

Bartenbach[®]
lighting design

▫ **gegründet
1976**
(Prof. Dr. h.c. Ing.
Christian Bartenbach)

▫ **Aldrans
Österreich**

▫ **85
Mitarbeiter**

▫ **Gründungs-
mitglied**



▫ **> 3.500
Planungs-
projekte
weltweit**

▫ **Hersteller-
neutraler
Lichtplaner**





Daylighting Design

Artificial Lighting Design



Scale Mock-Ups

Technical Development

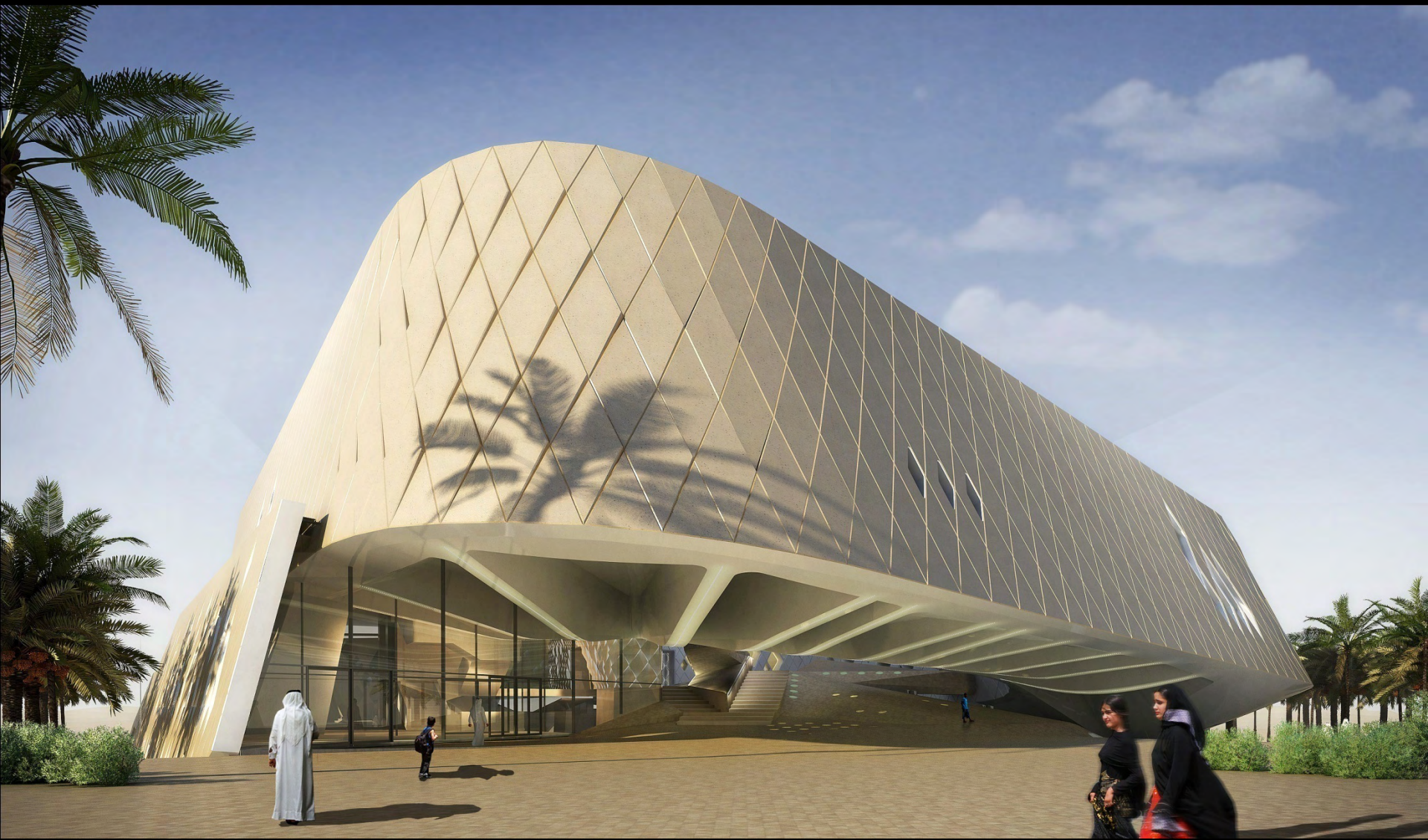


Perception Psychology

Research



Sheikh Zayed Desert Learning Centre, Al Ain Zoo (UAE)
Architect: Chalabi Architekten, Vienna





متنزه العين
للحياة البرية
AL AIN WILDLIFE
PARK & RESORT

Sheikh Zayed Desert Learning Center

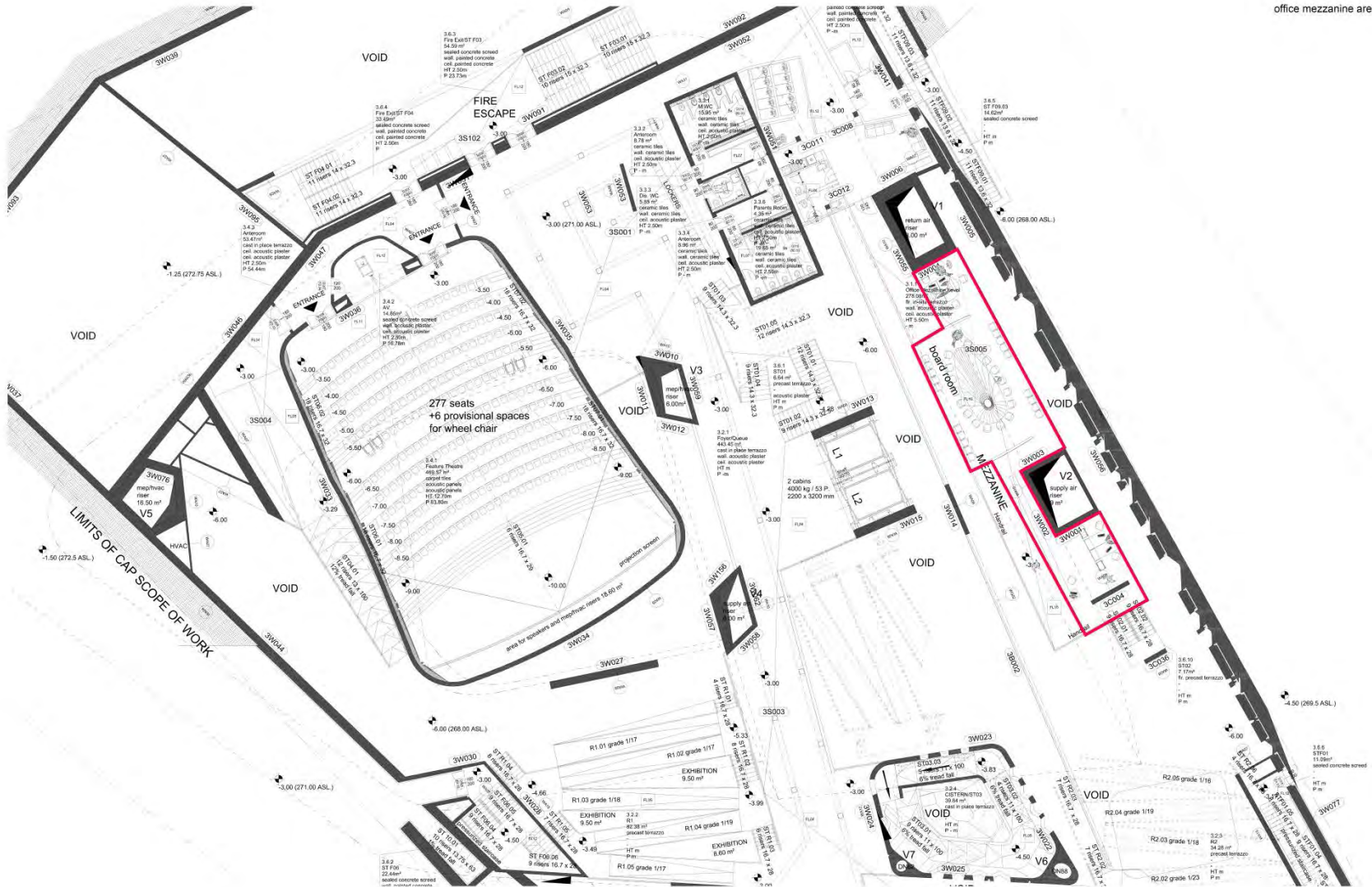
Lighting Analysis for LEED accreditation 01. April 2010

solar gain value of 0,32 and 61% transmission of glazing

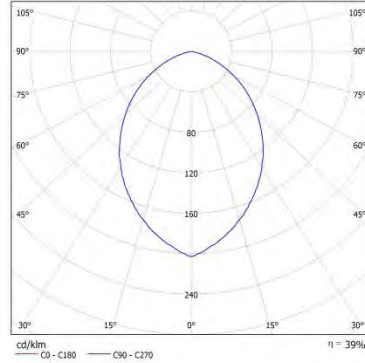
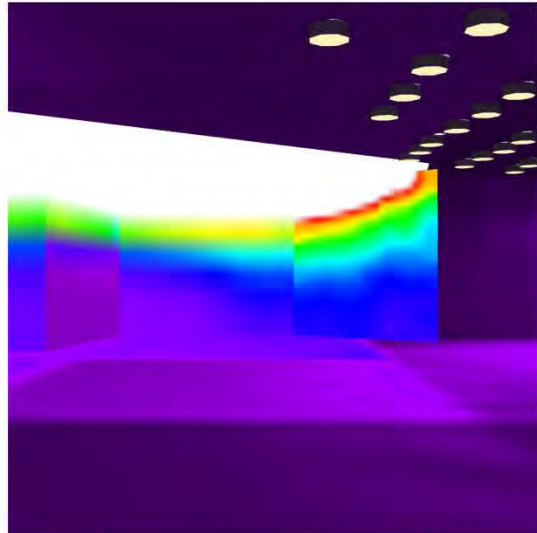
Sheikh Zayed Desert Learning Centre, Al Ain Zoo (UAE)
Architect: Chalabi Architekten, Vienna



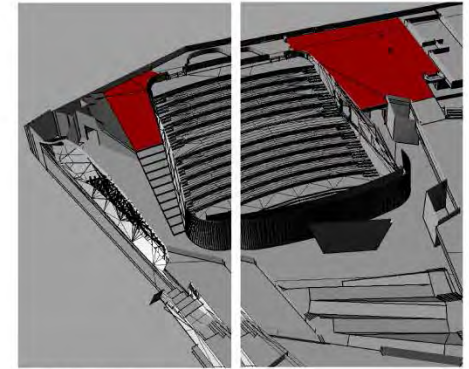
office mezzanine area at -3.00 with 117.4 m²



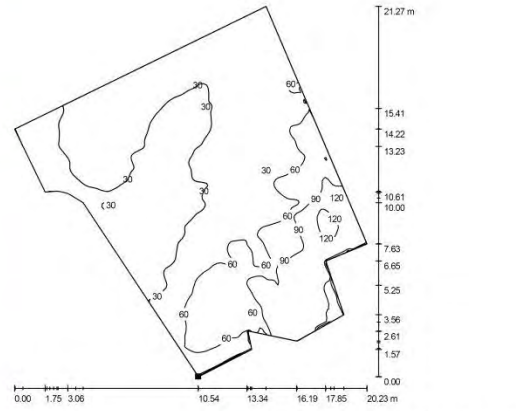
daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



This area is not relevant for LEED accreditation as it is not defined as a permanently occupied space



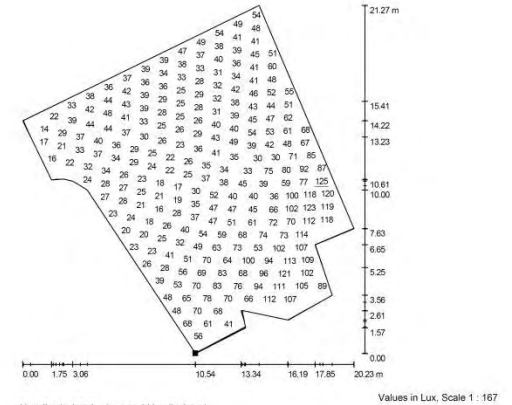
Foyer and queuing areas



Position of surface in external scene:
Marked point:
(-4.012 m, -21.588 m, 0.750 m)

Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
50	12	125	0.232	0.093



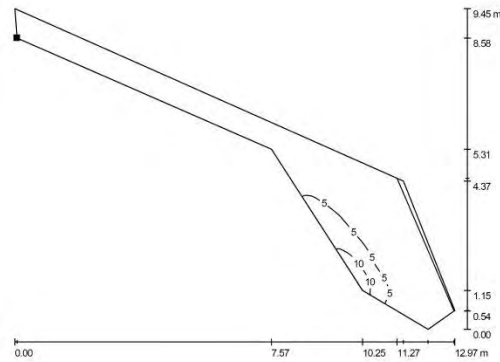
Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(-4.012 m, -21.588 m, 0.750 m)

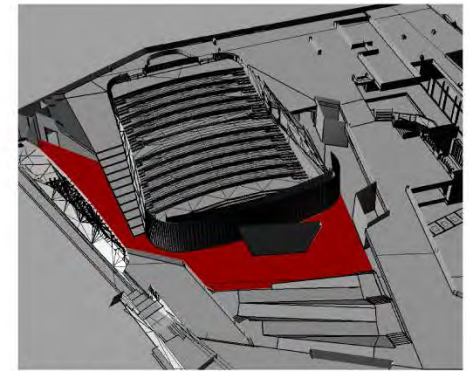
Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
50	12	125	0.232	0.093

daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



This area is not relevant for LEED accreditation as it is not defined as a permanently occupied space



Queuing areas

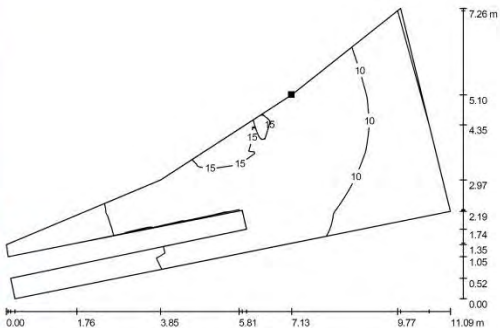
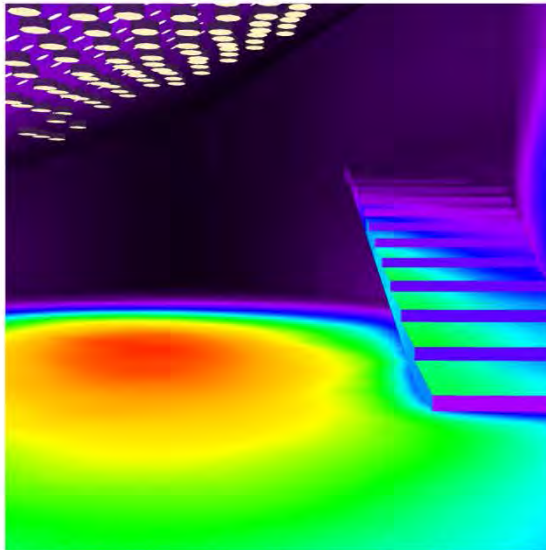
Position of surface in external scene:
Marked point:
(-37.211 m, 15.114 m, 0.750 m)



Values in Lux, Scale 1 : 93

Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
2.81	1.24	14	0.443	0.088



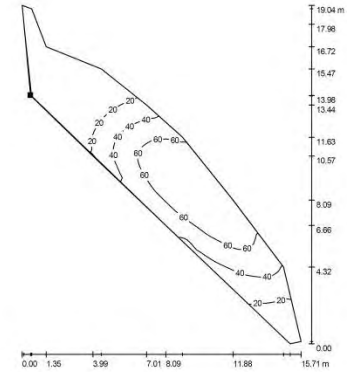
Values in Lux, Scale 1 : 80

Position of surface in external scene:
Marked point:
(-4.854 m, 5.158 m, 0.750 m)



Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
11	5.72	16	0.533	0.361



Values in Lux, Scale 1 : 149

Position of surface in external scene:
Marked point:
(-36.603 m, 8.324 m, 0.750 m)



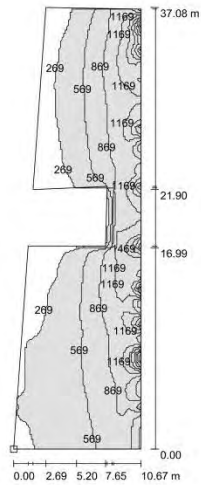
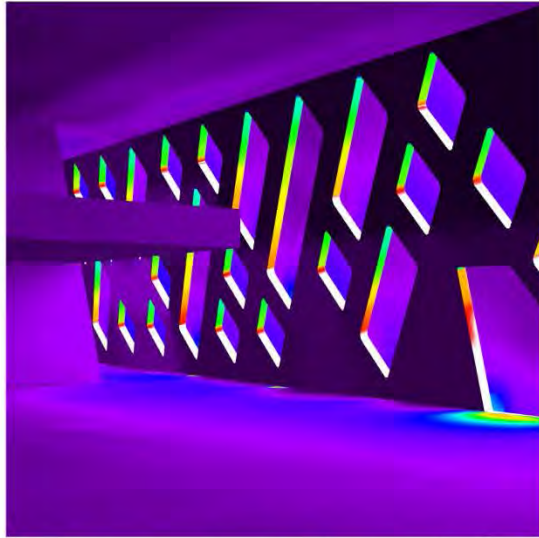
Grid: 128 x 128 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
39	1.27	80	0.033	0.016

daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



Sheikh Zayed Desert Learning Center

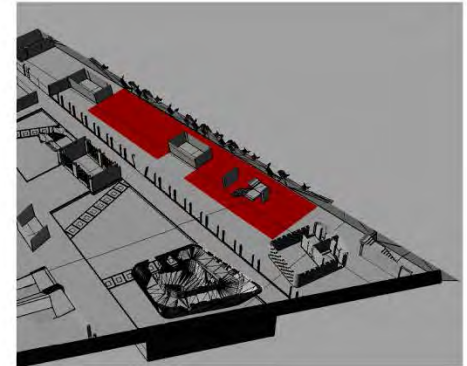


Solar gain value of glazing 0,32
Light transmission of glazing 0,61

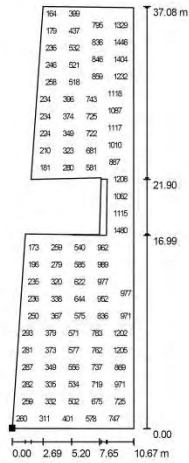
Total are of permanently occupied spaces = 314,5 m²

Area in which illuminance levels > 269 lx are achieved = 262,8 m²

269 lx (25 fc) are achieved for 84 % of occupied spaces.



Office areas



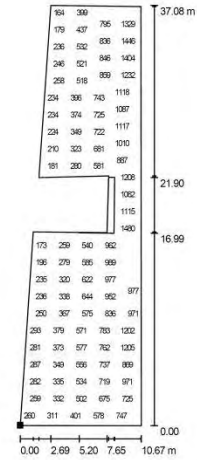
Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(3,188 m, 7,115 m, 0,750 m)



Grid: 21 x 74 Points

E_{av} [lx] 668 E_{min} [lx] 133 E_{max} [lx] 3254 u_0 0,200 E_{min} / E_{max} 0,041



Values in Lux, Scale 1 : 290

Not all calculated values could be displayed.

Position of surface in external scene:
Marked point:
(3,188 m, 7,115 m, 0,750 m)



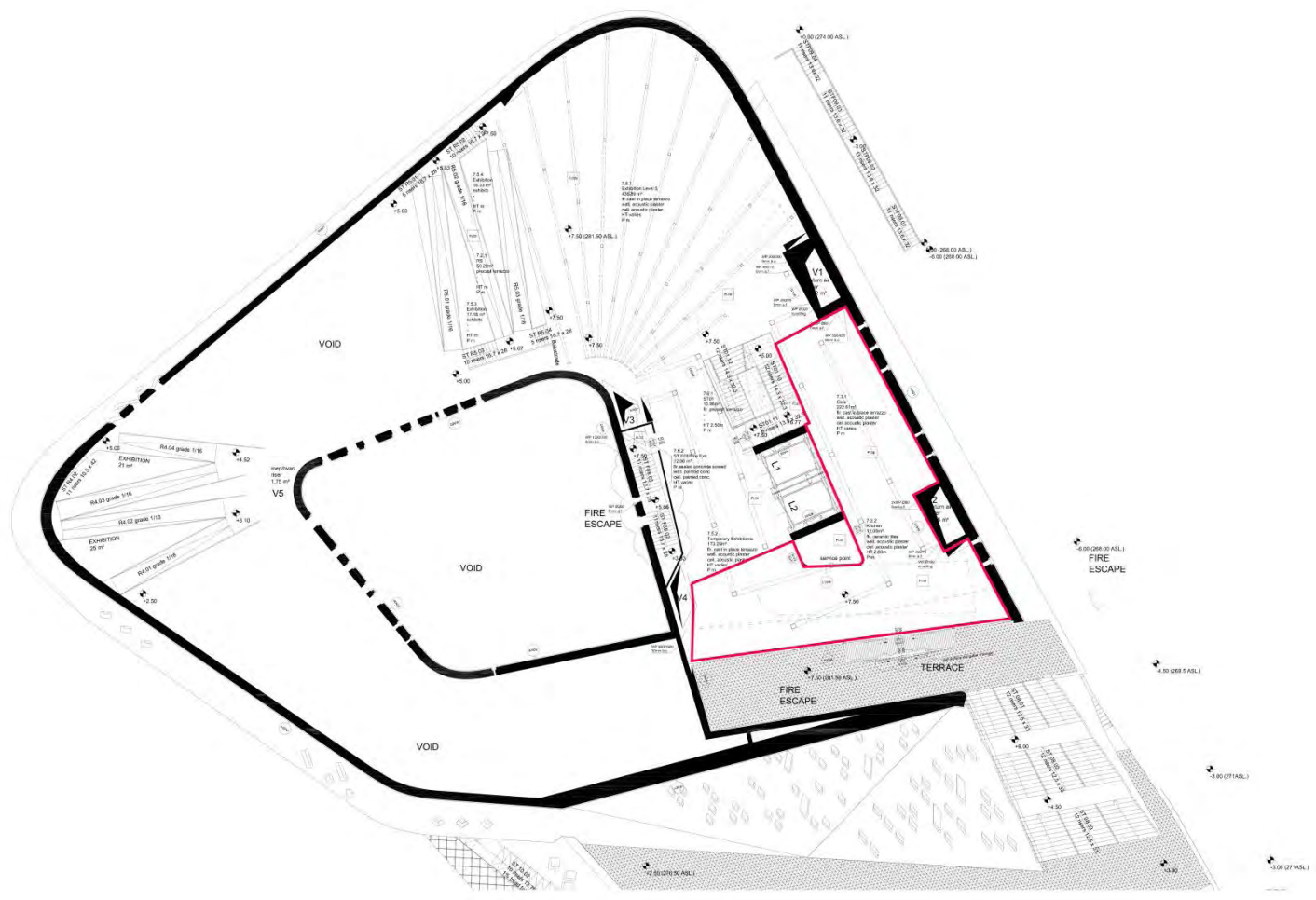
Grid: 21 x 74 Points

E_{av} [lx] 668 E_{min} [lx] 133 E_{max} [lx] 3254 u_0 0,200 E_{min} / E_{max} 0,041

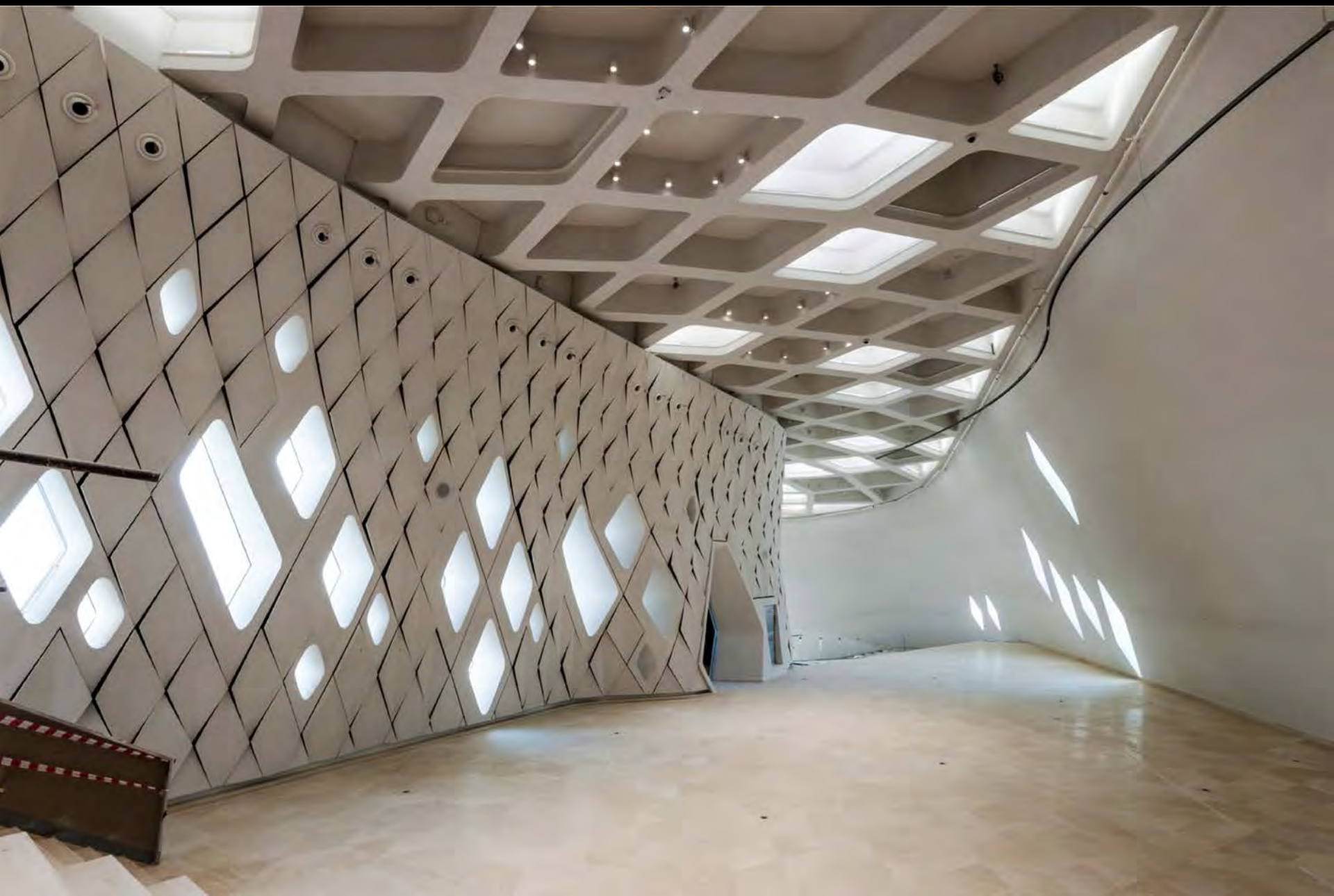
daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



cafeteria at + 7.50 with 229.6 m²



daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



Summary for permanently occupied spaces:

The sum of the total area of all permanently occupied spaces is summed up and then divided by the sum of all areas in which LEED requirements between 25fc (269 lx) and 500fc (5380 lx) are achieved. Occupied spaces which would not fulfill the 75% requirement are split up into two areas; the one area which does not fulfill the requirements (illuminance levels below 269 lx) and the other area fulfilling the requirements. These areas are then used for further evaluation of the LEED accreditation.

SZDLC summary of LEED calculations for permanently occupied spaces 10.04.01

regularly occupied space ID	regularly occupied space name	regularly occupied space area [m ²]	surface in regularly occupied space with illuminance levels above/equal 269 lx (25 fc) [m ²]
100	office area at level -6,00	314,5	262,8
101	office mezzanine at level -3,00 area 1	57,8	57,8
102	office mezzanine at level -3,00 area 2	59,6	0
103	main entrance area at level +/- 0,00	271,7	219,4
104	cafeteria at level +7,50	229,6	213,9
total sum of areas [m ²]		933,2	753,9
total sum of areas [sf]		10041,2	8112,0

percentage of permanently occupied spaces with illuminance levels above/equal 269 lx (25 fc)

81%

Leuchtende Wände und Decken führen von der Zisterne zur Aussicht





GENERAL NOTES

- ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
- ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
- REVISIONS

NOTE: ACCESS DOORS TO BE PROVIDED ON ALL RISERS FINAL LOCATION TO BE COORDINATED WITH SHOP DRAWINGS

TABLE

ITEM	QTY	UNIT	PRICE	TOTAL
1.00	1.00	sqm	1.00	1.00
1.01	1.00	sqm	1.00	1.00
1.02	1.00	sqm	1.00	1.00
1.03	1.00	sqm	1.00	1.00
1.04	1.00	sqm	1.00	1.00
1.05	1.00	sqm	1.00	1.00
1.06	1.00	sqm	1.00	1.00
1.07	1.00	sqm	1.00	1.00
1.08	1.00	sqm	1.00	1.00
1.09	1.00	sqm	1.00	1.00
1.10	1.00	sqm	1.00	1.00
1.11	1.00	sqm	1.00	1.00
1.12	1.00	sqm	1.00	1.00
1.13	1.00	sqm	1.00	1.00
1.14	1.00	sqm	1.00	1.00
1.15	1.00	sqm	1.00	1.00
1.16	1.00	sqm	1.00	1.00
1.17	1.00	sqm	1.00	1.00
1.18	1.00	sqm	1.00	1.00
1.19	1.00	sqm	1.00	1.00
1.20	1.00	sqm	1.00	1.00
1.21	1.00	sqm	1.00	1.00
1.22	1.00	sqm	1.00	1.00
1.23	1.00	sqm	1.00	1.00
1.24	1.00	sqm	1.00	1.00
1.25	1.00	sqm	1.00	1.00
1.26	1.00	sqm	1.00	1.00
1.27	1.00	sqm	1.00	1.00
1.28	1.00	sqm	1.00	1.00
1.29	1.00	sqm	1.00	1.00
1.30	1.00	sqm	1.00	1.00
1.31	1.00	sqm	1.00	1.00
1.32	1.00	sqm	1.00	1.00
1.33	1.00	sqm	1.00	1.00
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1.37	1.00	sqm	1.00	1.00
1.38	1.00	sqm	1.00	1.00
1.39	1.00	sqm	1.00	1.00
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1.41	1.00	sqm	1.00	1.00
1.42	1.00	sqm	1.00	1.00
1.43	1.00	sqm	1.00	1.00
1.44	1.00	sqm	1.00	1.00
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1.97	1.00	sqm	1.00	1.00
1.98	1.00	sqm	1.00	1.00
1.99	1.00	sqm	1.00	1.00
2.00	1.00	sqm	1.00	1.00

NET FLOOR AREA
2840.83 m²

GROSS FLOOR AREA
3393 m²

Level -6.00 (268.00 ASL.)

CLIENT: **Sheikh Zayed Desert Learning Center**

ARCHITECT: **SZDLC**

DATE: 2018.09.19

SCALE: 1:100

SHEET SIZE: 1188 x 814 mm

DATE: 2018.09.19







NOTE:
ACCESS DOORS TO BE PROVIDED ON ALL RISERS
FINAL LOCATION TO BE COORDINATED WITH
SHOP DRAWINGS

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED. DIMENSIONS ARE TO FACE UNLESS OTHERWISE STATED.
2. DIMENSIONS TO FACE UNLESS OTHERWISE STATED. DIMENSIONS TO FACE UNLESS OTHERWISE STATED.
3. THIS DRAWING IS A PRELIMINARY DESIGN AND DOES NOT CONSTITUTE A CONTRACT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS ON SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS ON SITE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND CONDITIONS ON SITE.

REVISIONS

NO.	DESCRIPTION	DATE

LEGEND

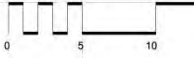
- hatched concrete wall
- concrete masonry unit wall
- gypsum board drywall
- partition
- door
- door description
- technical riser
- MEP provided concrete
- MEP provided brick
- public areas
- entrance
- back of house
- administration
- computer/office exits
- hold up reference

Symbol	Name of Light Fixture	Light source	Mounting	Units	Watt
.....	LED recessed	LED 24W 2400lm	Recessed	1000	1000
.....	LED strip	LED 12W 1200lm	Surface	1000	1000
.....	LED track	LED 12W 1200lm	Track	1000	1000
.....	LED panel	LED 24W 2400lm	Surface	1000	1000
.....	LED downlight	LED 12W 1200lm	Recessed	1000	1000
.....	LED spotlight	LED 12W 1200lm	Surface	1000	1000
.....	LED track	LED 12W 1200lm	Track	1000	1000
.....	LED panel	LED 24W 2400lm	Surface	1000	1000

For quantities for L-400 refer to section drawings
302_AWPR-SEC-CAP-COT-SEC-ARC-ELV-00001.dwg /
302_AWPR-SEC-CAP-COT-SEC-ARC-ELV-00002.dwg
L-400 refers to fixtures on top and below elevator cabinet.
Exact length of these fixtures must be taken from an unobstructed
elevation or section or directly from the 3D model.

Level ± 0.00 (274 m ASL.)

NET FLOOR AREA
801.66 m²
GROSS FLOOR AREA
943.90 m²



1:500 Narrative Title

Section Line: _____

Client Name: _____

Client Address: _____

Client Phone: _____

Client Email: _____

Client Website: _____

Client Logo: _____

Client Name: _____

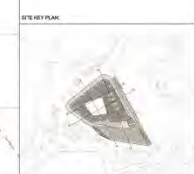
Client Address: _____

Client Phone: _____

Client Email: _____

Client Website: _____

Client Logo: _____



Barthenbach
I. Ch. Labor
Barthenbach Ltd. and Co.
P.O. Box 1000, Al Ain, UAE
Tel: +971 3 200 0000
Fax: +971 3 200 0001
www.barthenbach.com

Chalabi Architects Partners LLC
Registered Architects Partners
P.O. Box 1000, Al Ain, UAE
Tel: +971 3 200 0000
Fax: +971 3 200 0001
www.chalabi.com

SHANKLAND
SHANKLAND GROUP
P.O. Box 1000, Al Ain, UAE
Tel: +971 3 200 0000
Fax: +971 3 200 0001
www.shankland.com

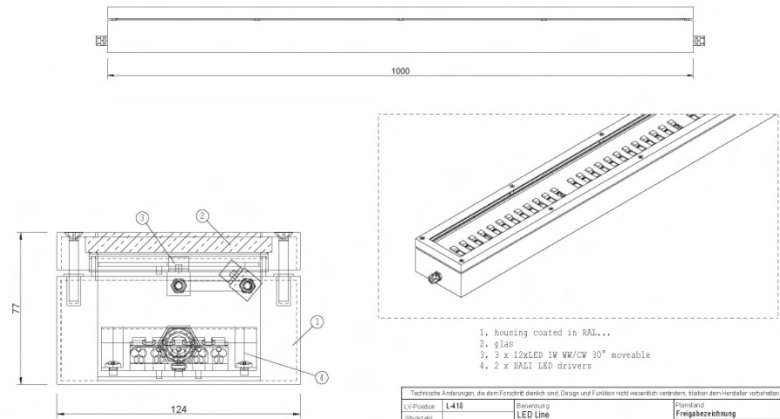
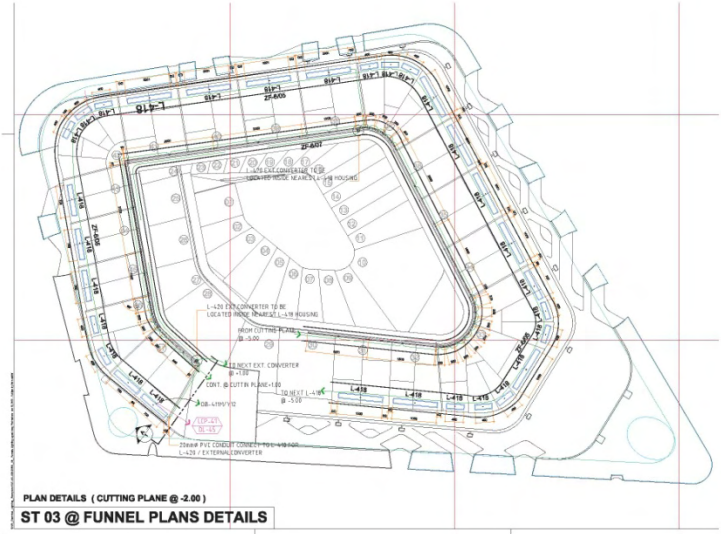
CH2MHILL International Ltd.
P.O. Box 1000, Al Ain, UAE
Tel: +971 3 200 0000
Fax: +971 3 200 0001
www.ch2mhill.com

Ai Ain Wildlife Park & Resort
P.O. Box 1000, Al Ain, UAE
Tel: +971 3 200 0000
Fax: +971 3 200 0001
www.aiainwildlife.com

SZDL
Sheikh Zayed
Desert Learning Center

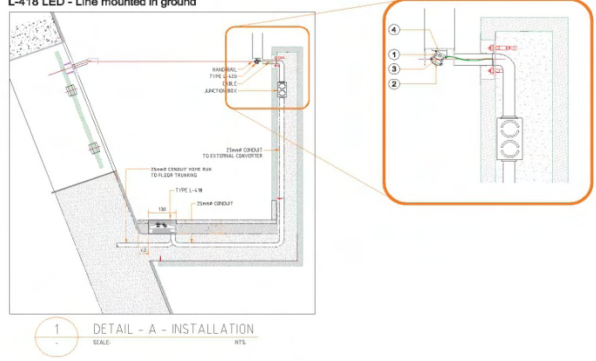
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PROJECT NAME: CONSTRUCTION DOCUMENTATION
DRAWING NO: 101_AWPR-SEC-CAP-COT-SEC-ARC-OWG-0006
DRAWING TITLE: Level 0.00
DRAWN BY: JH | SCALE: 1:100
CHECKED BY: RM | SHEET SIZE: 1188 x 814 mm
ELEVATION: ± 0.00 + 274 ASL | DATE: 26.08.2019
SHEETS: REVISION

CONSTRUCTION In Progress Funnel Floor Lighting



Technische Änderungen, die dem Fachwerk durch Design und Funktion nicht vereinbar sind, bleiben dem Hersteller vorbehalten.			
Leuchte	L418	Bezeichnung	LED Line
Staubzahl		Freigebezeichnung	
Leuchtmittel		Produktcode	L418-111865.PRT
Projektleuchten GmbH		Sheikh Zayed Desert Learning Center	
Auftraggeber		Auftragsnummer	
Datei		Datum	Auftr. Nr.
19-02-2018		19-02-2018	
19-02-2018		MAC:00	Blatt
19-02-2018		Freigegeben	
Dieses Dokument ist unser geistiges Eigentum und urheberrechtlich geschützt. Inak (IGL, 1119736)			

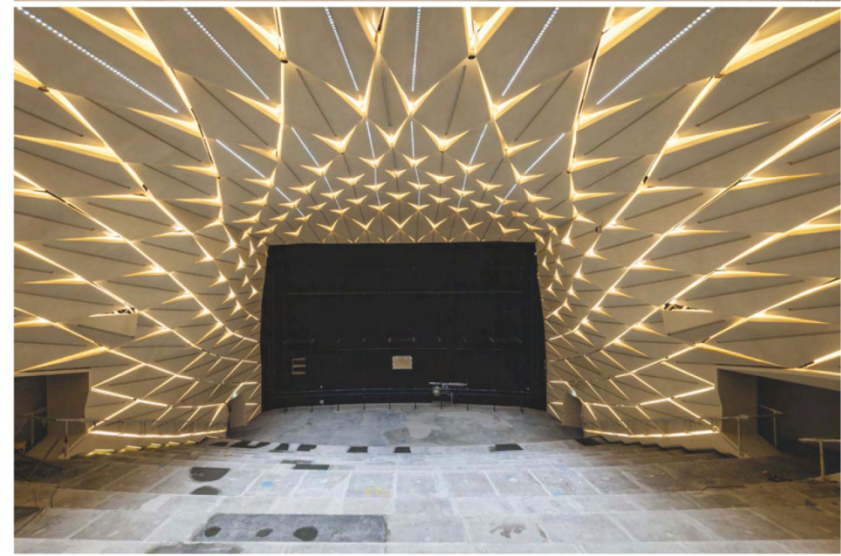
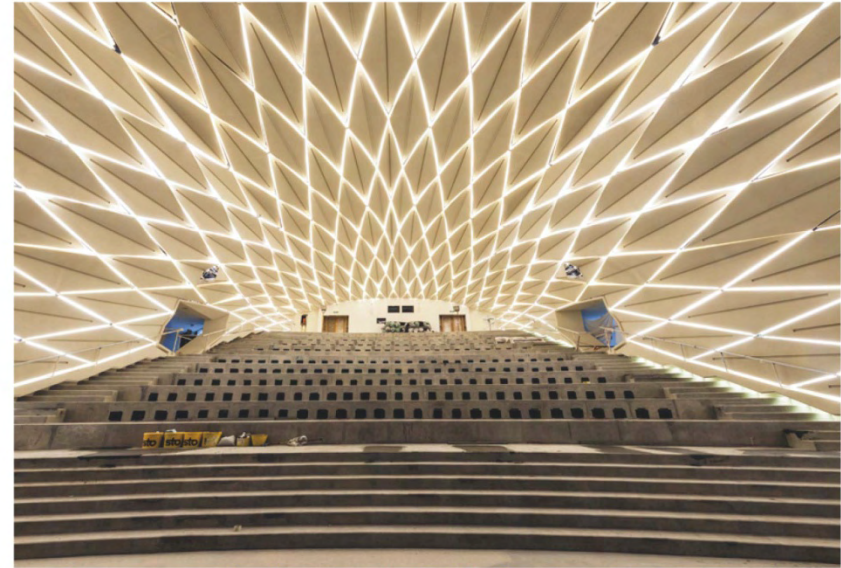
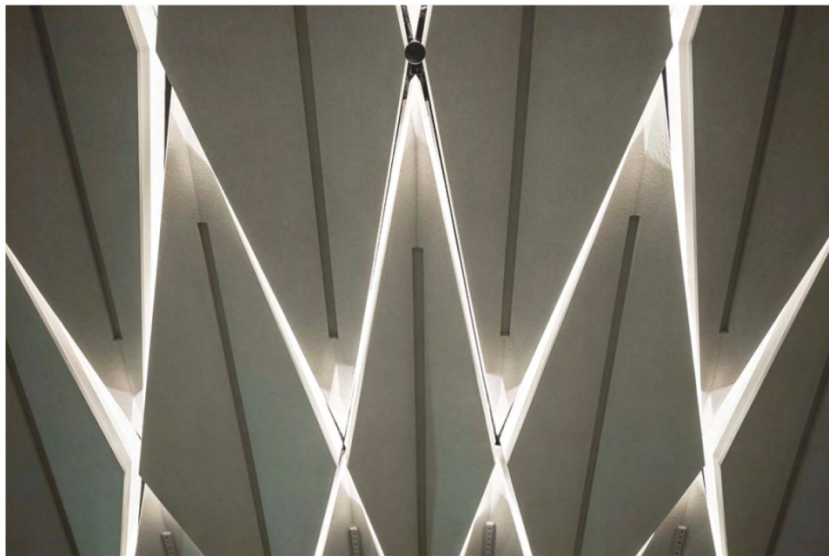
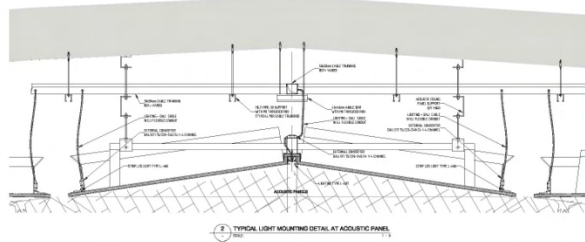
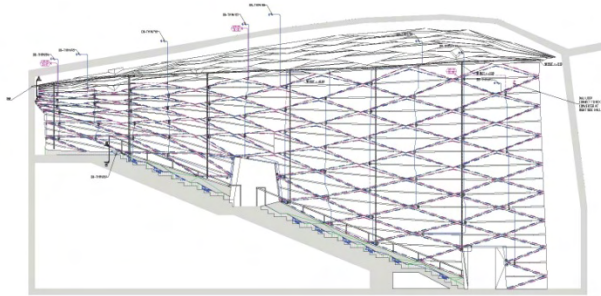
L-420 LED - Line IP65 Handrail
L-418 LED - Line mounted in ground



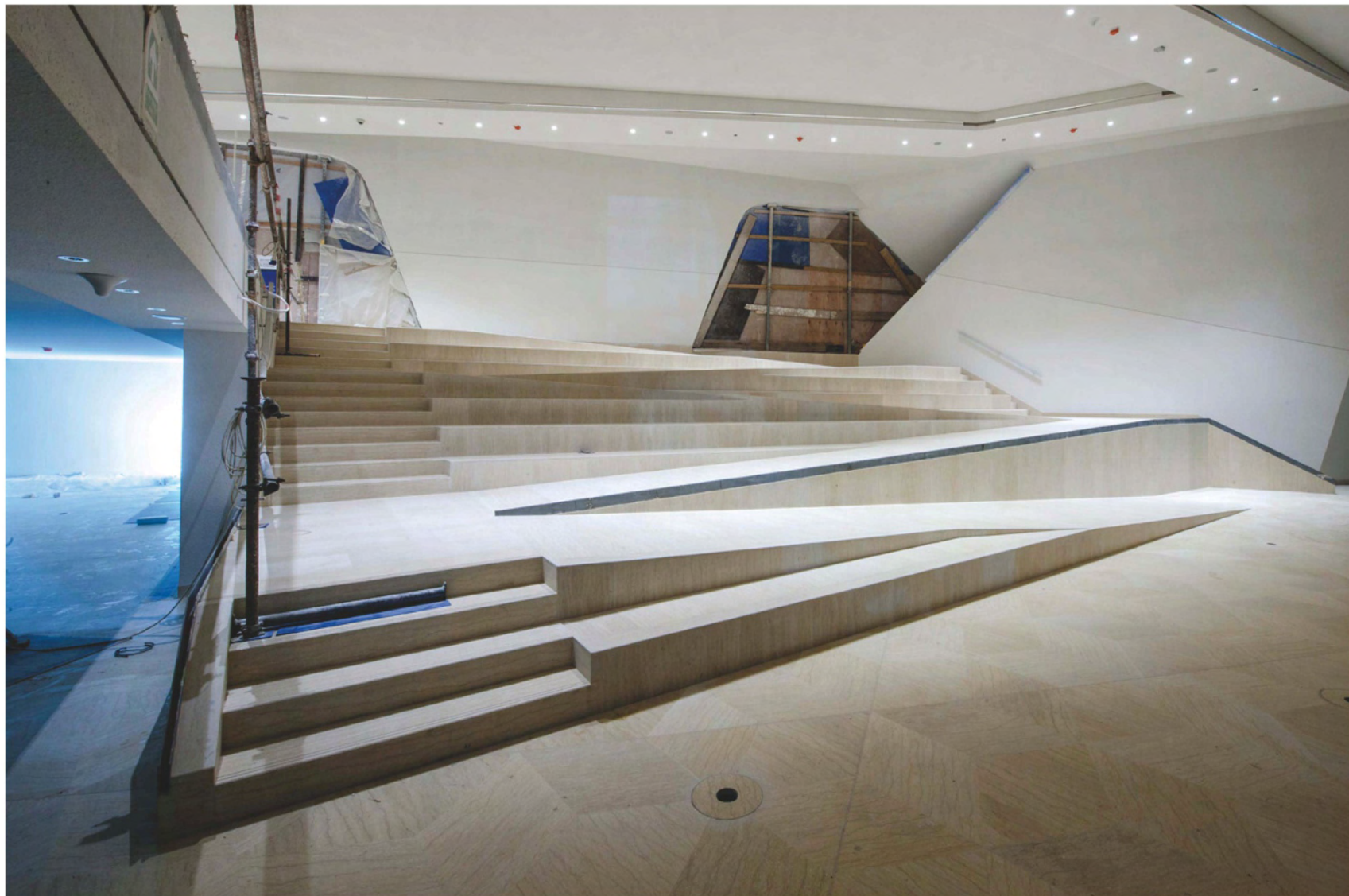
Chalabi architekten&partner ZT GmbH · Gesellschafter Talik Chalabi, Jaafar Chalabi · UID-Nr. ATU 62497845 · FN 277935d
Wien 1070, Lindengasse 4/12, Österreich EU · tel +43(0)1 532 79 52-22 · fax +43(0)1 922 95 19 · mail office@chalabi.at · web www.cap.co.at



CONSTRUCTION AS BUILT Theatre Lighting



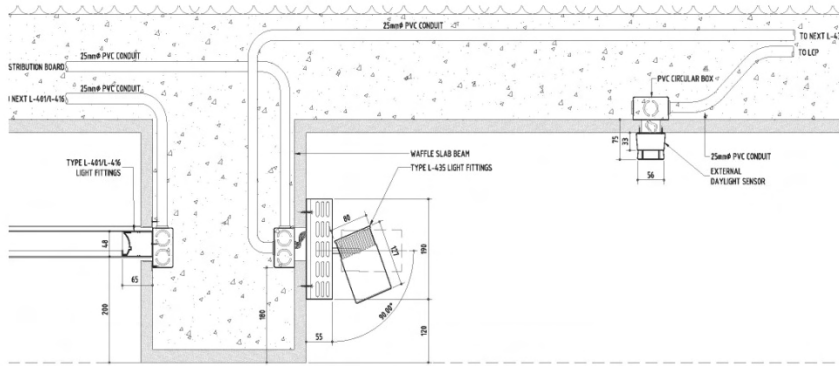




CAP 

Chalabi architekten&partner ZT GmbH . Gesellschafter Talik Chalabi, Jaafar Chalabi . UID-Nr. ATU 62497845 . FN 277935d
Wien 1070, Lindengasse 4/12, Österreich EU . tel +43(0)1 532 79 52-22 . fax +43(0)1 922 95 19 . mail office@chalabi.at . web www.cap.co.at

CONSTRUCTION AS-BUILT Main Tube Waffle Lighting



LIGHTING FIXTURE TYPE L-401, L-416 & L-435 AND DAYLIGHT SENSOR AT WAFLE SLAB TYPICAL MOUNTING DETAIL





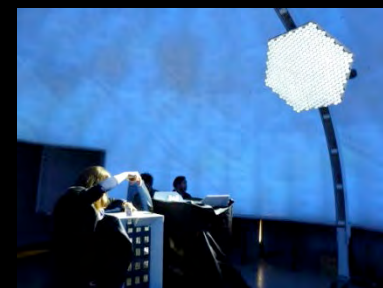


Sheikh Zayed Desert Learning Center



Sheikh Zayed Desert Learning Center

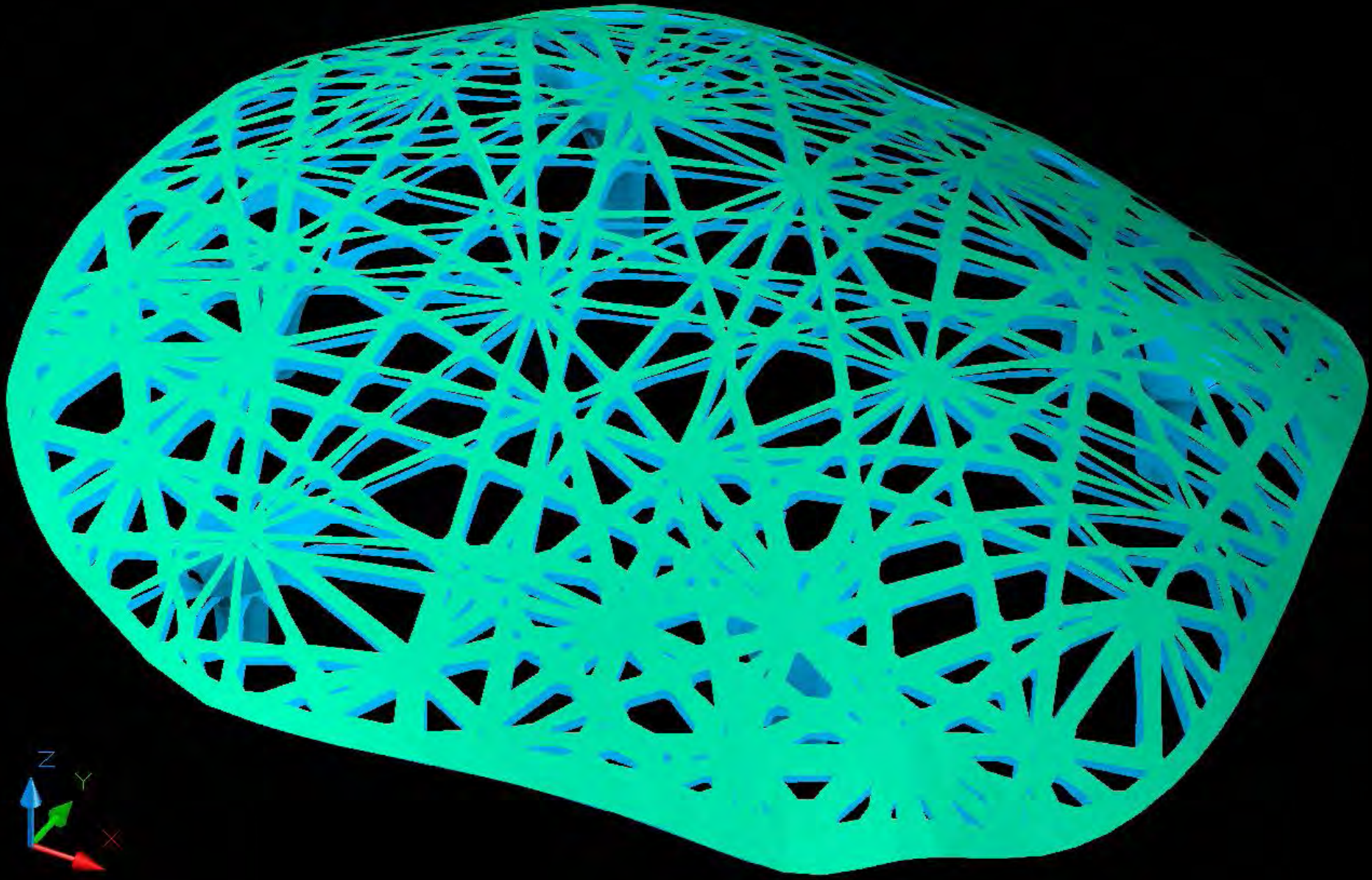
Tageslicht –
ist effizient direkt wirksam eingesetzt



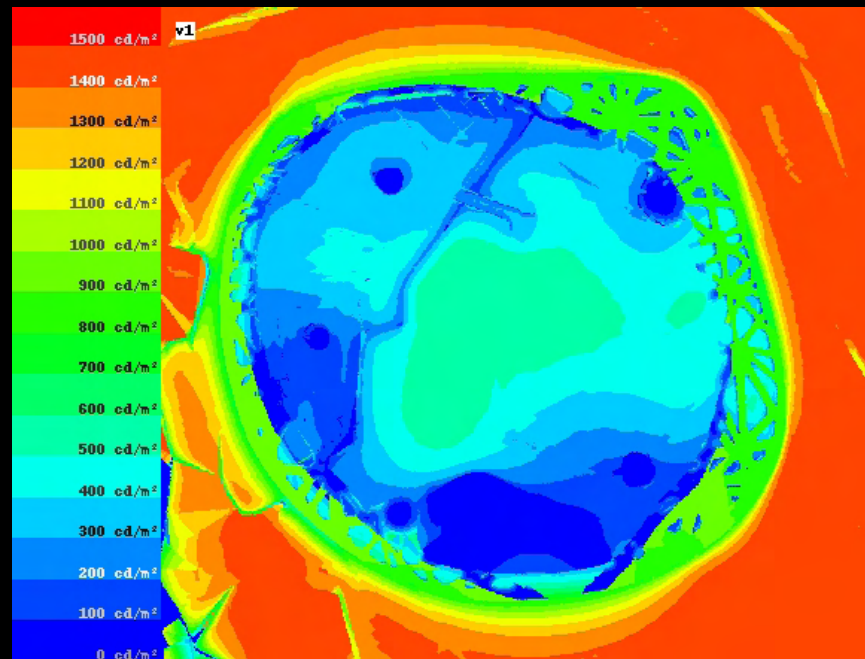
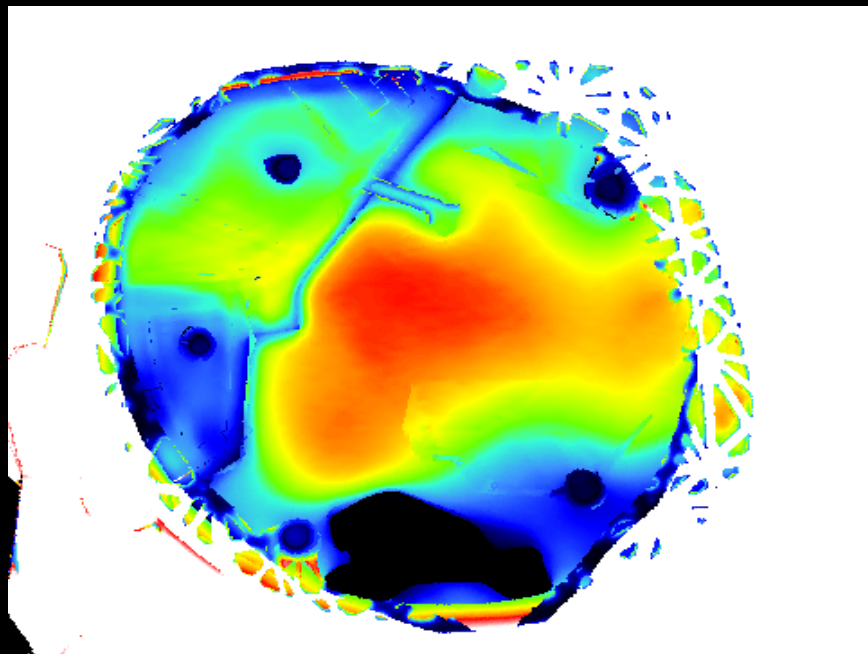
Elefant house – Zoo Zürich
Architect: Schietsch Architect



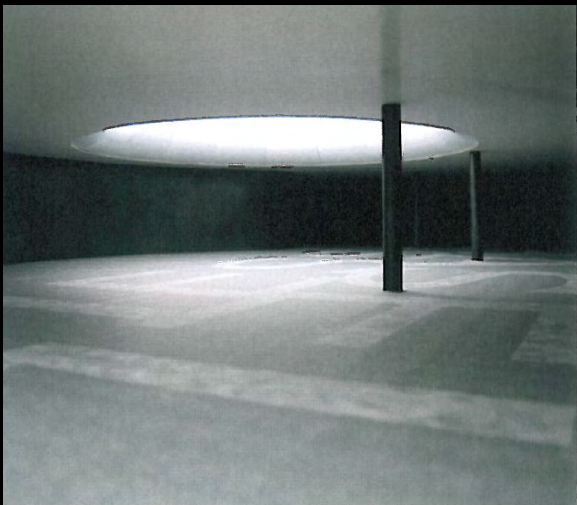
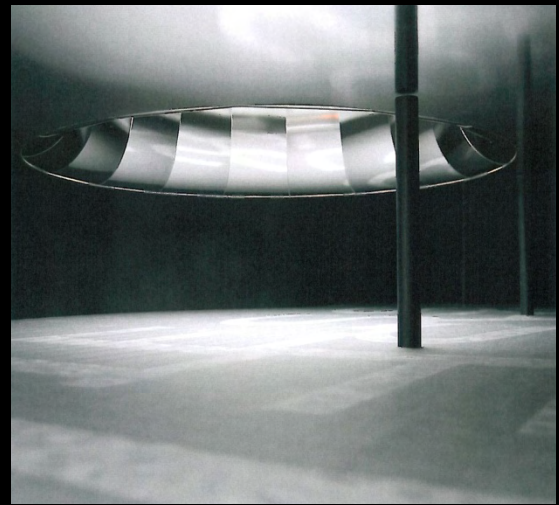
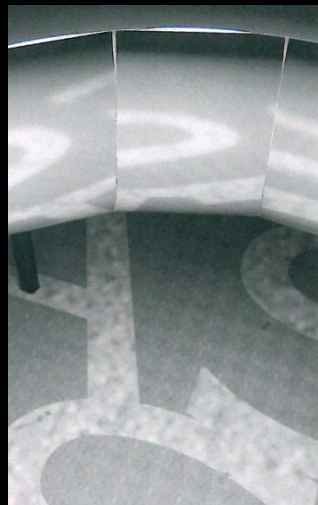
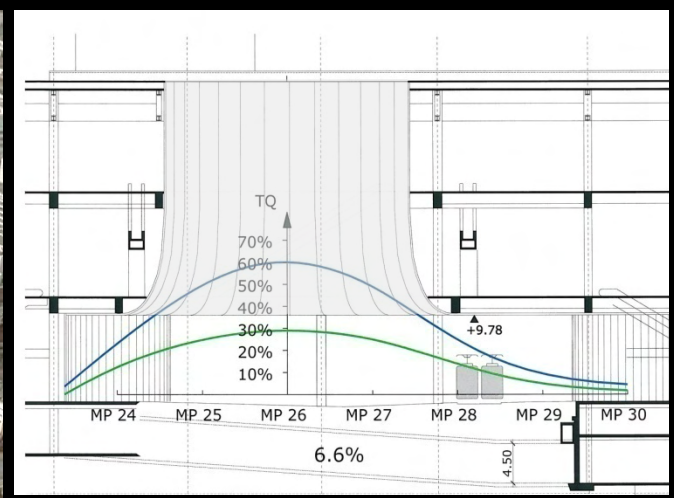
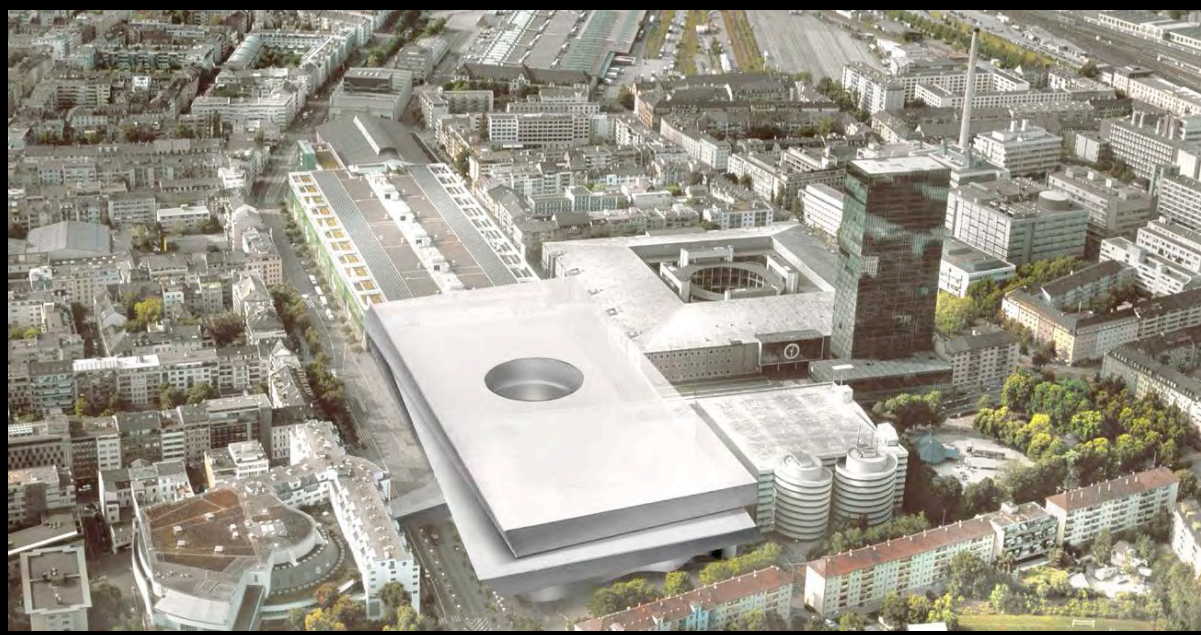
Elefant house – Zoo Zürich
Architect: Schietsch Architect



Elefant house – Zoo Zürich
Architect: Schietsch Architect



Exhibition Center, Basel
Architect: Herzog de Meuron

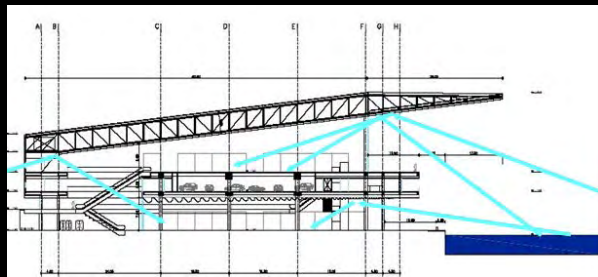
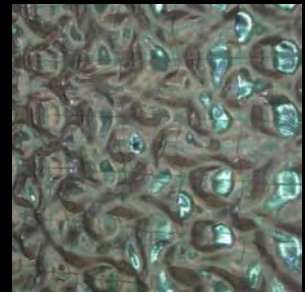


Exhibition Center, Basel
Architect: Herzog de Meuron

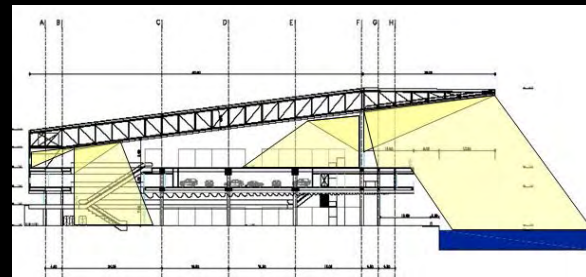


Fiera di Genova, Italy

Architect: Jean Nouvel, (I)



daytime



nighttime

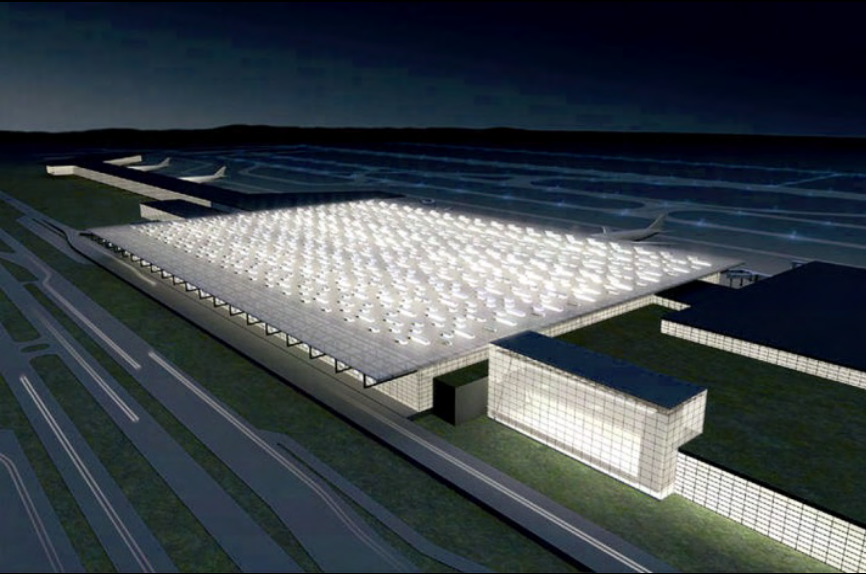


Fiera di Genova, Italy
Architect: Jean Nouvel, (I)



Sheikh Zayed Desert Learning Center

Changi Airport, Singapur
Architect: SOM



Light energy saving:
3 Mio. kWh / year

primär energy:
9 Mio. kWh / year

CO2 saving:
2.400 t CO2 / year



Changi Airport, Singapur
Architect: SOM



Middel East

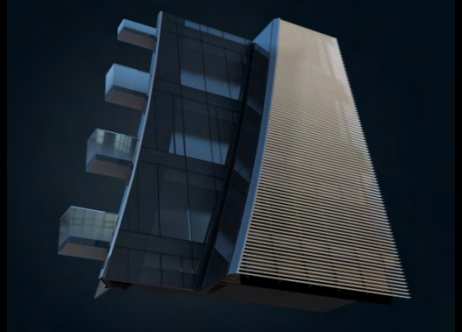
King Abdullah Financial District, Riyadh

Architect: Behnisch Architekten, Stuttgart



Sheikh Zayed Desert Learning Center

Lusail Katara Hotel
Architect: Kling Consult, Germany



Lusail Katara Hotel
Architect: Kling Consult, Germany



Sheikh Zayed Desert Learning Center

Lusail Katara Hotel
Architect: Kling Consult, Germany



Sheikh Zayed Desert Learning Center

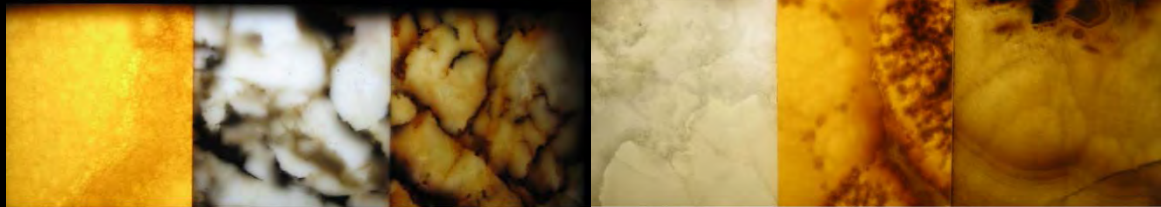
Grand Egyptian Museum – Cairo
Architect:: Heneghan Peng Architect Irland



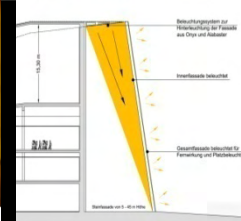
Sheikh Zayed Desert Learning Center

Grand Egyptian Museum – Cairo

Architect:: Heneghan Peng Architect Irland



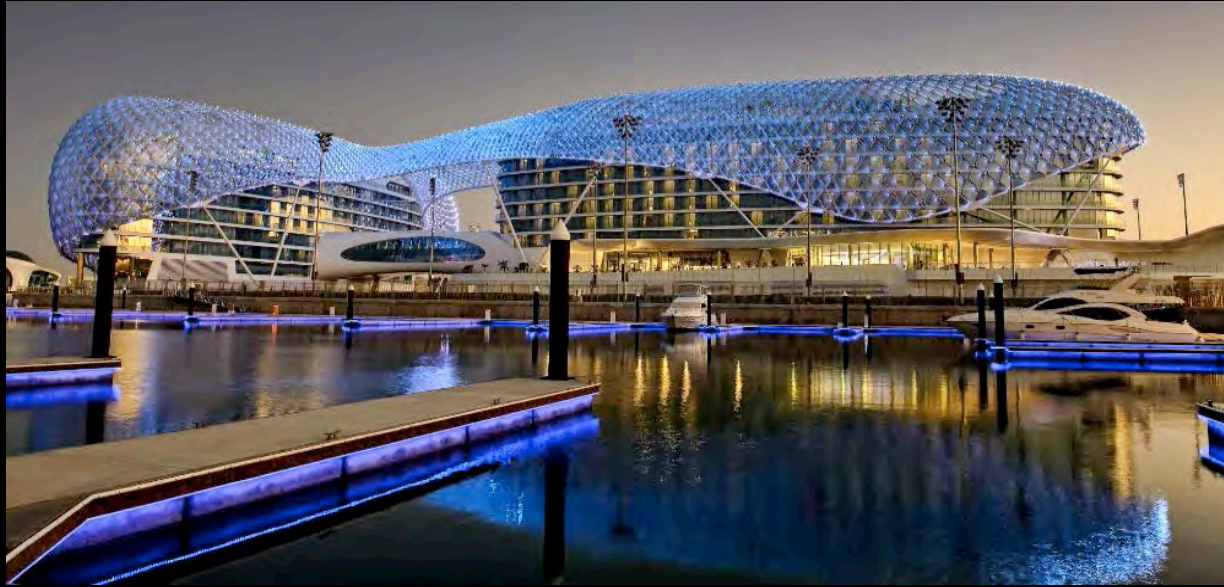
orange sunset statuario venato aphion dorato white cloud onyx alabaster marble horny onyx



YAS Marina Hotel, Abu Dhabi
Architect Asymptote Architect – New York



YAS Marina Hotel, Abu Dhabi
Architect Asymptote Architect – New York



YAS Marina Hotel, Abu Dhabi
Architect Asymptote Architect – New York



YAS MARINA & RACETRACK HOTEL

YAS Marina Hotel, Abu Dhabi
Architect Asymptote Architect – New York



YAS Marina Hotel, Abu Dhabi
Architect Asymptote Architect – New York





Vielen Dank für Ihre Aufmerksamkeit



Robert Müller
Head of Lighting Design

Bartenbach LichtLabor
Rinnerstrasse 14
6071 Aldrans
Robert.mueller@bartenbach.com
www.bartenbach.com