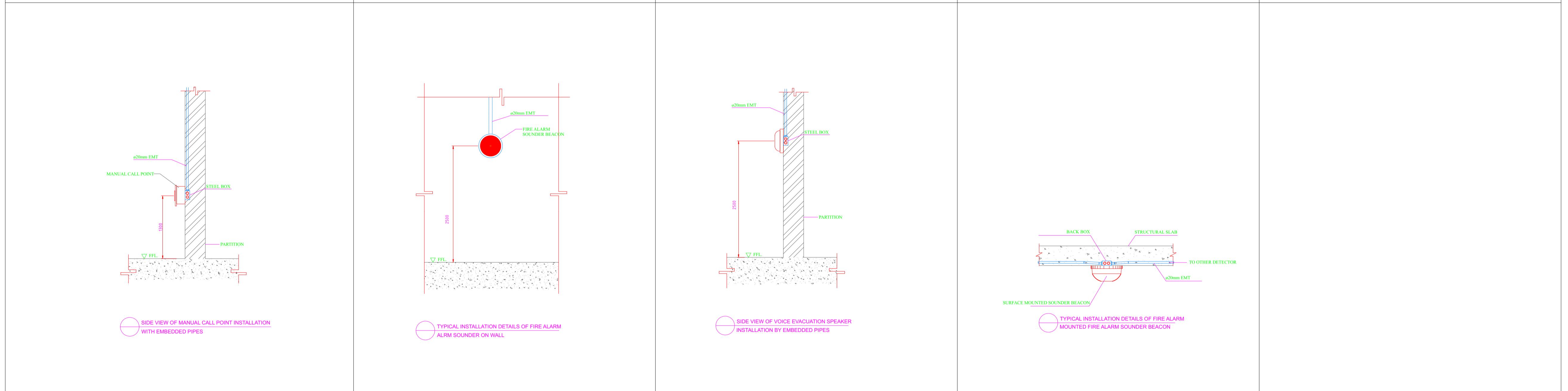
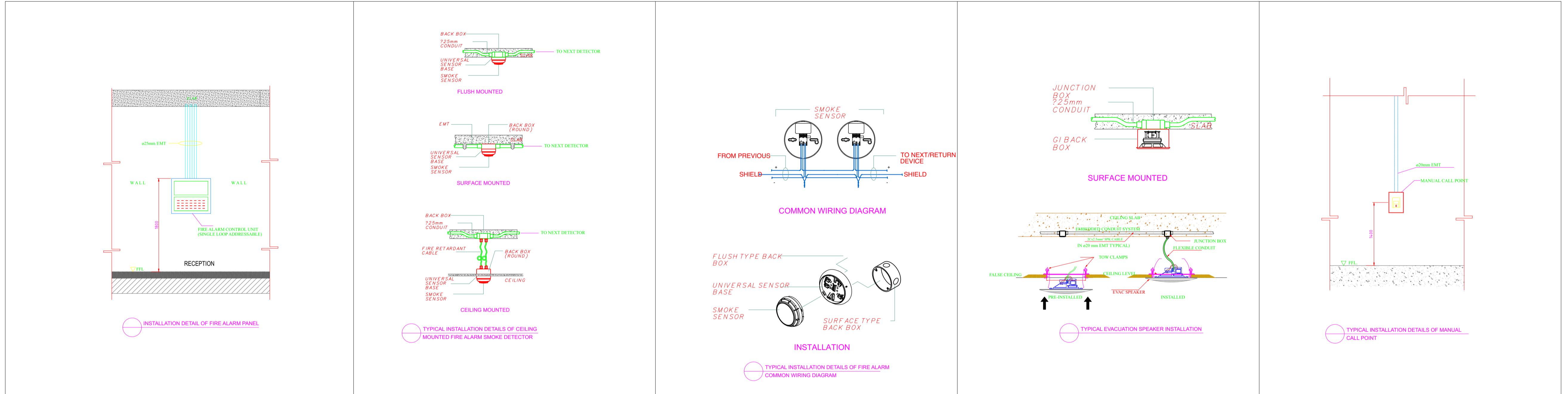
Sheet: FIRE ALARM SINGLE LINE DIAGRAM

Design by:	
Date	June 2022
Scale	Approval: O.A.
Drg. No.	Rev. No.

AISE_FW020 Rev00

NOTE

KEY



No.	Revision	By	Chkd	Date
1				
2				
3				

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title:
ELV SERVICES DRAWING

Architects:
SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Owolabi Oniru Crescent, Ojodu-Akute Rd.
Lagos, Nigeria
Tel: +234 809 893 7203
www.acoutechengineering.com

Sheet: FIRE ALARM DETAILS

Design by:

Date: June 2022 Drawn by:

Scale: Approval: O.A.

Drg. No. Rev. No.
AISE_FW021 Rev00

NOTE

KEY



PAVA DEVICES TAG LAYOUT

No.	Revision	By	Chkd	Date
1				
2				
3				

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title
ELV SERVICES DESIGN

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

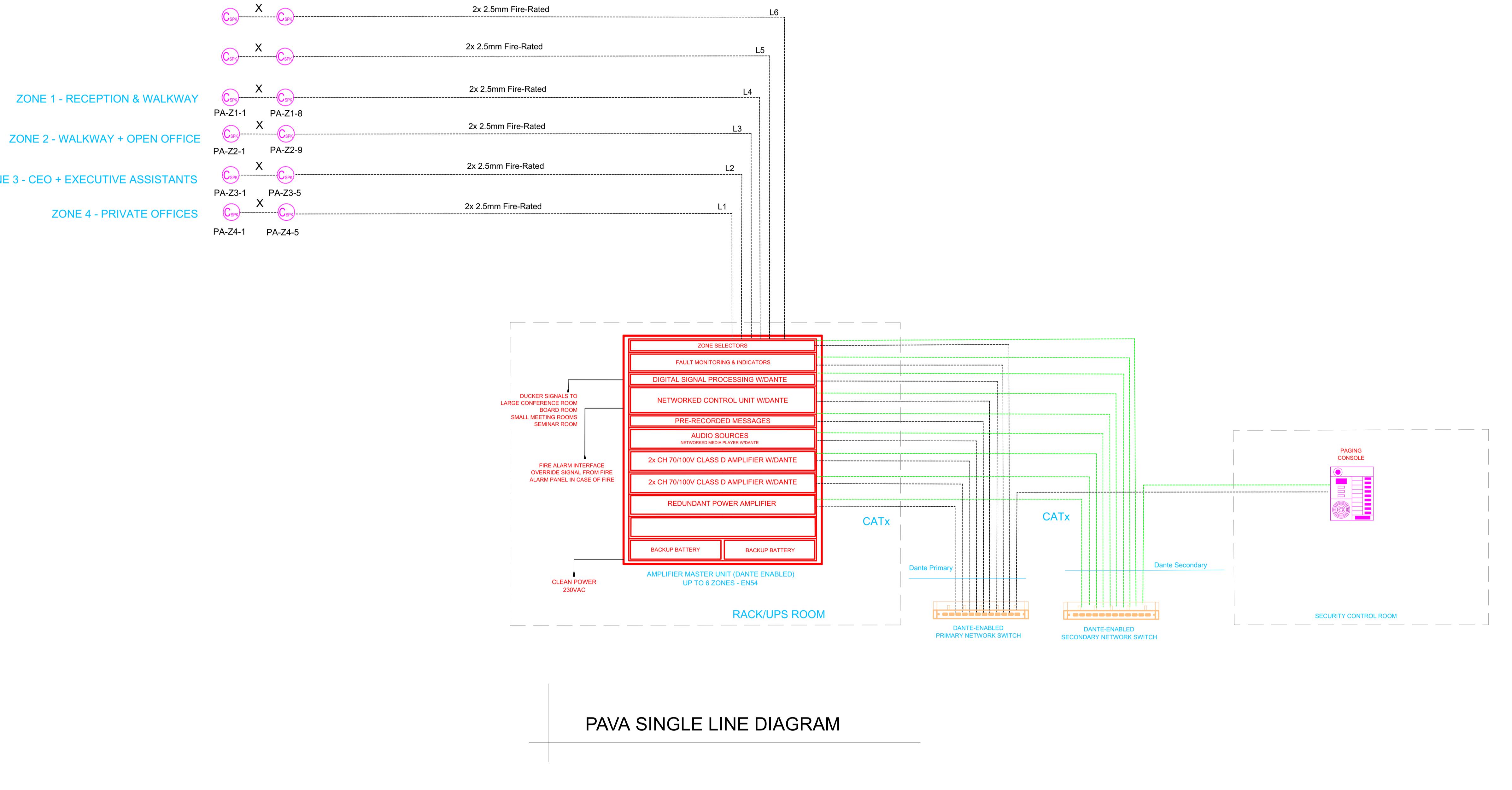
Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Oluwalana Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 993 2201
www.acoutechengineering.com

Sheet: PAVA DEVICES TAG LAYOUT

Date	Design by:
June 2022	Drawn by:
Scale	Approval: O.A.
Drg. No. AISE_FW022	Rev. No. Rev00

NOTE

KEY



Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

ELV SERVICES DESIGN

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):

ACOUTECH

Integrated Systems & Engineering

RAYA SINGLE LINE DIAGRAM

	Design by:
Date	Drawn by:
June 2022	
Scale	Approval:
	O.A.
Drg. No.	Rev. No.
AISE_FW023	Rev00

NOTE

KEY



ACCESS CONTROL DEVICES TAG

No.	Revision	By	Chkd	Date
1				
2				
3				

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title
ELV SERVICES DESIGN

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering

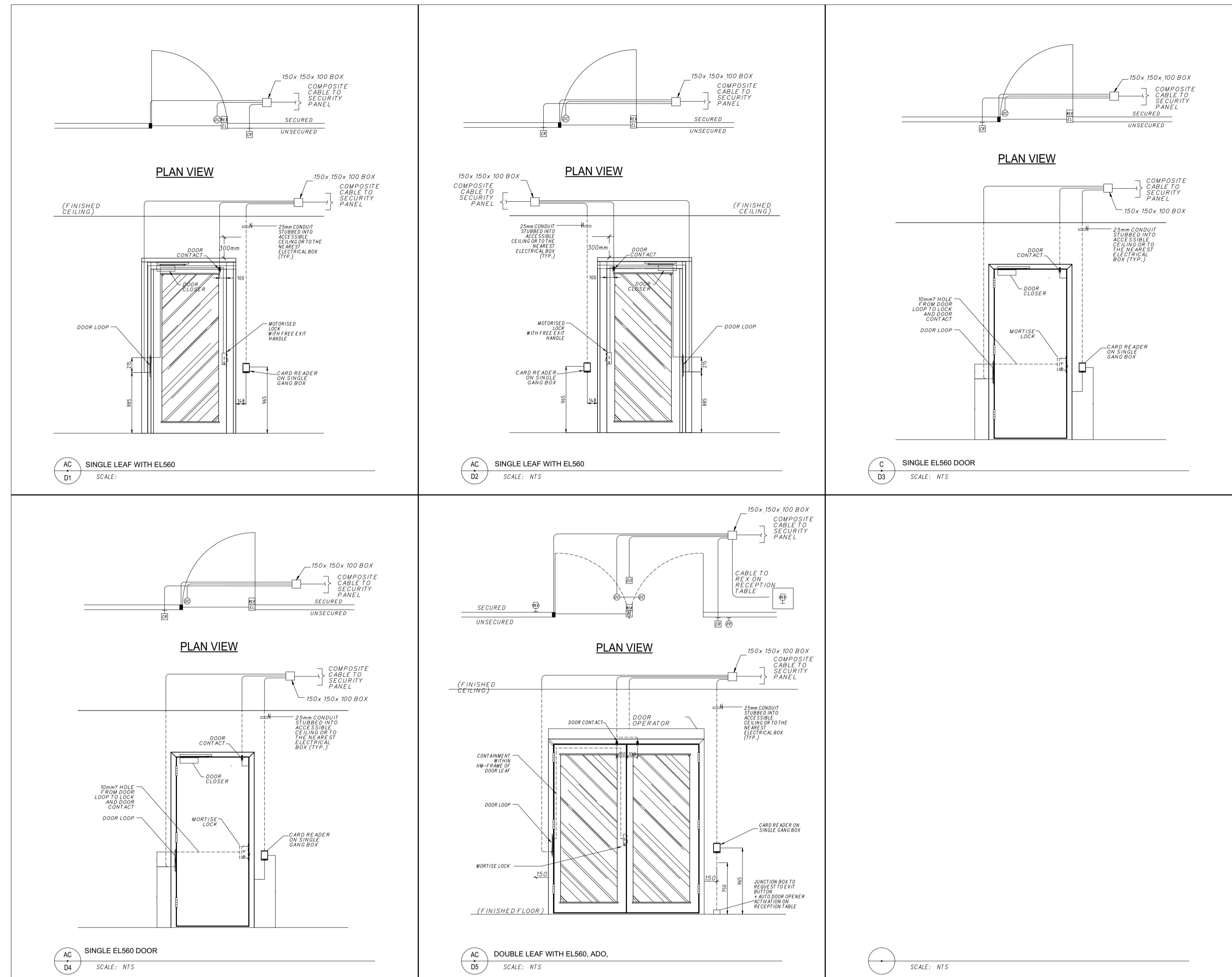
4, Oluwalana Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 933 2201
www.acoutechengineering.com

Sheet: ACCESS CONTROL DEVICES TAG

Design by:	
Date	Drawn by:
June 2022	
Scale	Approval: O.A.

Drg. No. AISE_FW024 Rev. No. Rev00

NOTE



KEY

No.	Revision	By	Chkd	Date
1				
2				
3				

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title:
ELV SERVICES DESIGN

Architects:
SpaceFinish Africa
4, Idowu Martins Street
Victoria Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering

4, Ondoja Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 893 7201
www.acoutechengineering.com

Sheet: ACCESS CONTROL DOOR & SWING GATE DETAIL

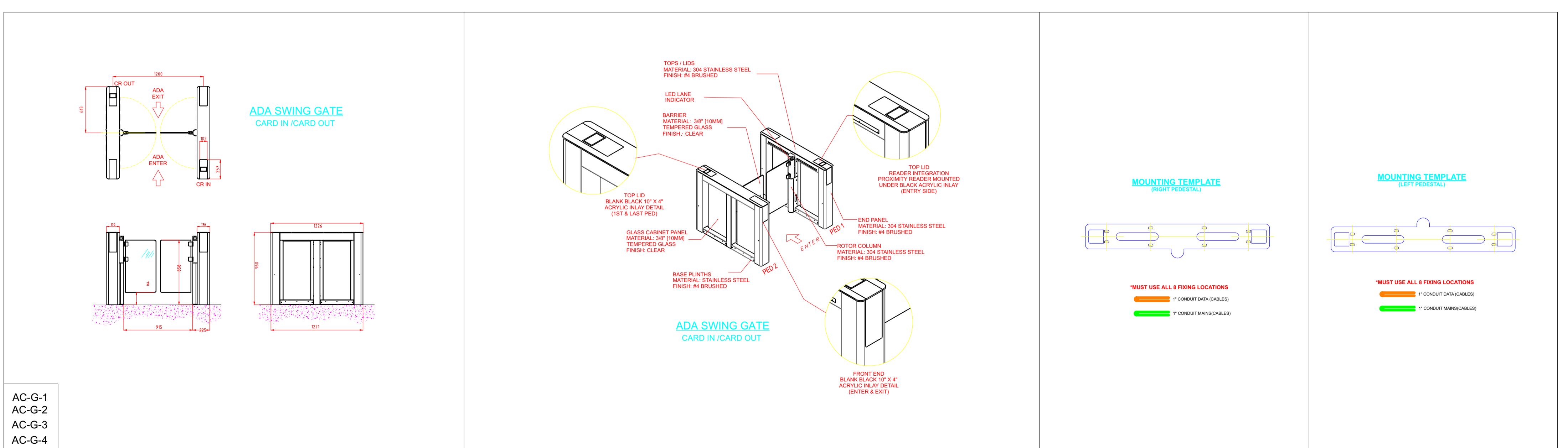
Design by:

Date: June 2022 Drawn by:

Scale Approval: O.A.

Drg. No. Rev. No.

AISE_FW025 Rev00



NOTE

KEY

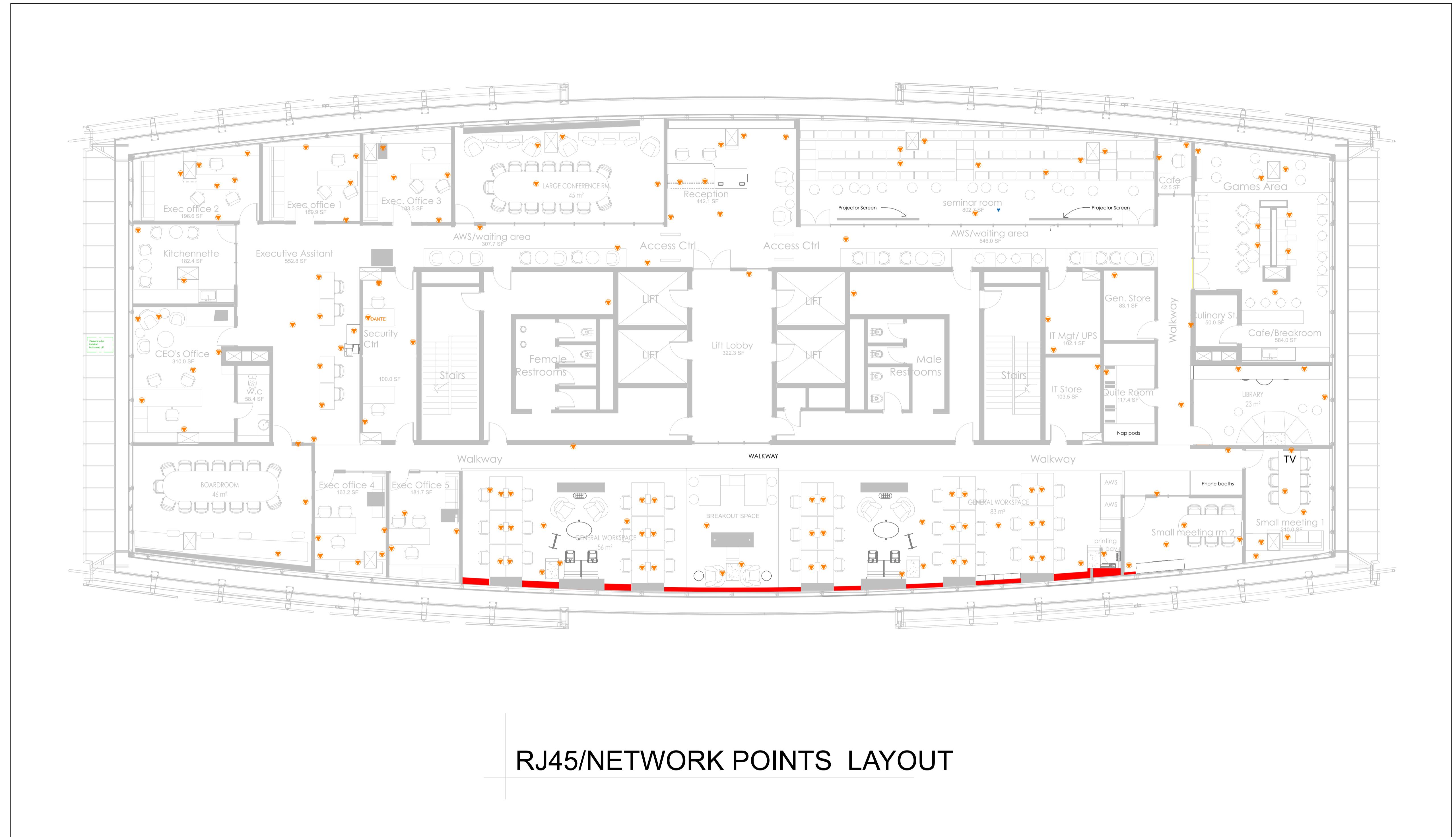


TV, SURVEILLANCE, DATA & VOICE DEVICES TAG LAYOUT

No.	Revision	By	Chkd	Date
1				
2				
3				
Client: FLUTTERWAVE TECHNOLOGIES SOLUTIONS LIMITED 8 Providence Street, Lekki Phase 1, Lagos, Nigeria				
Title ELV SERVICES DESIGN				
Architects: SpaceFinish Africa 4, Idowu Martins Street Victoria, Island, Lagos, Nigeria www.spacefinish.com				
Consultant Engineers (Acoustics & ELV): ACOUTECH Integrated Systems & Engineering 4, Owolabi Omotayo Crescent, Ojodu-Akute Rd, Lagos, Nigeria Tel: +234 (0) 809 893 7201 www.acoutechengineering.com				
Sheet: TV, SURVEILLANCE, DATA & VOICE DEVICES TAG LAYOUT				
		Design by:		
Date June 2022		Drawn by:		
Scale		Approval: O.A.		
Drg. No. AISE_FW026			Rev. No. Rev02	

NOTE

KEY



Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title:
ELV SERVICES DESIGN

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

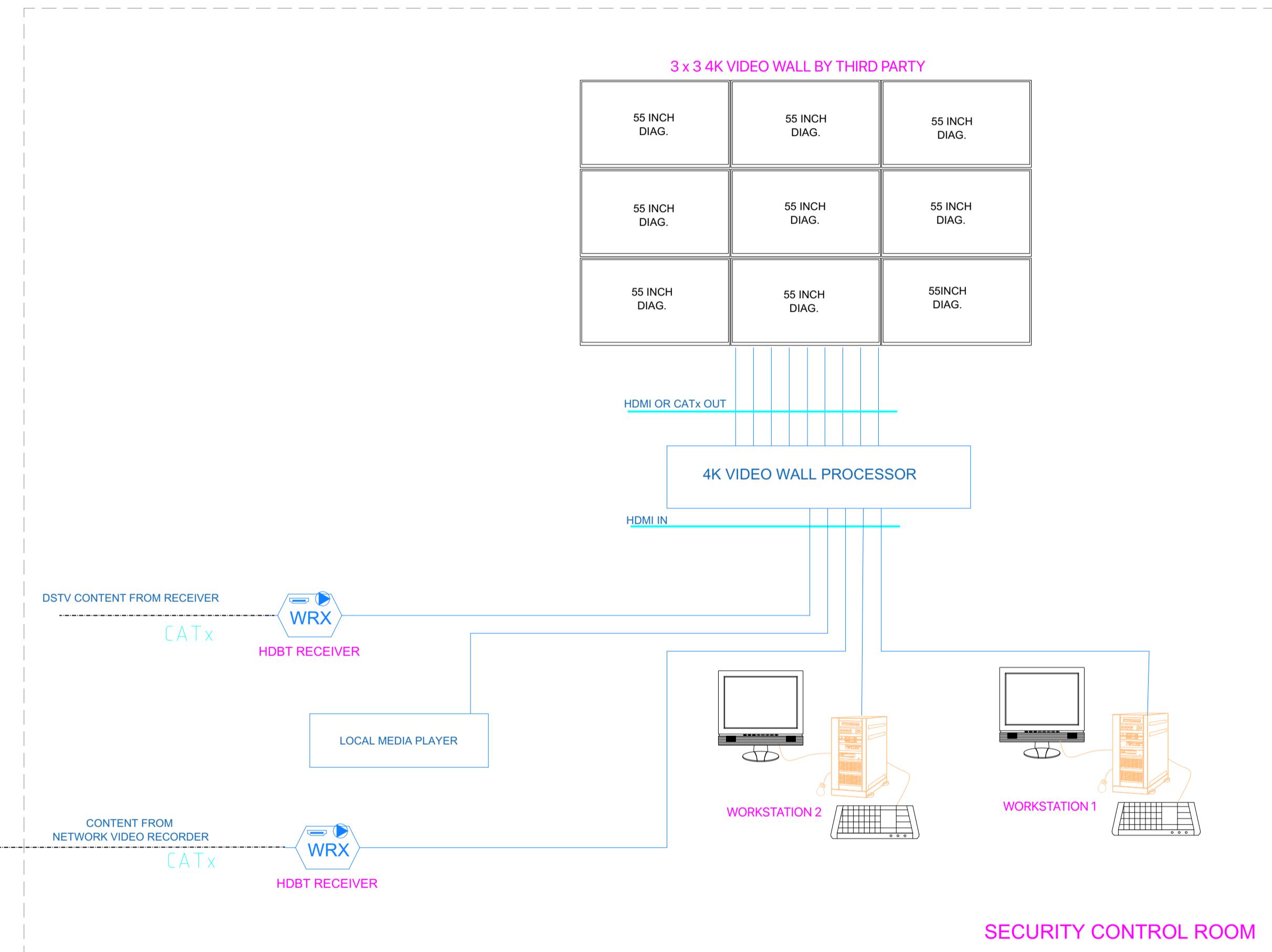
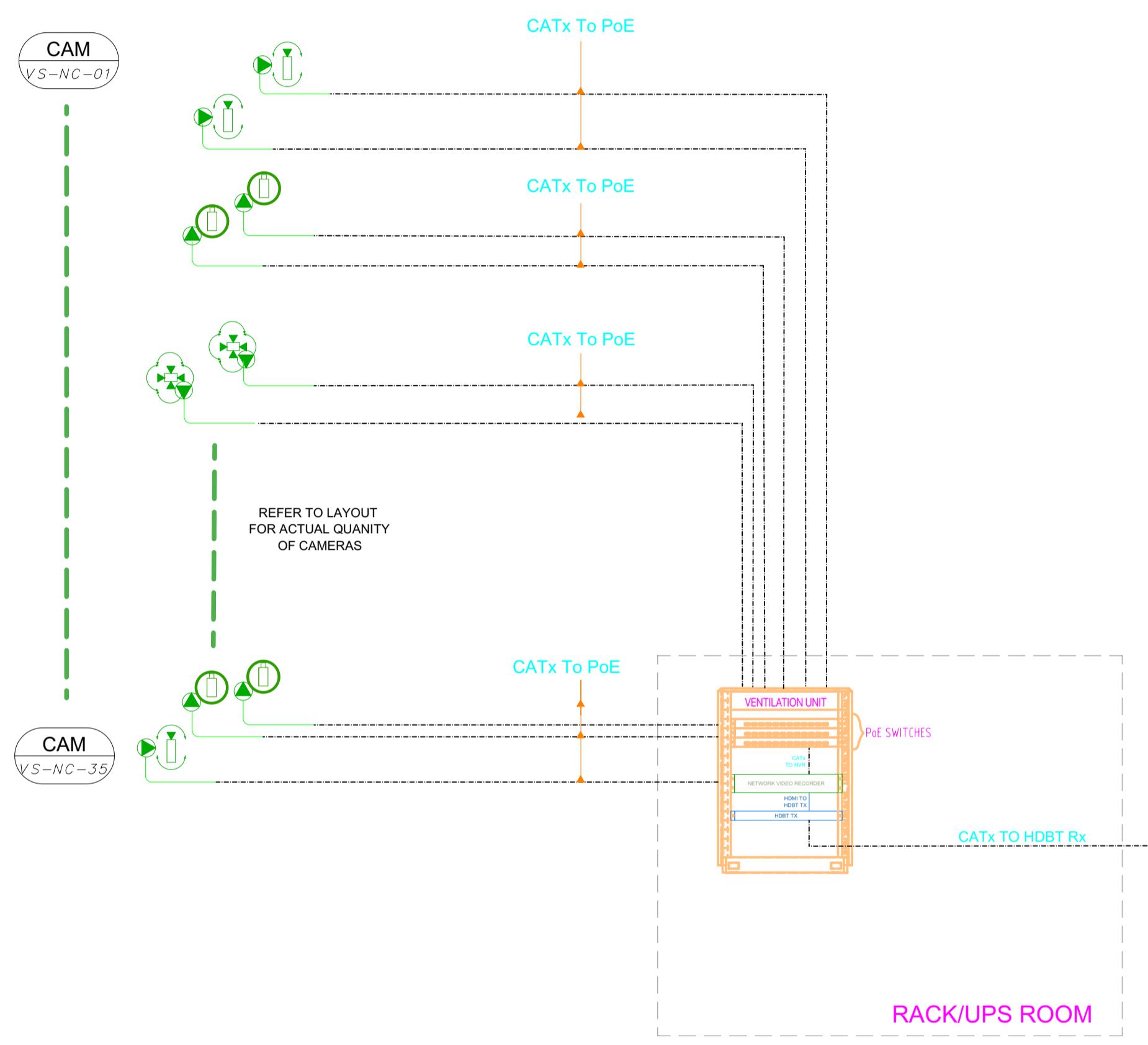
Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering
4, Oluwalana Crescent, Ojodu-Akute Rd,
Lagos, Nigeria
Tel: +234 (0) 809 993 2201
www.acoutechengineering.com

Sheet: RJ45/NETWORK POINTS LAYOUT

Date	Design by:
June 2022	Drawn by:
Scale	Approval:
Drg. No. AISE_FW027	Rev. No. Rev00

NOTE

KEY



No.	Revision	By	Chkd	Date
1				
2				
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Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title
ELV SERVICES DESIGN

Architects:
SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):
ACOUTECH
Integrated Systems & Engineering

4, Owojobi Crescent, Ojodu-Akute Rd.
Lagos, Nigeria
Tel: +234 (0) 89 893 7201
www.acoutechgreening.com

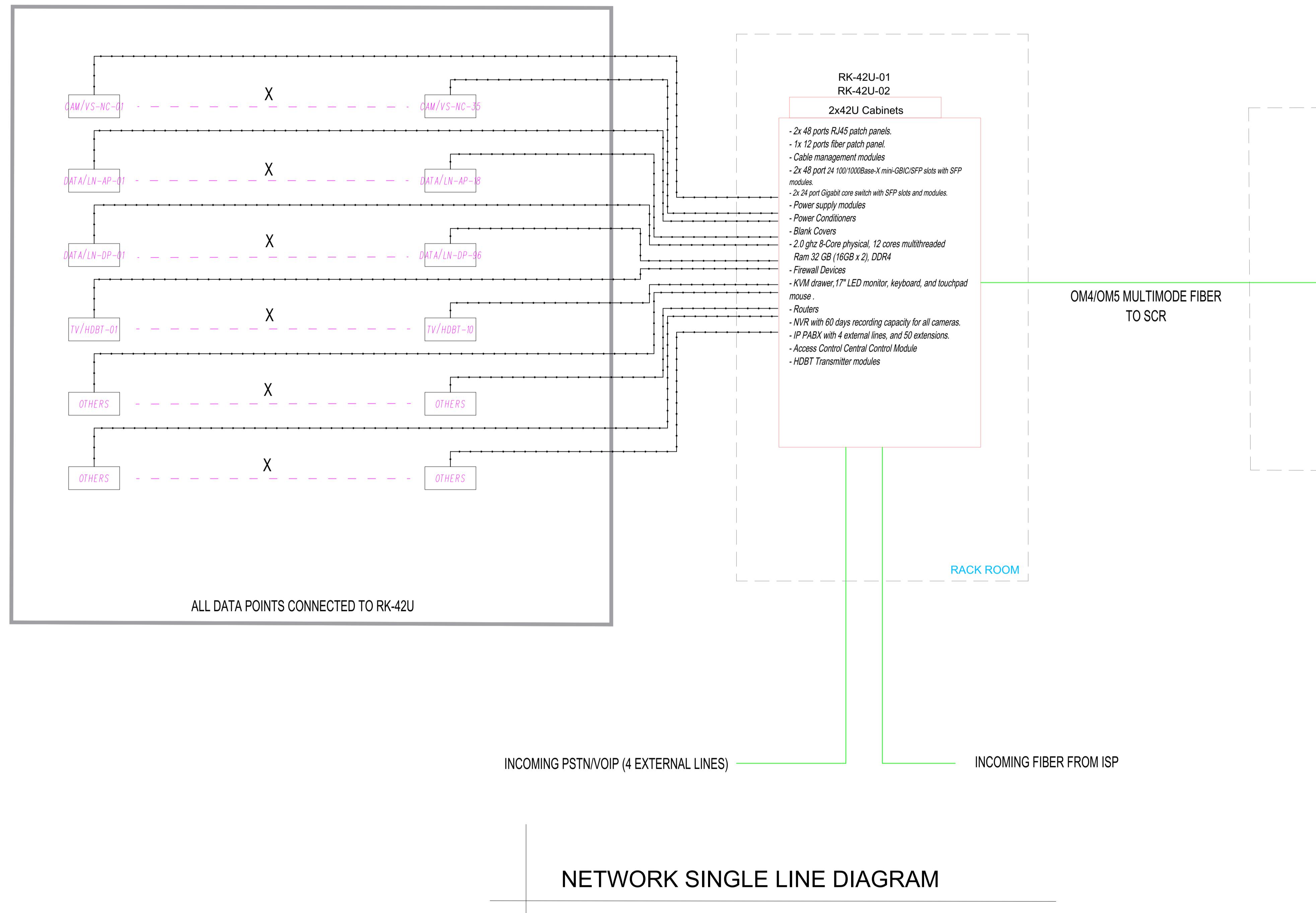
Sheet: VIDEO SURVEILLANCE
SINGLE LINE DIAGRAM

Design by:

Date June 2022 Drawn by:

Scale Approval: O.A.

Drg. No. Rev. No.
AISE_FW028 Rev00



NOTE

KEY

Client:
**FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED**
**8 Providence Street, Lekki Phase 1,
Lagos, Nigeria**

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):

ACOUTECH

Integrated Systems & Engineering

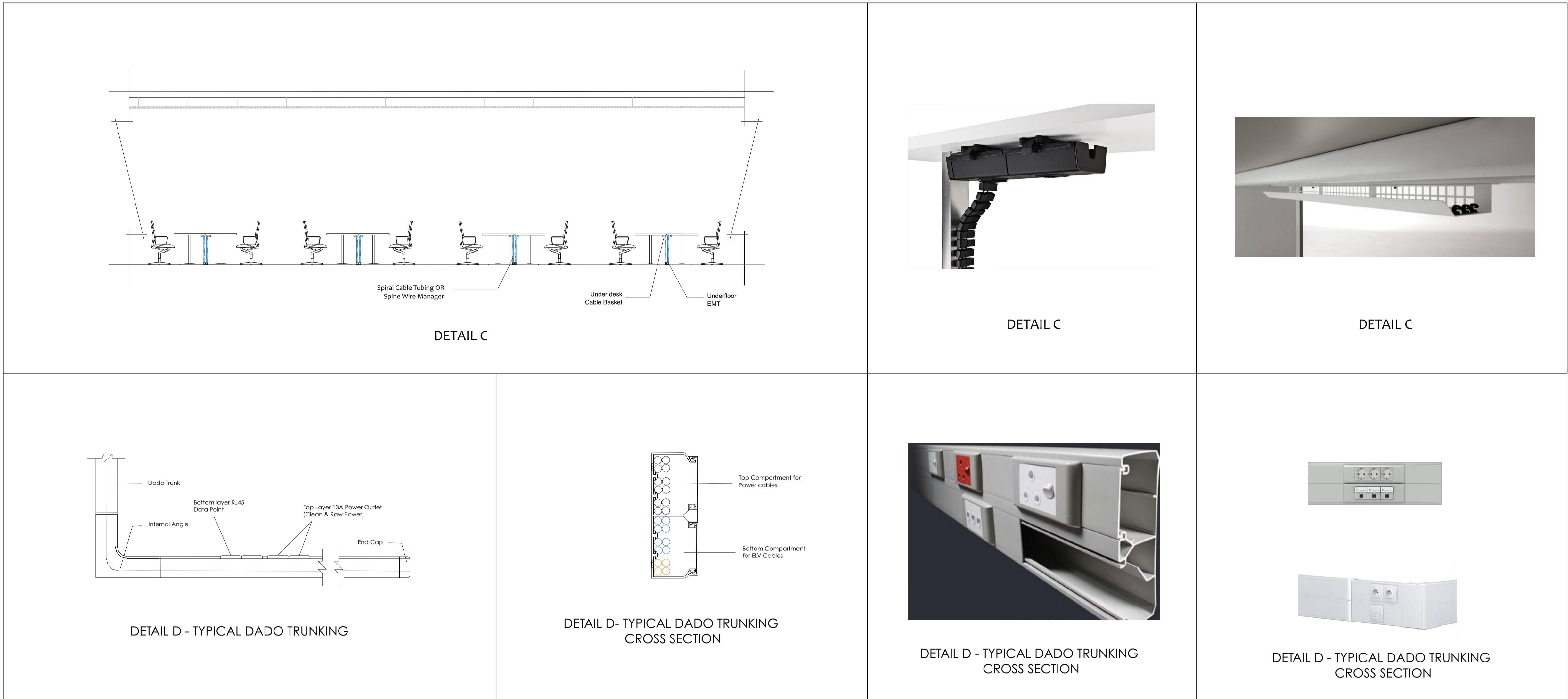
sheet: NETWORK SINGLE LINE DIAGRAM

Design by:

Date June 2022 Drawn by:

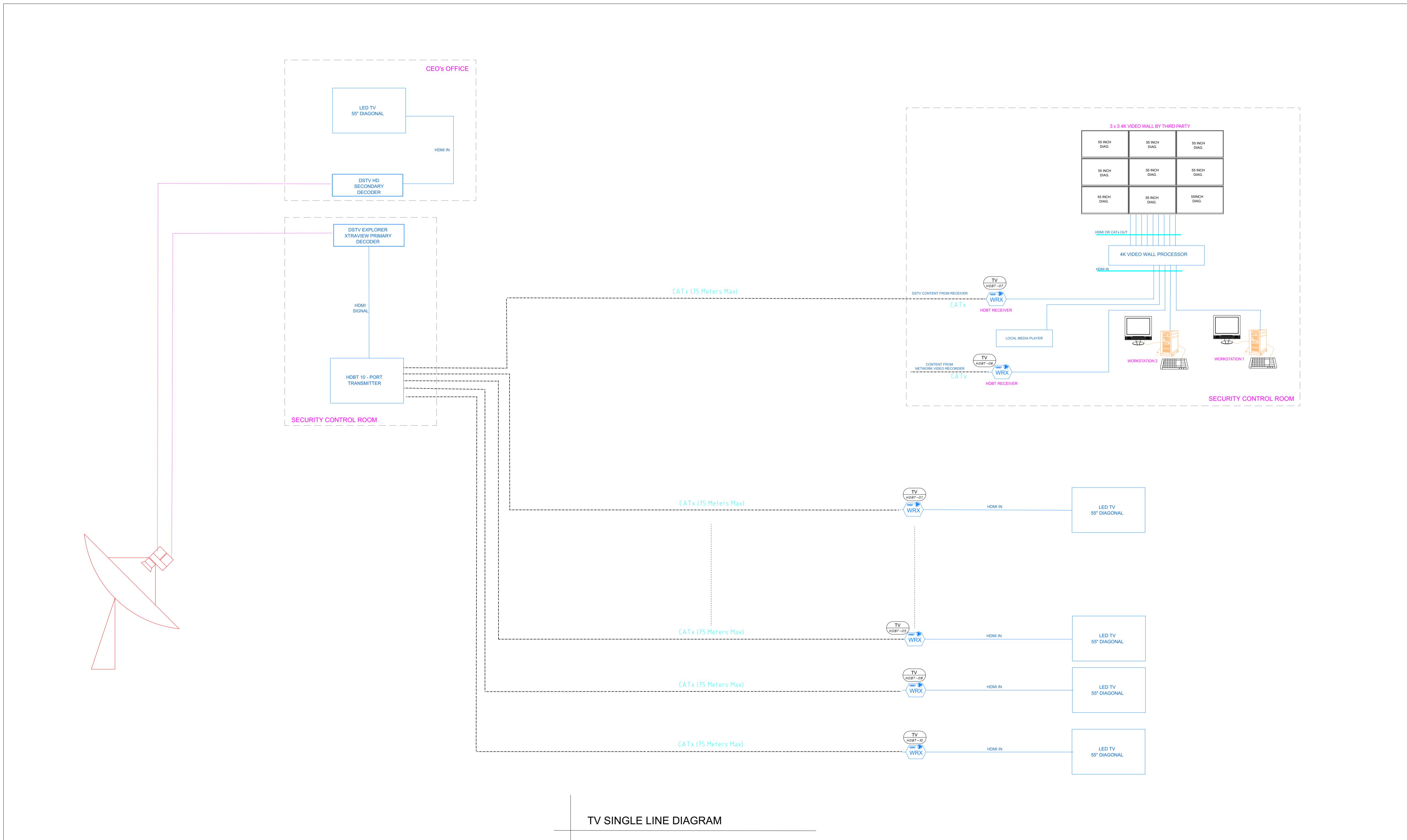
	O.A.
g. No.	Rev. No.

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Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics & ELV):

ACOUTECH

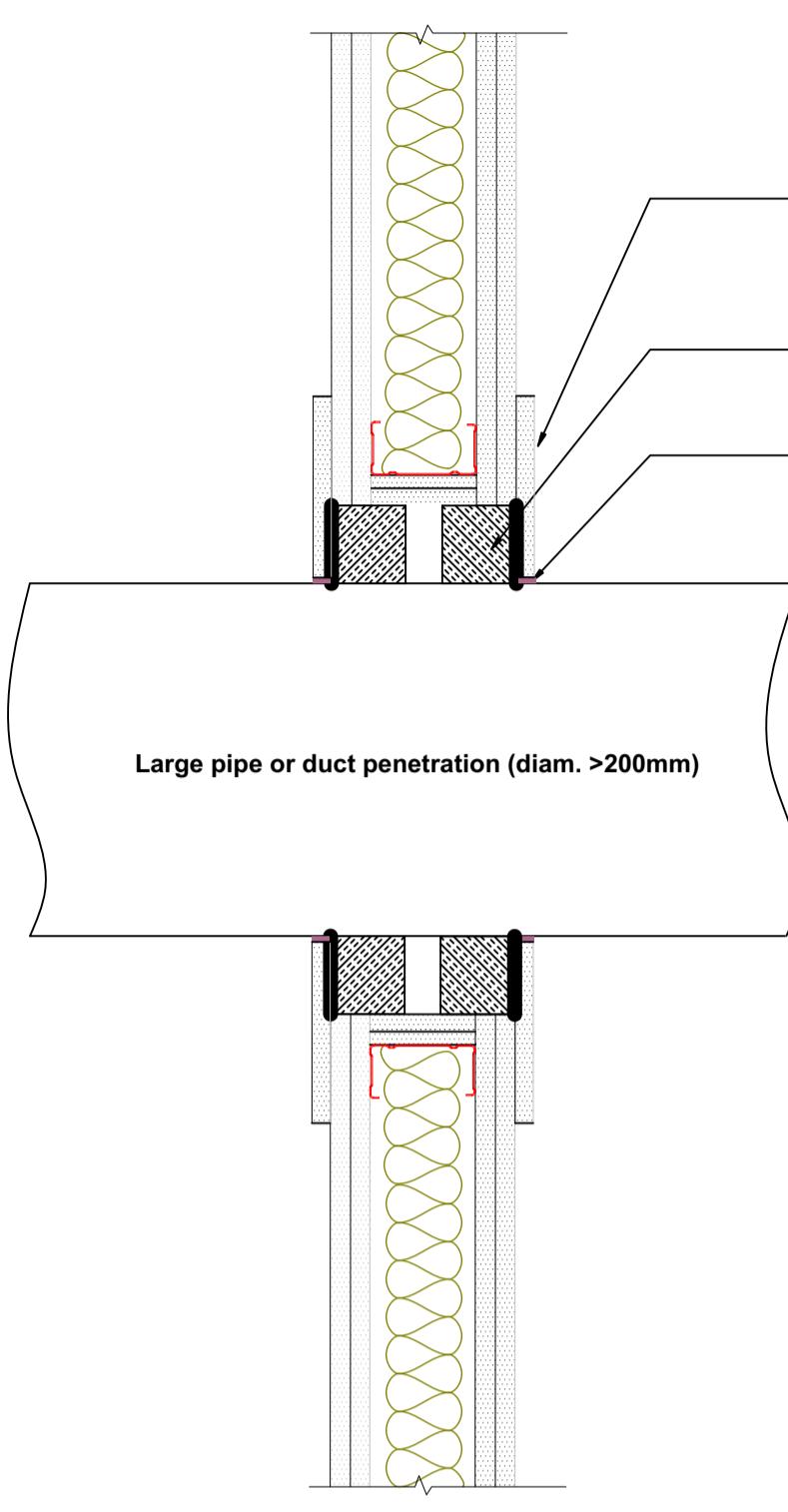
Integrated Systems & Engineering

10

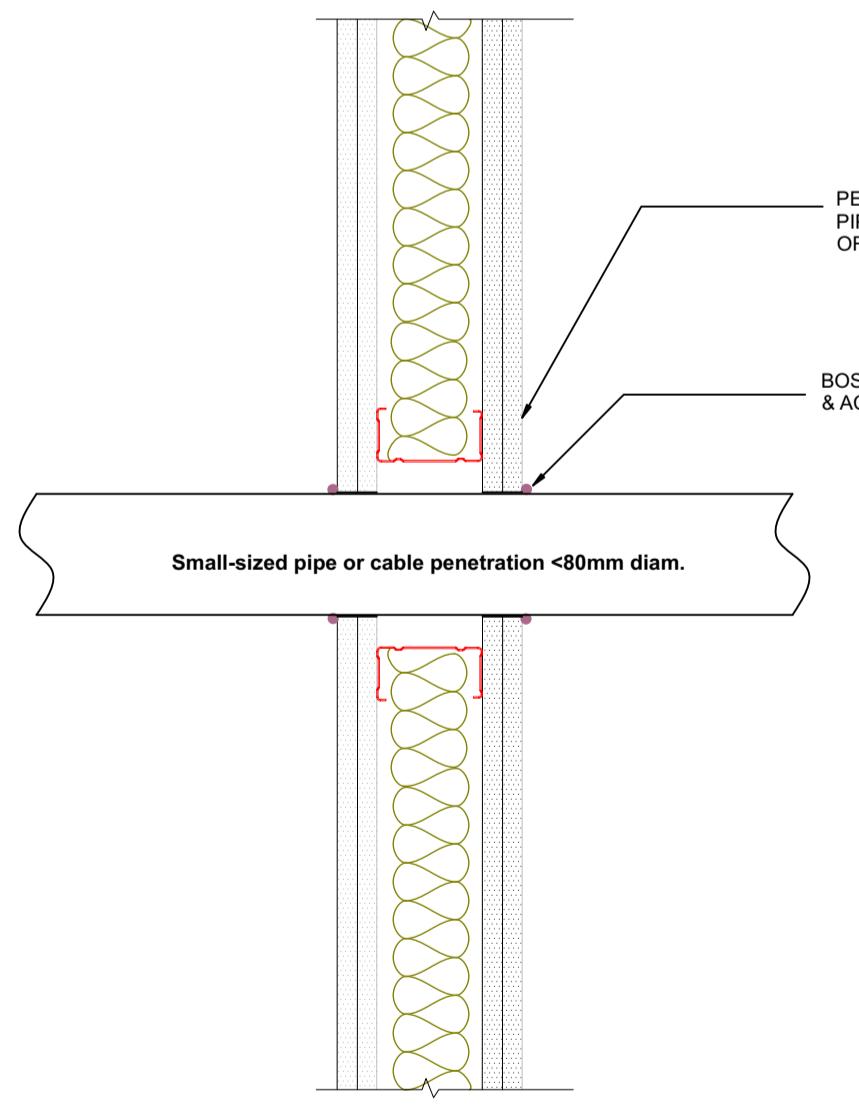
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Date June 2022	Drawn by:
Scale	Approval: O.A.
Drg. No. AISE_FW031	Rev. No. Rev00

NOTE

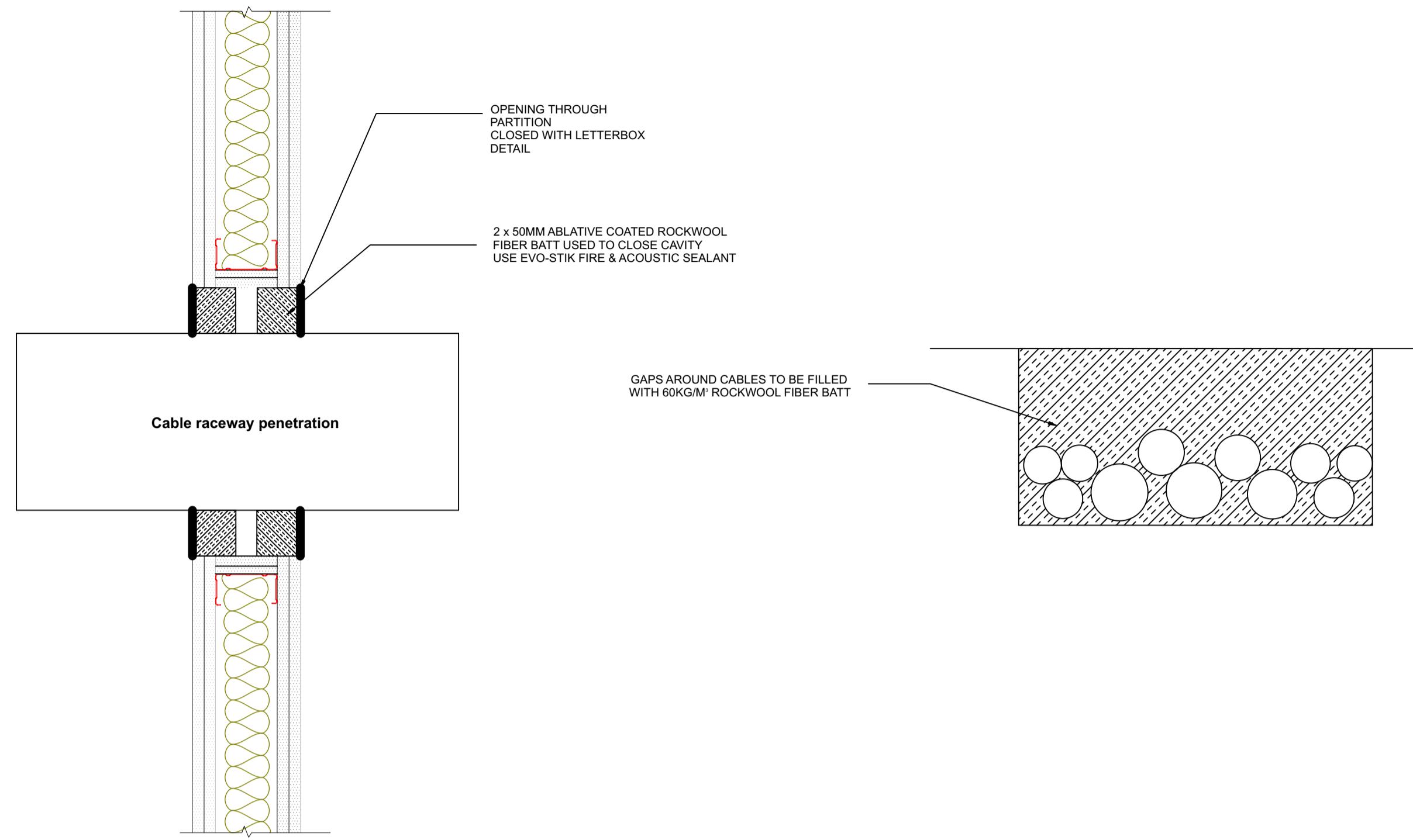
KEY



PENETRATION OF LARGE PIPE OR DUCT >200MM

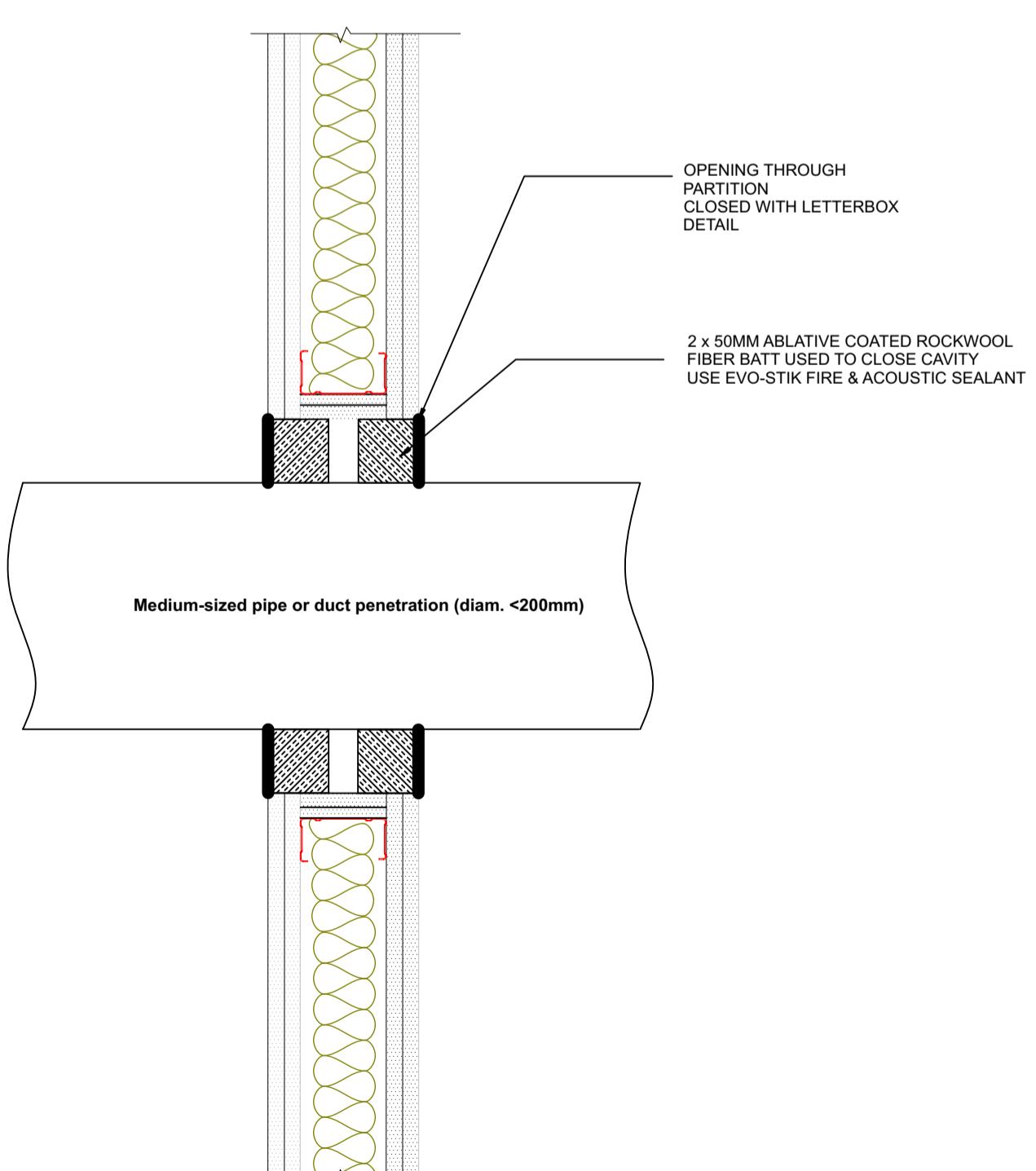


PENETRATION OF SMALL-SIZED PIPES OR CABLES <80MM DIAM





PENETRATION OF CABLE RACEWAY



PENETRATION OF MEDIUM-SIZED PIPE OR DUCT <200MM DIAM.

Optimized for Acoustic Performance
& Flanking Transmission Reduction

Client:
FLUTTERWAVE TECHNOLOGIES
SOLUTIONS LIMITED
8 Providence Street, Lekki Phase 1,
Lagos, Nigeria

Title

Architects: SpaceFinish Africa
4, Idowu Martins Street
Victoria, Island, Lagos, Nigeria
www.spacefinish.com

Consultant Engineers (Acoustics):

ACOUTECH

Integrated Systems & Engineering

Sheet: SERVICE PENETRATION DETAILS

	Design by:

Approval: O.A.

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