

LEGEND OF SYMBOLS

	2x2 RECESSED LED PANEL 36W 4000K (LOBBY/OFFICE)
	LED DOWNLIGHT 12W 3000K (LOBBY / CIRCULATION)
	LED HIGHBAY 150W 4000K (MAIN HALL)
	MAINTAINED LED EXIT SIGN, 3hr BATTERY, DOUBLE SIDED
	NON-MAINTAINED EMERGENCY BULKHEAD, 3hr BATTERY
	LIGHTING SWITCH / GRID SWITCH, 1350mm AFFL
	13A TWIN SWITCHED SOCKET OUTLET, 450mm AFFL
	RECESSED FLOOR SERVICE BOX (POWER + DATA)
	CCTV DOME CAMERA, IP 4MP, PoE
	CCTV BULLET CAMERA, IP 4MP, IP66 EXTERNAL
	DISTRIBUTION BOARD / SUB-DISTRIBUTION BOARD
	CONTAINMENT / CABLE ROUTE (TRAY, TRUNKING OR CONDUIT)
	FACADE / ARCHITECTURAL LIGHTING INTERFACE (BY SPECIALIST)

GENERAL ELECTRICAL NOTES

- THIS DRAWING IS PRELIMINARY AND ISSUED FOR COORDINATION AND BUDGETARY DESIGN ONLY. NOT FOR CONSTRUCTION, TENDER AWARD OR STATUTORY SUBMISSION. NO SITE SURVEY HAS BEEN CARRIED OUT.
- ALL WORK TO COMPLY WITH IEC 60364, BS 7671 (AS ADOPTED LOCALLY), PAKISTAN ELECTRICITY ACT REQUIREMENTS AND LESCO/DISCO SUPPLY RULES.
- EMERGENCY LIGHTING TO ISO 30061 / BS 5266-1: MIN 1 LUX ON ESCAPE ROUTE CENTRELINE, MIN 0.5 LUX OPEN AREA, 3 HOUR AUTONOMY.
- EXIT SIGNAGE TO ISO 7010 PICTOGRAM, MAINTAINED, VIEWING DIST 24m.
- SUPPLY ASSUMED 400/230V, 3-PHASE, 4-WIRE, 50Hz, TN-S ARRANGEMENT WITHIN THE BUILDING. EARTHING TO BE CONFIRMED BY UTILITY.
- ALL FINAL CIRCUITS RCBO PROTECTED, 30mA FOR SOCKET AND EXTERNAL CIRCUITS. MAIN PANEL WITH SPD TYPE 2 AT ORIGIN.
- CABLES: LSZH INSULATED COPPER, XLPE/PVC SWA WHERE BURIED OR EXTERNAL. MIN 2.5 sq.mm POWER, 1.5 sq.mm LIGHTING.
- CONTAINMENT AT HIGH LEVEL ON PEB PURLINS/RAFTERS VIA GALVANISED TRAY; NO DRILLING OF PRIMARY STEEL WITHOUT STRUCTURAL APPROVAL.
- LUMINAIRE QUANTITIES ARE CONCEPT-STAGE AND SUBJECT TO A FORMAL DIALUX/RELUX CALCULATION AT DETAILED DESIGN STAGE.
- CCTV IS AN IP/PoE SYSTEM. NVR AND STORAGE SIZING SUBJECT TO CLIENT RETENTION POLICY (30 DAYS ASSUMED).
- CONTRACTOR TO COORDINATE ALL ROUTES WITH STRUCTURAL, HVAC AND

PLUMBING SETTING-OUT PRIOR TO ANY INSTALLATION.

SCOPE - INCLUDED vs EXCLUDED

12. DESIGN CERTIFICATION BY A LICENSED PEC PROFESSIONAL ENGINEER IS INCLUDED IN BUILDING COSTS.

EXCLUDED BUILDING CONSTRUCTION ISSUE; NOT PROVIDED WITH THIS SET.

- Main LV panel (MDB) downstream of utility metering
- Sub-distribution boards DB-1..DB-4 and final circuits
- Internal lighting, switching and controls
- Small power, socket outlets and floor boxes
- Emergency and exit lighting with integral batteries
- CCTV cabling, cameras, NVR head-end and containment
- Earthing and bonding within the building envelope
- Facade lighting containment, feeders and DB provision

EXCLUDED (BY OTHERS / SEPARATE PACKAGE):

- HT/LT transformer, RMU and utility substation works
- DISCO/LESCO metering, service connection and tariff fees
- Standby diesel generator, ATS, fuel system and acoustics
- UPS, solar PV and battery energy storage
- External site/street lighting beyond building line
- Facade luminaires and lighting-designer scope (specialist)
- Fire alarm, PA/VA, structured data and BMS (separate issues)
- Civil trenching, ducting and builders work

FUSION DEVELOPERS

Design & Buile Contractors | Pakistan

PROJECT: UAS MARQUEE - EVENT COMPLEX

CLIENT: UAS / FUSION DEVELOPERS

TITLE: ELECTRICAL LEGEND, SYMBOLS & GENERAL NOTES

DRAWING No: E-001

SCALE: NTS

REV: P1

DRAWN: FD-ELEC-AI

CHECKED: FD-ARCH-SR-001

SHEET 1 OF 9

ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION

MAIN HALL 80'-0" x 150'-0" (12,000 SFT)

LIGHTING SCHEDULE (CONCEPT)

TYPE	DESCRIPTION	W	QTY
L1	LED HIGH BAY 4000K IP65	150	60
L2	2x2 RECESSED PANEL 4000K	36	12
L3	LED DOWNLIGHT 3000K	12	24

CONNECTED LIGHTING LOAD = 9.72 kW

TARGET ILLUMINANCE: HALL 300 lux, LOBBY 200 lux (EN 12464-1).

SUBJECT TO DIALUX VERIFICATION AT DETAIL DESIGN.

LOBBY 80'-0" x 20'-0"

FACADE LIGHTING INTERFACE - 3no 20A FEEDERS FROM DB-1 + DALI DRAW WIRE

20'-0"

150'-0"

170'-0" OVERALL

DIMENSIONS IN FEET-INCH UNLESS NOTED. DO NOT SCALE.

FUSION DEVELOPERS

Design & Build Contractors | Pakistan

PROJECT: UAS MARQUEE - EVENT COMPLEX

CLIENT: UAS / FUSION DEVELOPERS

TITLE: LIGHTING LAYOUT - GROUND FLOOR

DRAWING No: E-101

SCALE: 1:150 @ A3

REV: P1

DRAWN: FD-ELEC-AI

CHECKED: FD-ARCH-SR-001

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ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION

MAIN HALL 80'-0" x 150'-0" (12,000 SFT)



SMALL POWER SUMMARY

13A twin switched sockets 34 nos

Recessed floor service boxes 18 nos

Stage / AV dedicated 32A outlets ... 4 nos (DB-2)

Catering 3-phase 63A outlets 2 nos (DB-3)

All socket circuits 30mA RCB protected.

Floor boxes: 2x13A + 2x RJ45 + 1x HDMI blank.

Positions indicative - to be coordinated with

final furniture and event layout.

FUSION DEVELOPERS		
Design & Build Contractors Pakistan		
PROJECT: UAS MARQUEE - EVENT COMPLEX		
CLIENT: UAS / FUSION DEVELOPERS		
TITLE: SMALL POWER & SOCKET OUTLET LAYOUT		
DRAWING No: E-102	SCALE: 1:150 @ A3	REV: P1
DRAWN: FD-ELEC-AI	CHECKED: FD-ARCH-SR-001	SHEET 3 OF 9

ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION

MAIN HALL 80'-0" x 150'-0" (12,000 SFT)

EMERGENCY LIGHTING SCHEDULE

Maintained LED exit signs 7 nos

Non-maintained emergency bulkheads .. 33 nos

Battery autonomy 3 hours

Test facility self-test, addressable

PERFORMANCE CRITERIA (BS 5266-1 / ISO 30061):

Escape route centreline min 1.0 lux

Open (anti-panic) area min 0.5 lux

Uniformity max 40:1

Response time 50% in 5s, 100% in 60s

Emergency load (self-contained) 299 W

OCCUPANCY BASIS: 1,000 persons standing/banquet mix.

Exit widths and travel distances to be confirmed by

the fire strategy (separate package).

PRIMARY ESCAPE ROUTE

ENTRANCE

20'-0"

150'-0"

170'-0" OVERALL

DIMENSIONS IN FEET-INCH UNLESS NOTED. DO NOT SCALE.

FUSION DEVELOPERS

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PROJECT: UAS MARQUEE - EVENT COMPLEX

CLIENT: UAS / FUSION DEVELOPERS

TITLE: EMERGENCY & EXIT LIGHTING LAYOUT

DRAWING No: E-201

SCALE: 1:150 @ A3

REV: P1

DRAWN: FD-ELEC-AI

CHECKED: FD-ARCH-SR-001

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ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION

ZONE F3 - NORTH ELEVATION GRAZE

MAIN HALL 80'-0" x 150'-0" (12,000 SFT)

FACADE LIGHTING INTERFACE SCHEDULE

SCOPE BY FUSION (INCLUDED):

- DB-4 facade board, 4 way, TPN, 30mA RCBO
- 3 nos 20A radial feeders to zones F1/F2/F3
- DALI/DMX draw wire and 25mm conduit to each zone
- IP66 weatherproof junction boxes at zone origins
- Containment, earthing and testing to zone boundary

SCOPE BY SPECIALIST (EXCLUDED):

- Facade luminaires, drivers and mounting brackets
- Lighting design, photometrics and mock-ups
- DMX/DALI controller, scenes and commissioning
- Media facade / RGBW pixel content system

ALLOWANCE:

- Facade feeder capacity 12 kW total
- Control protocol DALI-2 (DMX optional)
- Switching astronomical timeclock

Zone extents indicative only - subject to the elevation package and the appointed lighting designer's layout.

DB-4 FACADE

ENTRANCE

ZONE F1 - ENTRANCE PORTAL

ZONE F2 - SOUTH ELEVATION GRAZE

20'-0"

150'-0"

170'-0" OVERALL

FUSION DEVELOPERS

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PROJECT: UAS MARQUEE - EVENT COMPLEX

CLIENT: UAS / FUSION DEVELOPERS

TITLE: FACADE / ARCHITECTURAL LIGHTING INTERFACE

DRAWING No: E-202

SCALE: 1:150 @ A3

REV: P1

DRAWN: FD-ELEC-AI

CHECKED: FD-ARCH-SR-001

SHEET 5 OF 9

DIMENSIONS IN FEET-INCH UNLESS NOTED. DO NOT SCALE.

2

1

ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION

MAIN HALL 80'-0" x 150'-0" (12,000 SFT)

Cat6A PoE HOME RUNS ON DEDICATED DATA TRAY (100m MAX)

LOBBY 80'-0" x 20'-0"

ENTRANCE

CCTV SCHEDULE (CONCEPT)

Internal dome cameras 4MP, PoE 15 nos

External bullet cameras 4MP, IP66 5 nos

TOTAL CAMERAS 20 nos

PoE switches (24-port, 370W) 1 nos

NVR channels (with 25% spare) 26 ch

Retention assumed 30 days

Storage estimate @4Mbps CBR 25.9 TB raw

Rack 42U, dedicated UPS by others

NOTES:

- Camera positions indicative; final field of view to be confirmed by the security consultant.

- No facial recognition or analytics assumed.

- Signage and data-privacy compliance by the operator.

- Cable lengths to be verified against 100m PoE limit.

DIMENSIONS IN FEET-INCH UNLESS NOTED. DO NOT SCALE.

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Design & Build Contractors Pakistan		
PROJECT: UAS MARQUEE - EVENT COMPLEX		
CLIENT: UAS / FUSION DEVELOPERS		
TITLE: CCTV LAYOUT & HEAD-END CONCEPT		
DRAWING No: E-301	SCALE: 1:150 @ A3	REV: P1
DRAWN: FD-ELEC-AI	CHECKED: FD-ARCH-SR-001	SHEET 6 OF 9

BOARD SCHEDULE

REF	LOCATION / DUTY	SPECIFICATION
MDB	Main Distribution Board	400/230V TPN, 800A, form 3b, Icu 36kA, SPD T2, MCCB outgoers
DB-1	Lobby & Front of House	TPN 12-way, 100A MCCB feed, 30mA RCBO finals
DB-2	Main Hall & Stage	TPN 24-way, 250A MCCB feed, 30mA RCBO finals
DB-3	Catering & Back of House	TPN 18-way, 160A MCCB feed, 30mA RCBO finals
DB-4	Facade & External	TPN 8-way, 63A MCCB feed, IP65 enclosure, timeclock
EM-DB	Emergency Lighting Sub-Circuit	SPN 6-way, fed ahead of local isolation
SEC-DB	Security / CCTV Rack Board	SPN 6-way, dedicated clean earth

PANEL CONSTRUCTION & INSTALLATION NOTES

1. All boards floor or wall mounted, IP42 internal / IP65 external, powder coated RAL 7035.
2. Form of separation: MDB form 3b minimum; sub-boards form 2.
3. 25% spare ways and 25% spare busbar capacity on every board.
4. Each board fitted with a laminated circuit chart and an as-installed schedule.
5. Cable entry from top via galvanised tray; glanded SWA terminations at external boards.
6. Main earth bar in MDB; separate clean earth bar for the security rack.
7. Surge protection Type 2 at MDB origin, Type 3 at the security and AV boards.
8. Boards to be located clear of HVAC drip trays and plumbing risers - to be coordinated.
9. Board sizes and breaker ratings are preliminary and require verification against the final utility supply characteristics and a full cable/discrimination study.

FUSION DEVELOPERS		
Design & Build Contractors Pakistan		
PROJECT: UAS MARQUEE - EVENT COMPLEX		
CLIENT: UAS / FUSION DEVELOPERS		
TITLE: DISTRIBUTION BOARD & PANEL CONCEPT		
DRAWING No: E-401	SCALE: NTS	REV: P1
DRAWN: FD-ELEC-AI	CHECKED: FD-ARCH-SR-001	SHEET 7 OF 9

ISSUED FOR COORDINATION / BUDGETARY DESIGN - NOT FOR CONSTRUCTION
BY UTILITY / OTHERS - EXCLUDED FROM THIS SCOPE

11kV DISCO SUPPLY > RMU > TRANSFORMER 11kV/400V

UTILITY METERING PANEL

STANDBY GENERATOR + ATS (FUTURE / BY OTHERS)

Assumed transformer 250 kVA min - to be confirmed by DISCO.

400/230V 3ph 4W 50Hz TN-S

MAIN DISTRIBUTION BOARD (MDB) 800A TPN Icu 36kA SPD Type 2

100A

250A

160A

63A

32A

32A

250A

DB-1

Lobby / FoH

DB-2

Main Hall & Stage

DB-3

Catering / BoH

DB-4

Facade / External

EM-DB

Emergency Ltg

SEC-DB

CCTV / Security

HVAC

HVAC (by others)

MAIN EARTH <1 ohm

LOAD SUMMARY

Building connected load (excl. HVAC) 126.00 kW

Building maximum demand (after diversity) .. 72.18 kW

HVAC allowance (by HVAC package) 90.00 kW demand

TOTAL SITE CONNECTED LOAD 246.00 kW

TOTAL SITE MAXIMUM DEMAND 162.18 kW

Apparent power @ pf 0.90 180.20 kVA

Recommended transformer (min 25% spare) 250 kVA

Recommended sanctioned load 198 kVA

Diversity factors per CIBSE Guide K / local practice. Load figures are

preliminary and must be re-verified once equipment schedules are fixed.

DIMENSIONS IN FEET-INCH UNLESS NOTED. DO NOT SCALE.

FUSION DEVELOPERS

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PROJECT: UAS MARQUEE - EVENT COMPLEX

CLIENT: UAS / FUSION DEVELOPERS

TITLE: ELECTRICAL SINGLE LINE DIAGRAM (PRELIMINARY)

DRAWING No: E-501

SCALE: NTS

REV: P1

DRAWN: FD-ELEC-AI

CHECKED: FD-ARCH-SR-001

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LOAD SCHEDULE

BOARD	DESCRIPTION	CONN kW	D.F.	DEMAND kW
DB-1	Lobby lighting + downlights	4.20	0.90	3.78
DB-1	Lobby small power / sockets	6.00	0.40	2.40
DB-2	Main hall highbay lighting	9.00	0.90	8.10
DB-2	Stage / AV dedicated outlets	24.00	0.50	12.00
DB-2	Hall floor boxes & sockets	12.00	0.40	4.80
DB-3	Catering / pantry 3-phase outlets	30.00	0.50	15.00
DB-3	Washroom & back-of-house power	8.00	0.40	3.20
DB-3	Hand dryers / water heaters	12.00	0.50	6.00
DB-4	Facade lighting feeders (allowance)	12.00	0.80	9.60
DB-4	External / perimeter services	5.00	0.70	3.50
EM	Emergency & exit lighting (charging)	0.30	1.00	0.30
SEC	CCTV, PoE switches, NVR rack	3.50	1.00	3.50
HVAC	HVAC allowance (by HVAC package)	120.00	0.75	90.00
TOTAL		246.00		162.18

Building only (excluding HVAC package): 126.00 kW connected / 72.18 kW demand

Apparent power at power factor 0.90: 180.20 kVA

Power factor correction to 0.95 recommended at MDB (detail design).

EXCLUDED FROM THIS SCHEDULE:

transformer & HT works, DISCO metering, standby generator & ATS,

UPS, solar PV / BESS, external site lighting, fire alarm, PA/VA,

structured cabling, BMS, lifts, and all civil / builders work.

FUSION DEVELOPERS		
Design & Build Contractors Pakistan		
PROJECT: UAS MARQUEE - EVENT COMPLEX		
CLIENT: UAS / FUSION DEVELOPERS		
TITLE: PRELIMINARY ELECTRICAL LOAD SCHEDULE		
DRAWING No: E-601	SCALE: NTS	REV: P1
DRAWN: FD-ELEC-AI	CHECKED: FD-ARCH-SR-001	SHEET 9 OF 9