

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



München



Innsbruck



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

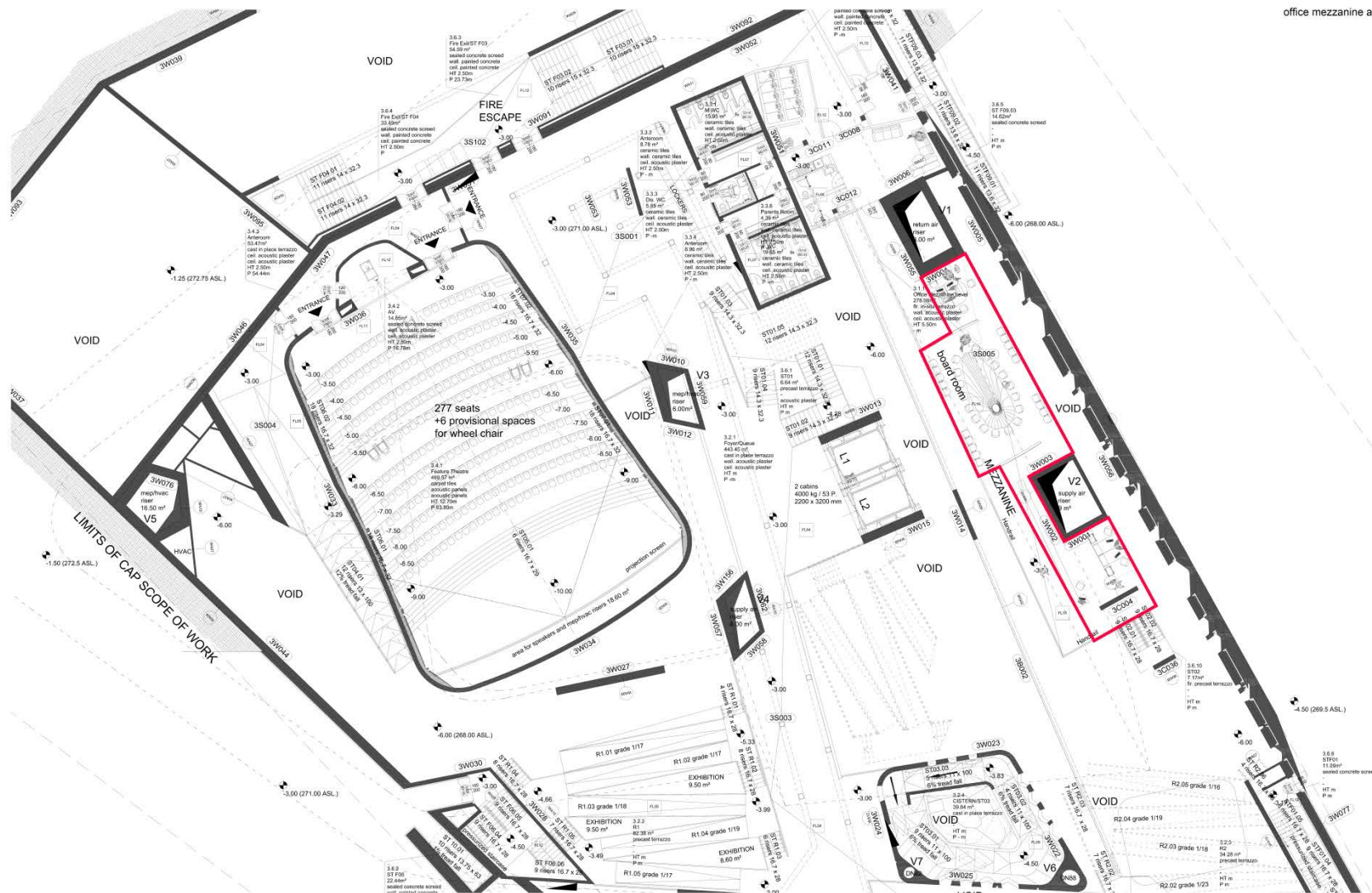
Sheikh Zayed Desert Learning Center

Lighting Analysis for LEED accreditation 01. April 2010

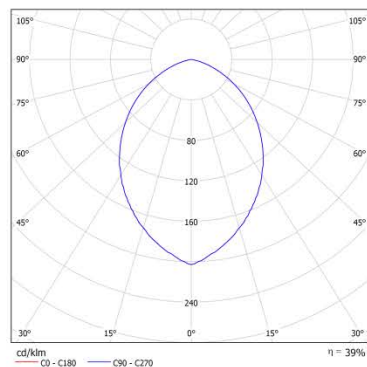
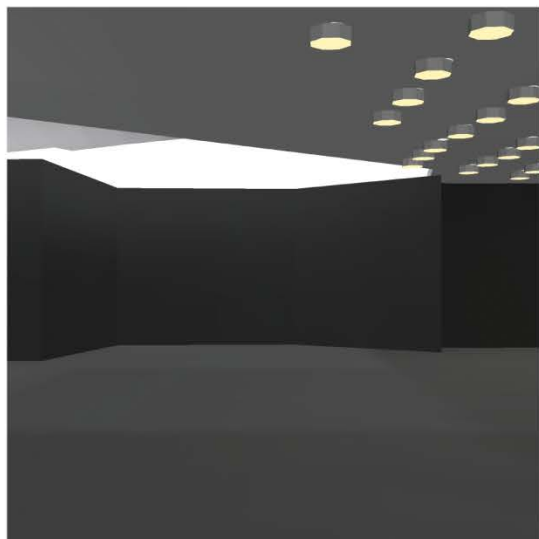
solar gain value of 0,32 and 61% transmission of glazing

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

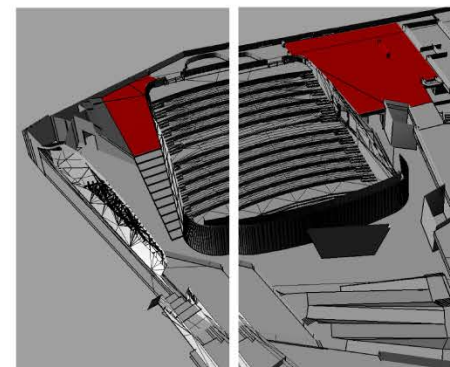




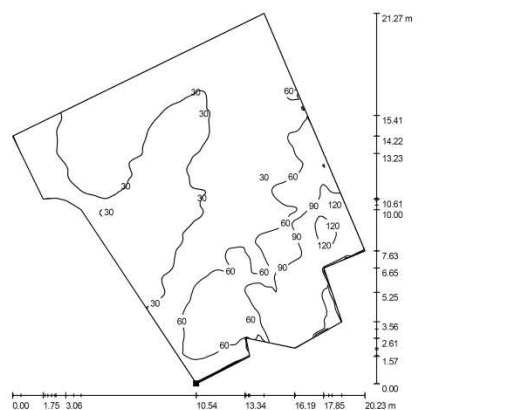
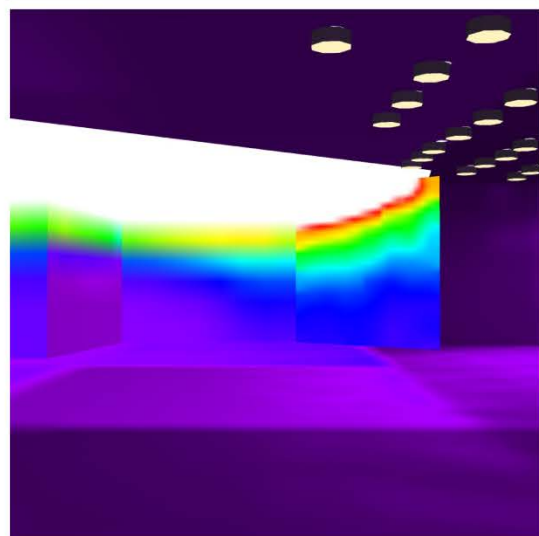
daylight analysis SZDLC - all values calculated for September 21 at 12:00 at 0,75 m above floor - external illuminance under clear sky with sun 17.000 lx



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

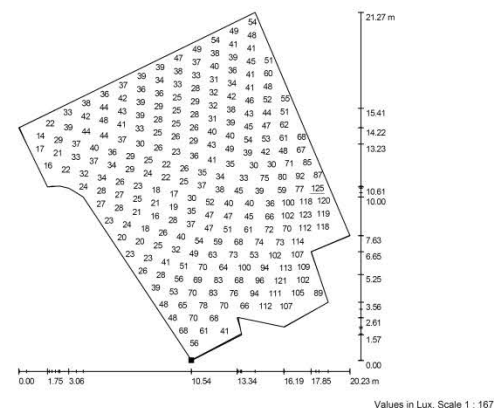


Foyer and queuing areas



Grid: 128 x 128 Points

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



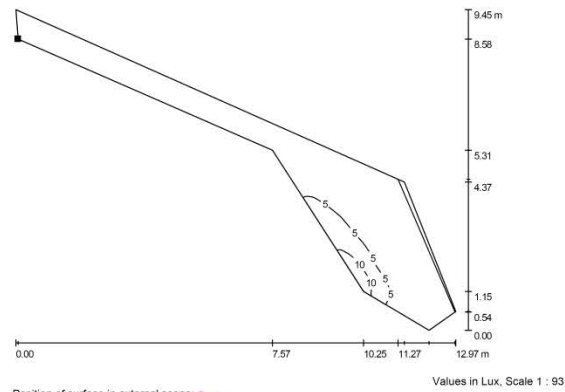
Not all calculated values could be displayed.

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

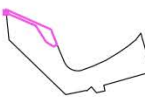
Grid: 128 x 128 Points

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

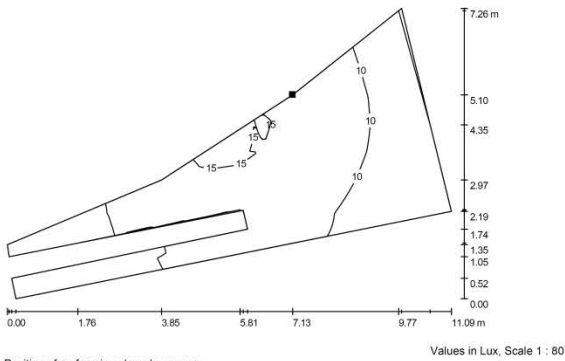
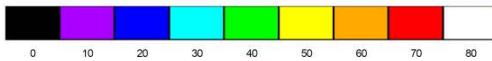
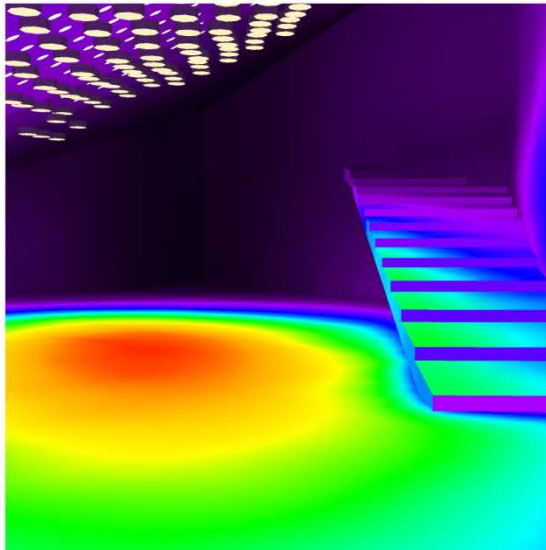


Position of surface in external scene:
Marked point:
(-37.211 m, 15.114 m, 0.750 m)



Grid: 128 x 128 Points

$E_{av} [lx]$	$E_{min} [lx]$	$E_{max} [lx]$	u_0	E_{min} / E_{max}
2.81	1.24	14	0.443	0.088

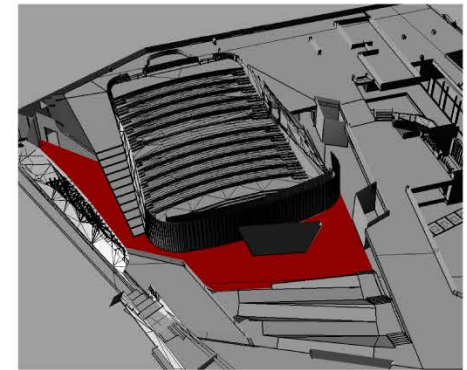


Position of surface in external scene:
Marked point:
(-4.854 m, 5.158 m, 0.750 m)

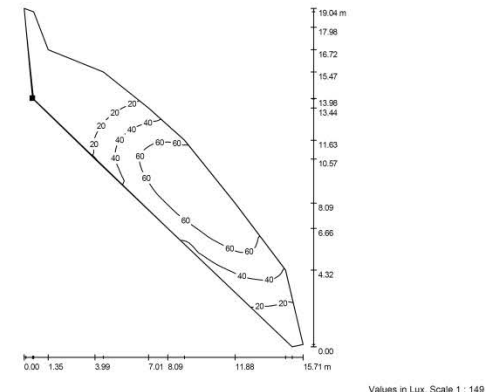


Grid: 128 x 128 Points

$E_{av} [lx]$	$E_{min} [lx]$	$E_{max} [lx]$	u_0	E_{min} / E_{max}
11	5.72	16	0.533	0.361



Queuing areas



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



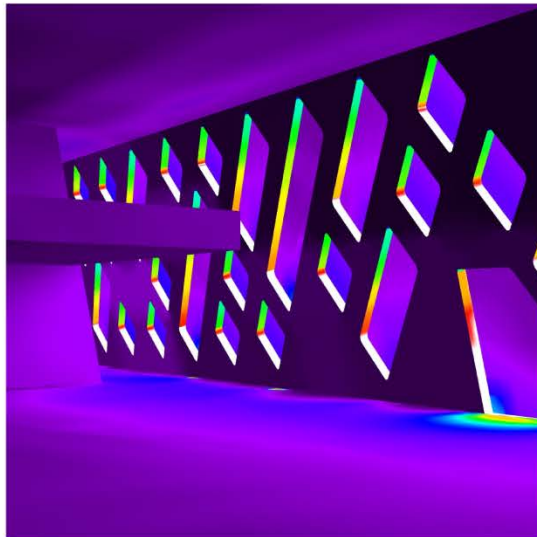
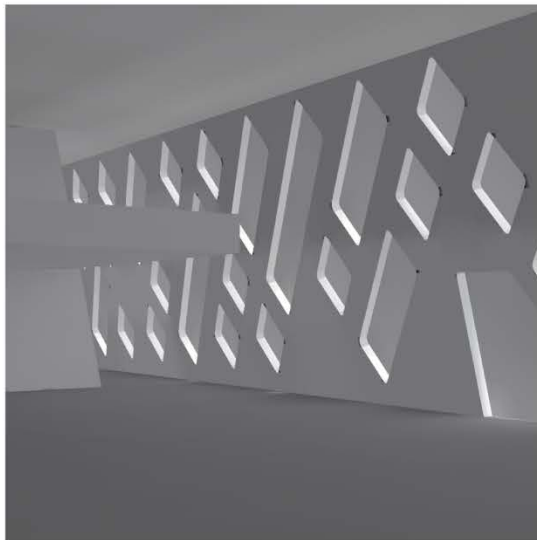
Grid: 128 x 128 Points

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

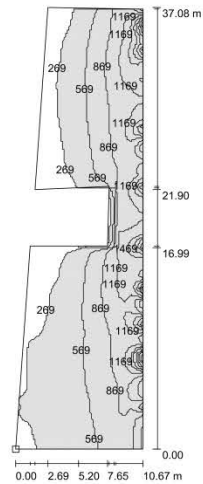
**Bartenbach
L'chtLabor**



Sheikh Zayed Desert Learning Center



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

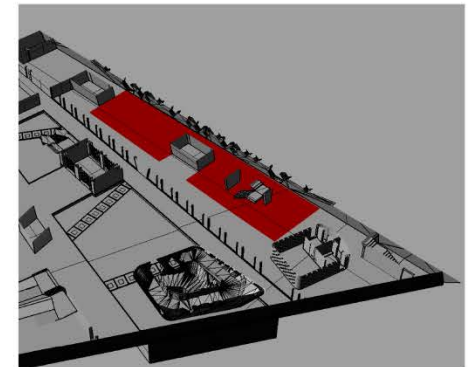


Solar gain value of glazing 0,32
Light transmission of glazing 0,61

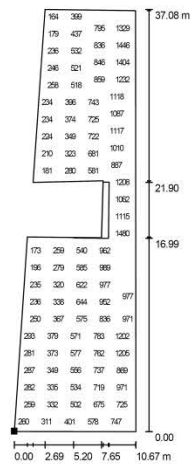
Total are of permanently occupied spaces =
314,5 m²

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



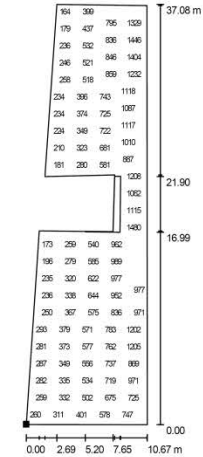
Not all calculated values could be displayed.

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]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
668	133	3254	0.200	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)

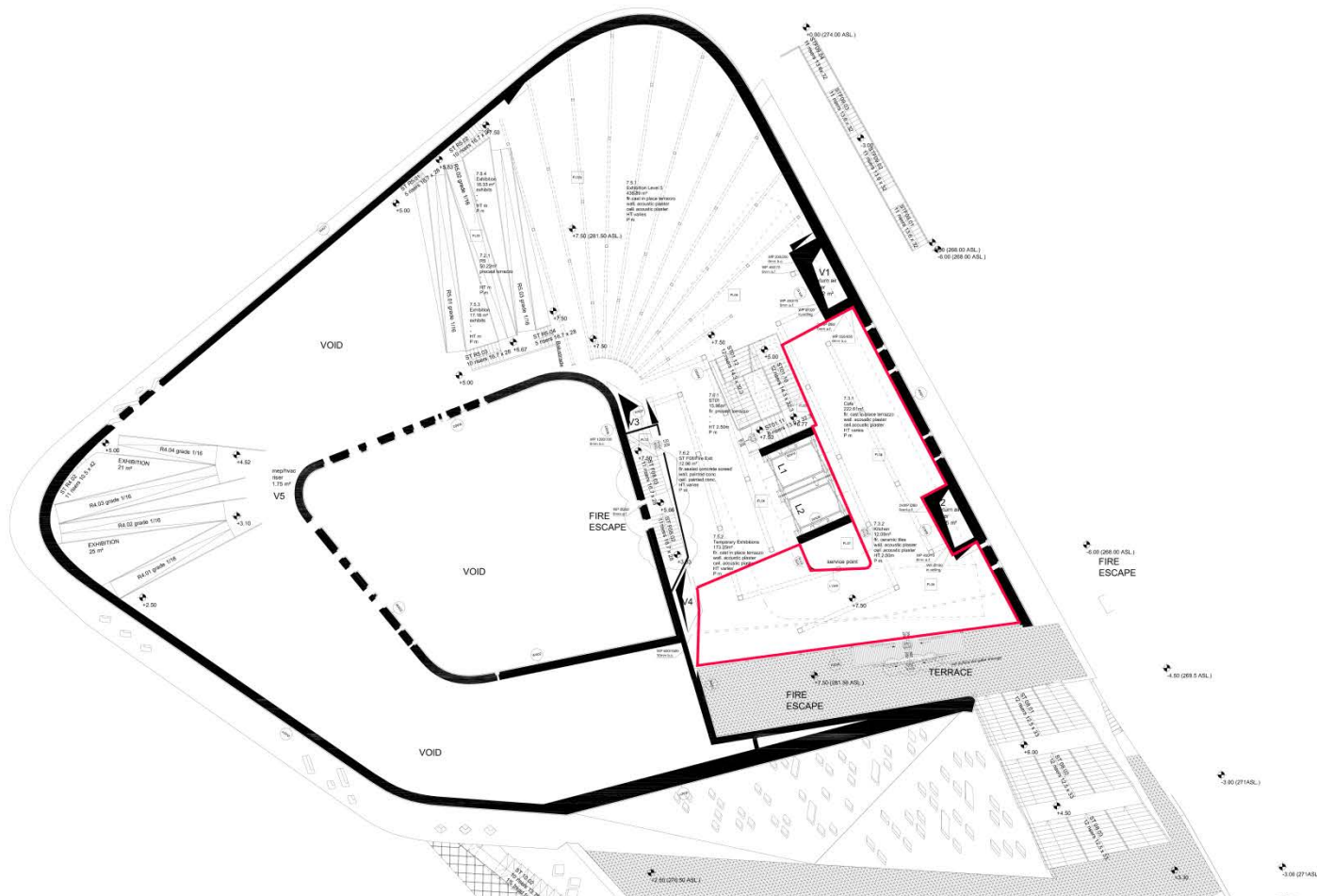


Grid: 21 x 74 Points

E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
668	133	3254	0.200	0.041



cafeteria at + 7.50 with 229.6 m²





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 [m²]	surface in regularly occupied space with illuminance levels above/equal 269 lx (25 fc) [m²]
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 [m²]		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

[illegible]



Sheikh Zayed Desert Learning Center

[illegible]

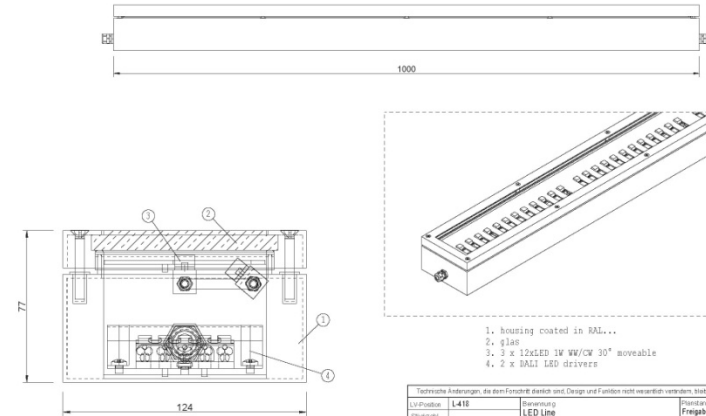
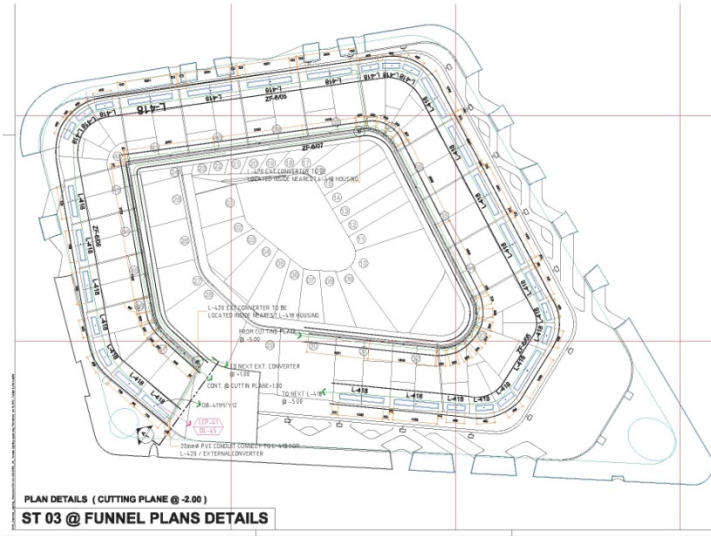




[illegible]

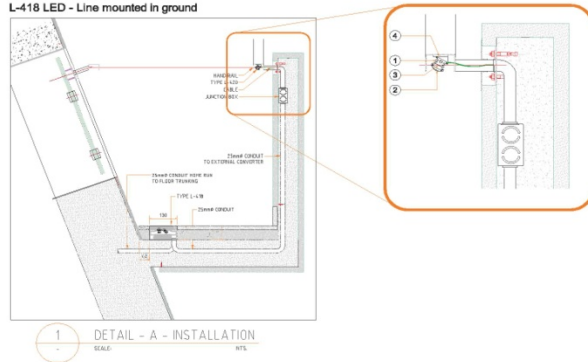
				SITE PLAN 1:1000			
CLIENT: Bartenbach LchLabor 2000 West 10th Avenue Suite 100 Denver, CO 80202 Tel: +1 303 438-6800 Fax: +1 303 438-6801 Email: info@lchlabor.com				DATE: _____ SIGNATURE: SIGNATURE			
ARCHITECT: Chalahabi chitects partners LLC 1000 West 10th Avenue Suite 100 Denver, CO 80202 Tel: +1 303 822 18 18 Email: info@chalahabi.com				DATE: _____ SIGNATURE: SIGNATURE			
CONSULTANT OF RECORD: SHANKLAND COX & ASSOCIATES 1000 West 10th Avenue Suite 100 Denver, CO 80202 Tel: +1 303 822 18 18 Email: info@shanklandcox.com				DATE: _____ SIGNATURE: SIGNATURE			
PROGRESS INFORMATION: SHANKLAND COX & ASSOCIATES 1000 West 10th Avenue Suite 100 Denver, CO 80202 Tel: +1 303 822 18 18 Email: info@shanklandcox.com				DATE: _____ SIGNATURE: SIGNATURE			
CLIENT: Al An Wildlife Park & Resort P.O. Box 45555, Alaha, UAE Tel: +971 2 822 91 71 Fax: +971 2 822 91 72 Email: info@alanhospital.com				DATE: _____ SIGNATURE: SIGNATURE			
PROJECT: SZDCL Sheikh Zayed Desert Learning Center				DATE: _____ SIGNATURE: SIGNATURE			
DISCIPLINE: ARCHITECTURE		STATUS: CONSTRUCTION DOCUMENTATION		CONTRACTOR: CONSTRUCTION DOCUMENTATION			
CONTRACT TYPE: Lump Sum		DATE: 2018.05.24		REVISION: 01			
CONTRACT VALUE: 1,150.00 AED		DATE: 2018.05.24		REVISION: 01			

CONSTRUCTION In Progress Funnel Floor Lighting



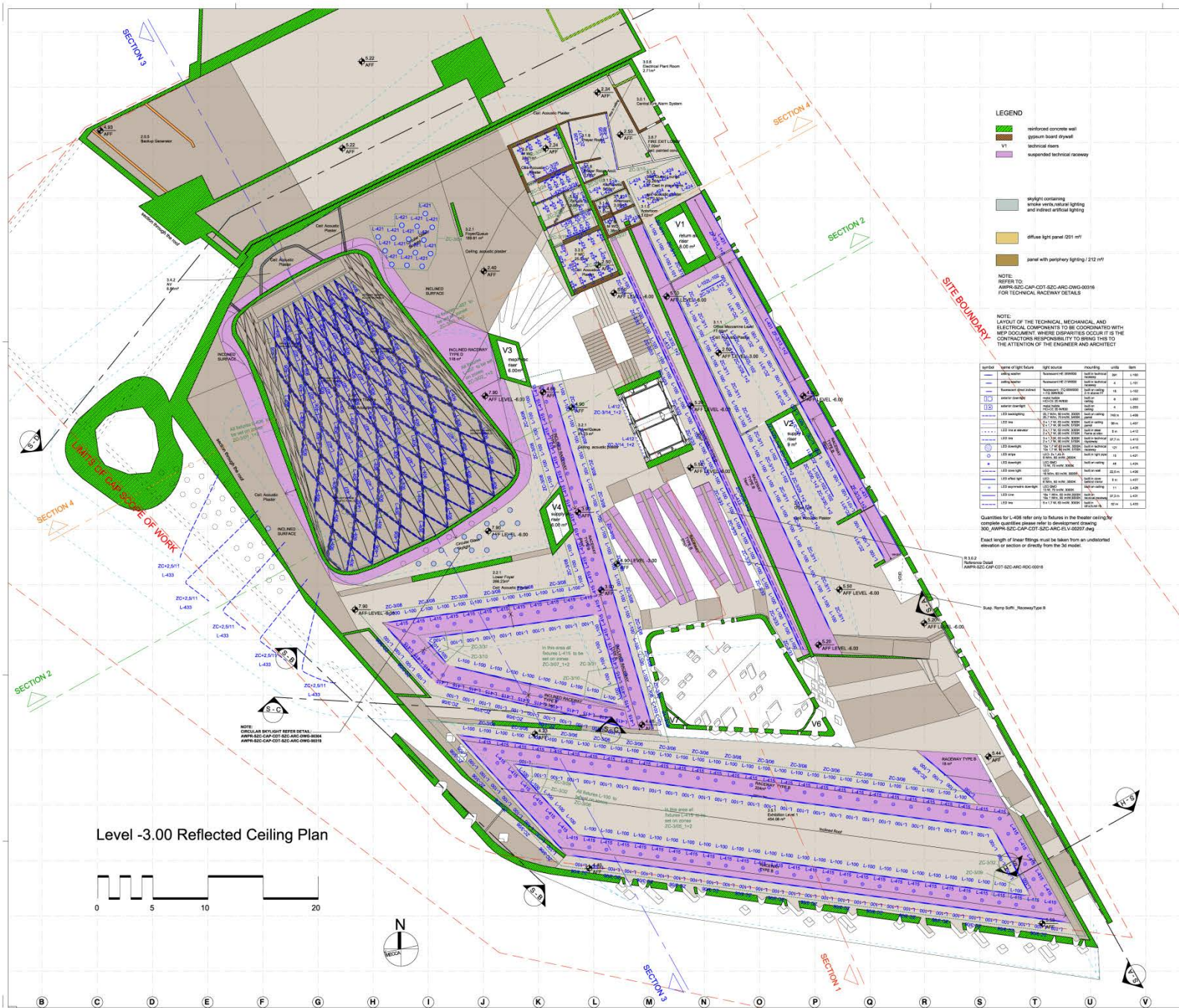
Technische Änderungen, die dem Fortschritt dienen und Design und Funktion nicht wesentlich verändern, bleiben dem Hersteller vorbehalten.	
Leuchte	L-418
Stromkreis	LED Line
Leuchtmittel	
Projekt	Freigeberschreibung
Projekt	Sheikh Zayed Desert Learning Center
Auftraggeber	Arbeitsnummer
Datum	17.04.2011
Gezeichnet	17.04.2011
Geprüft	17.04.2011
Freigegeben	17.04.2011

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





Sheikh Zayed Desert Learning Center

[illegible]

SITE KEY PLAN:



SUB-CONSULTANT: **Bartenbach LichtLabor GmbH**
Bartenbach LichtLabor GmbH
Rhein-Strasse 14
A - 3071 Alzenau / Vösendorf
Tel.: +43 (0)612 3336-0
Fax: +43 (0)612 3336-88

Chelabioarchitectorum, 1998

Registered Architects Partners
 UG 10, ATU 62487045 - FN 277036
 Unterluganweg 6/13, 1070, Austria
 Tel: +43 (0)1 532 79 52
 Fax: +43 (0)1 522 95 19
 mail: office@chabot.at, www.chabot.at

DATE	SIGNATURE AND TITLE

CONSULTANT OF RECORD
SHANKLAND AND COX®

NO fee BICE NO fee ADRK NO fee DICE

doi:10.1002/lmbd	doi:10.1002/lmbd	doi:10.1002/lmbd
1-877-375-6349	1-877-375-6349	1-877-375-6349
www.blackwell-science.com	www.blackwell-science.com	www.blackwell-science.com

DATE	SIGNATURE CONSULTANT
------	----------------------

PROGRAM MANAGERS:

CH2MHILL International Ltd.
P.O.Box 86505, Al Ain Abu Dhabi, UAE

Tel: +971 3 782 0754
Fax: +971 3 780 6835  CH2NHILL

DATE	SIGNATURE PROGRAM MANAGER
------	---------------------------

CLIENT: **Al Ain Wildlife Park & Resort**

P.O. Box 45553, Abu Dhabi, UAE

Tel: +971 2 632 9117
Fax: +971 2 634 1220

Name: _____

PROJECT	
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SZDLC

Sheikh Zayed

Desert Learning Center

DISCIPLINE:	ARCHITECTURE	STATUS:	CONSTRUCTION
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PROJ. PHASE:	CONSTRUCTION DOCUMENTATION
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DRANTED No:	202_AWPR-SZC-CAP-COT-SZC-ARC-RDC-00018
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Drawings TITLE:	Level -3.00 Reflected Ceiling Plan
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DRAWN BY:	HJ	SCALE:	1:100
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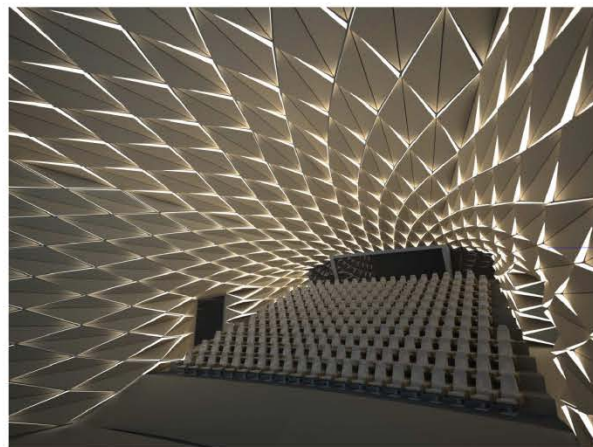
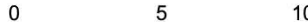
CHECKED BY:	JH	SHEET SIZE:	1189 x 914 mm

ELEVATION:	+ 0.00 = 274 ASL	DATE:	29.07.2019
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SHEET: ...	REVISION: 03
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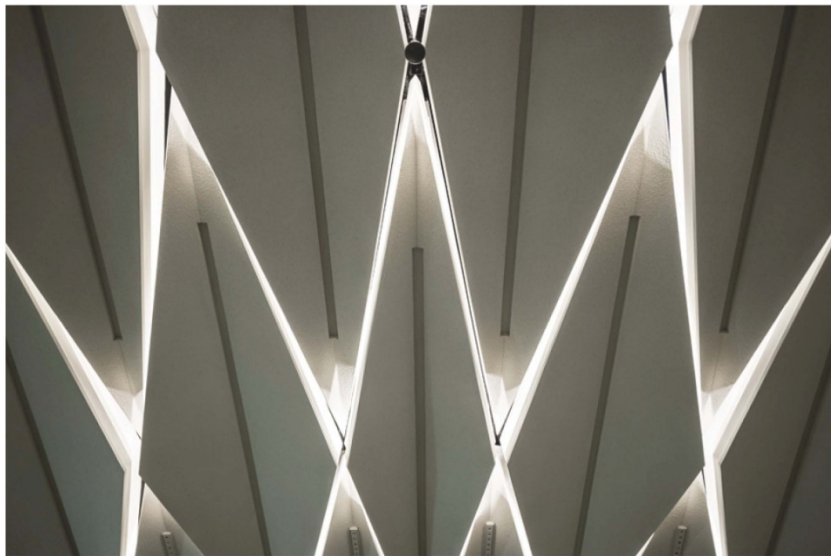
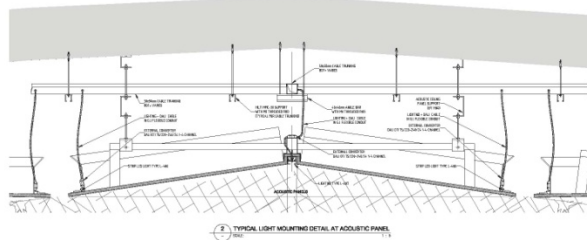
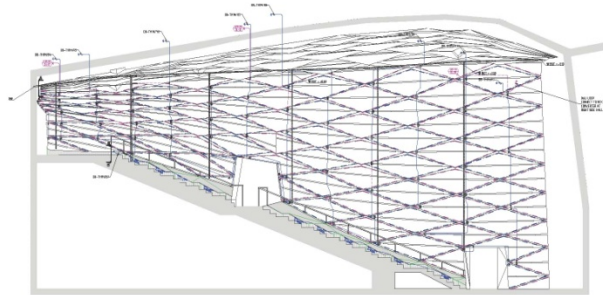
Learning C

Learning C

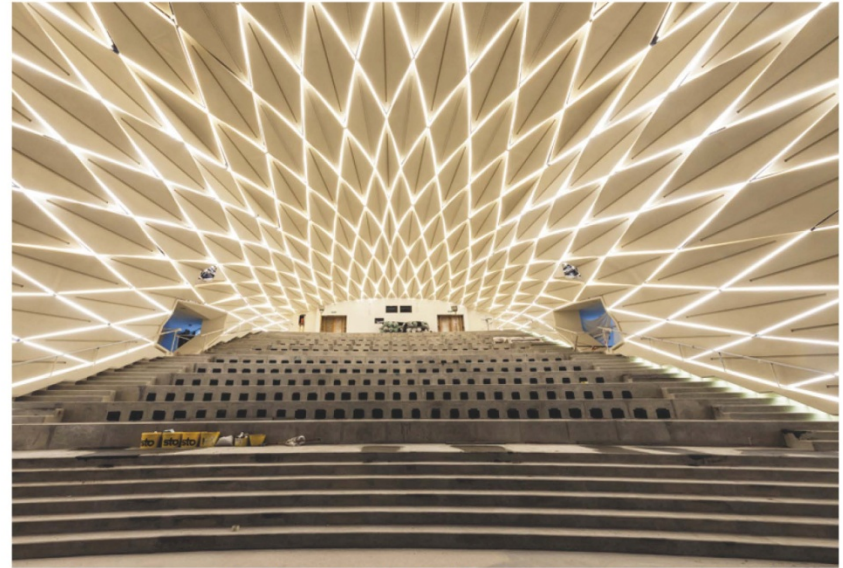


- LED stripes are to be placed around contours of every panel.

[illegible]



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



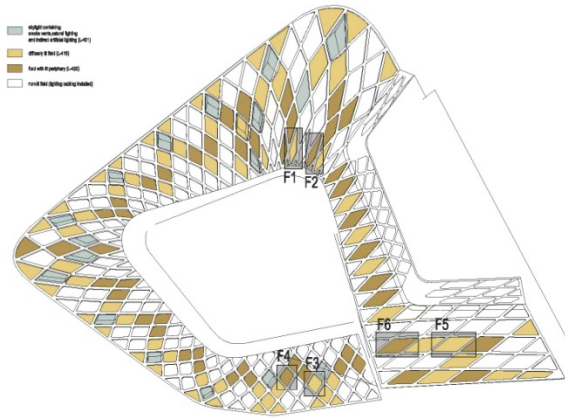
Sheikh Zayed Desert Learning Center



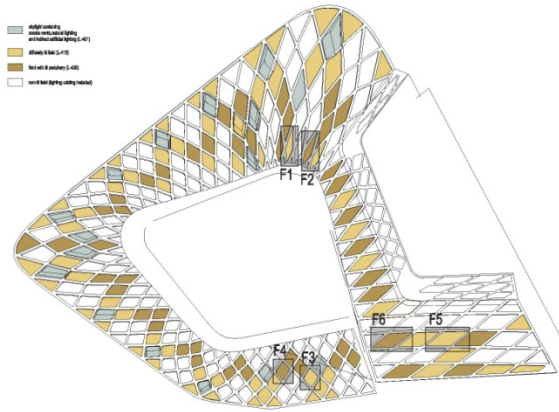
-  skylight containing smoke vents, natural lighting and indirect artificial lighting
-  diffuse light panel / 201 m²
-  panel with periphery lighting / 212 m²
-  position for additional skylights
-  skylights should be shifted to new position

[illegible]

DESIGN Main Tube Waffle Lighting



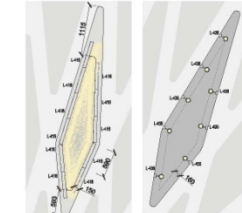
tube lighting layout M 1:300



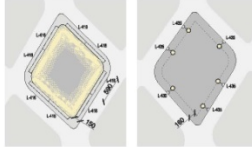
tube lighting layout M 1:300

- solid concrete
- waffle structure lighting
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)

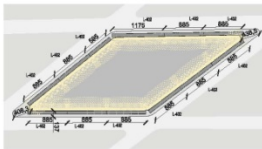
- solid concrete
- waffle structure lighting
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)
- waffle structure lighting (L=400)



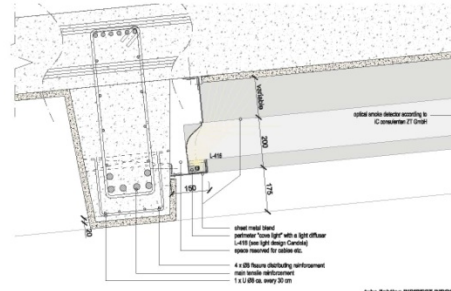
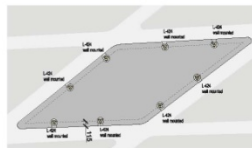
tube lighting layout in fields F1 and F2 M 1:50



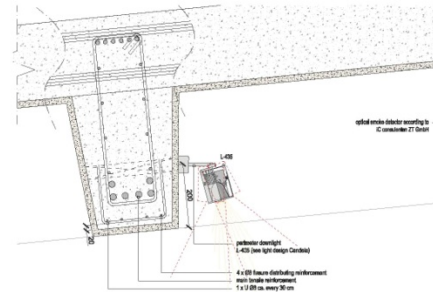
tube lighting layout in fields F3 and F4 M 1:50



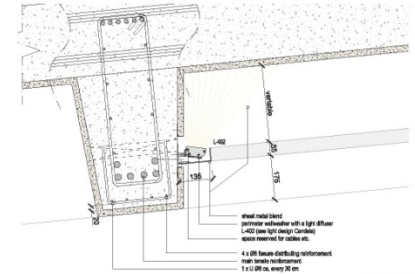
tube lighting layout in fields F5 and F6 M 1:50



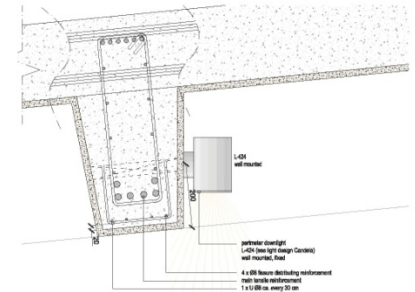
tube lighting CORRECT INDOOR



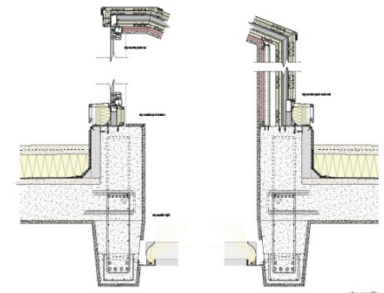
tube lighting CORRECT IN



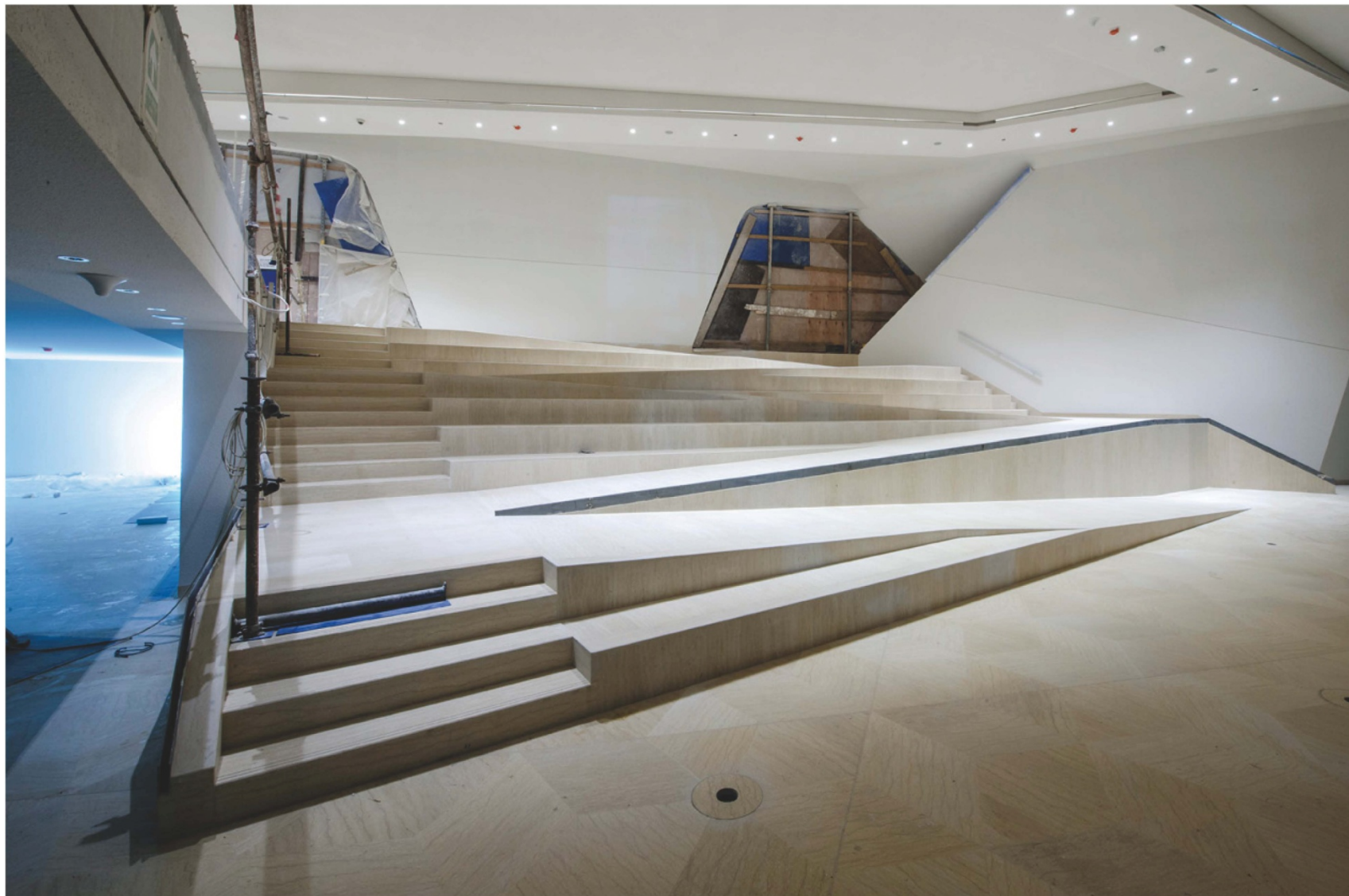
tube lighting



tube lighting



tube lighting

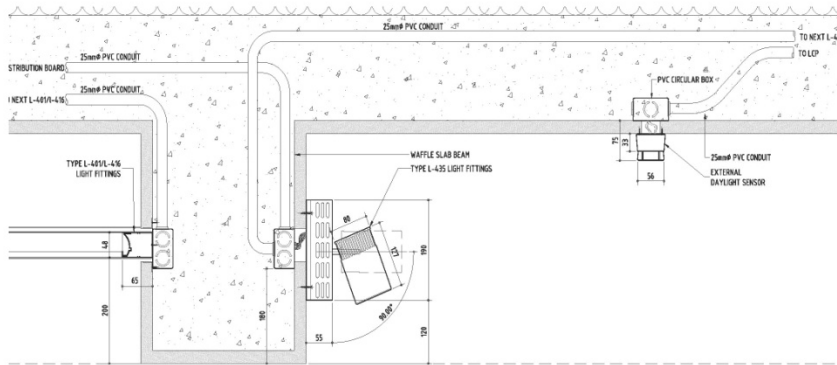


CAP



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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

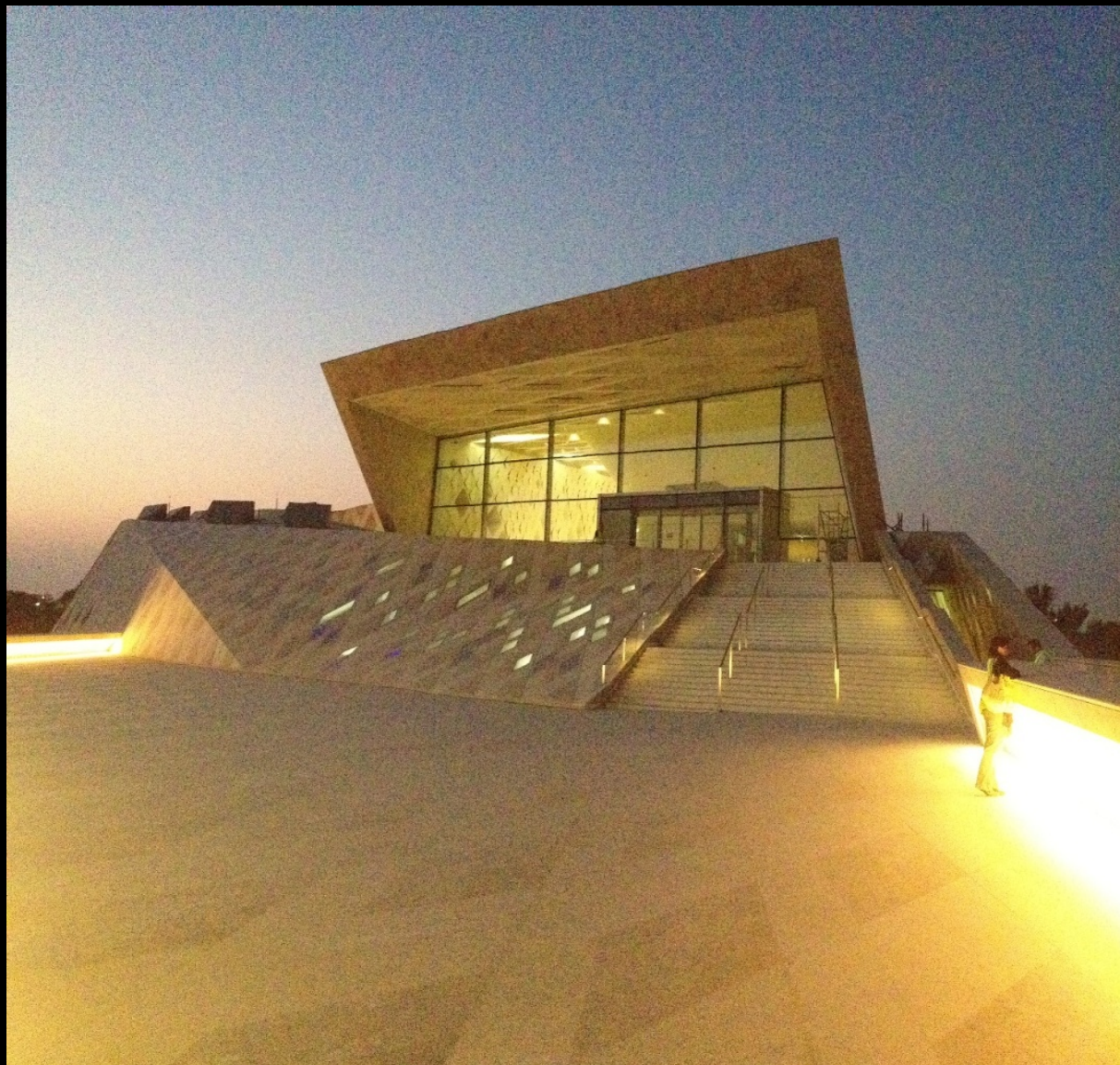


LIGHTING FIXTURE TYPE L-401, L-416 & L-435 AND DAYLIGHT SENSOR
AT WAFLE SLAB TYPICAL MOUNTING DETAIL





Sheikh Zayed Desert Learning Center

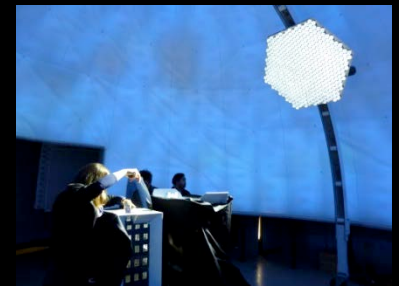


Sheikh Zayed Desert Learning Center



Sheikh Zayed Desert Learning Center

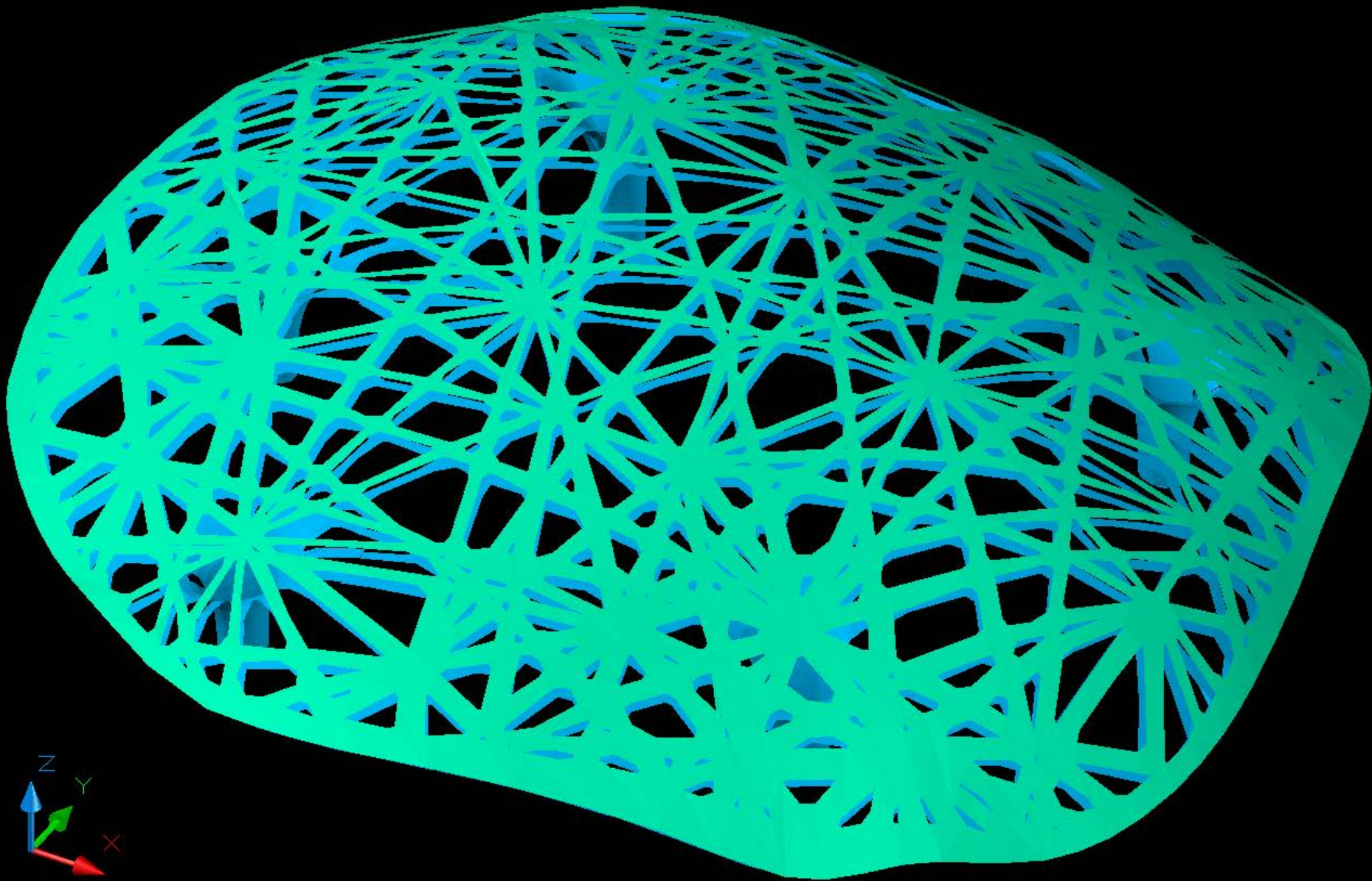
Tageslicht –
ist effizient direkt wirksam eingesetzt



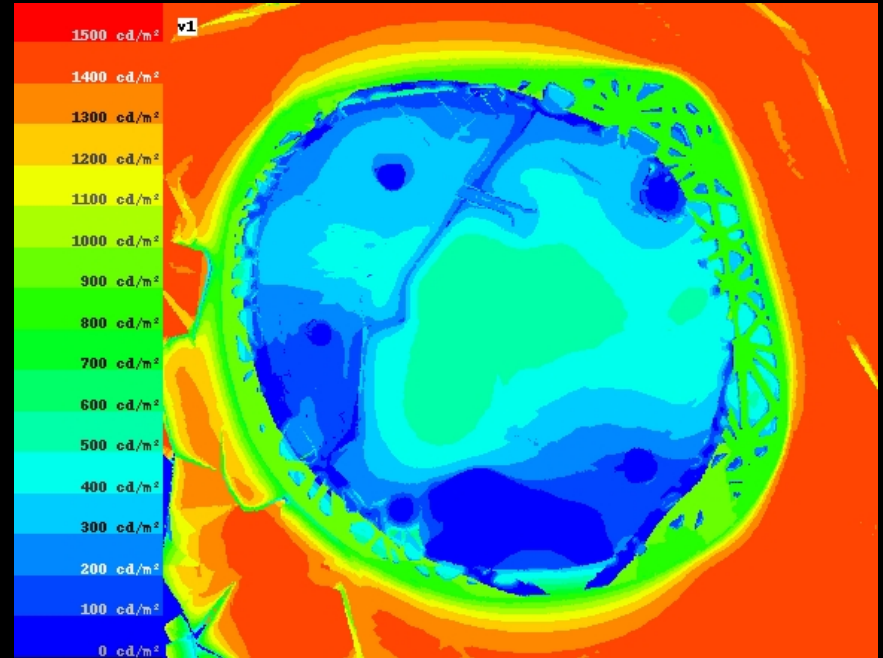
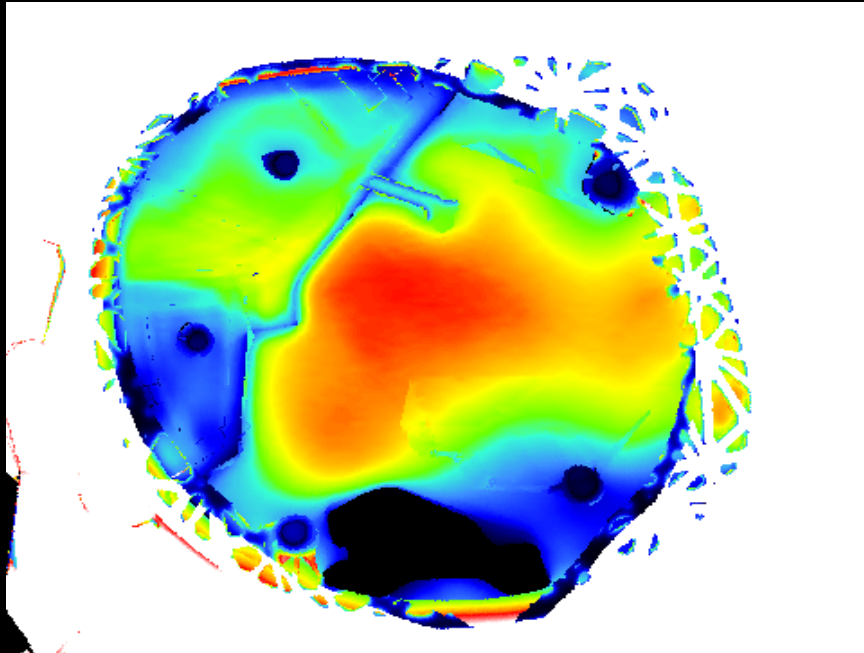
Elefant house – Zoo Zürich
Architect: Schietsch Architect



Elefant house – Zoo Zürich
Architect: Schietsch Architect

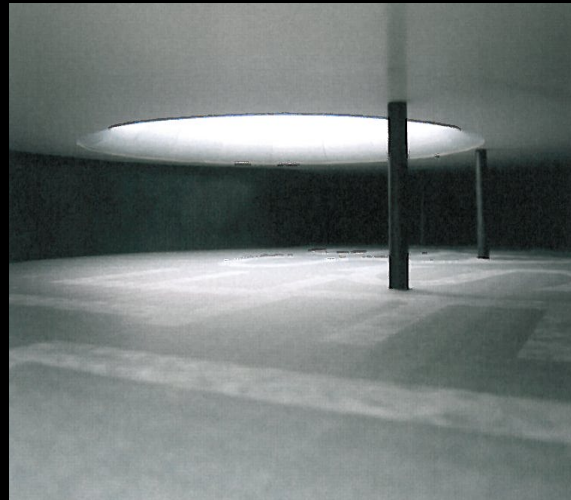
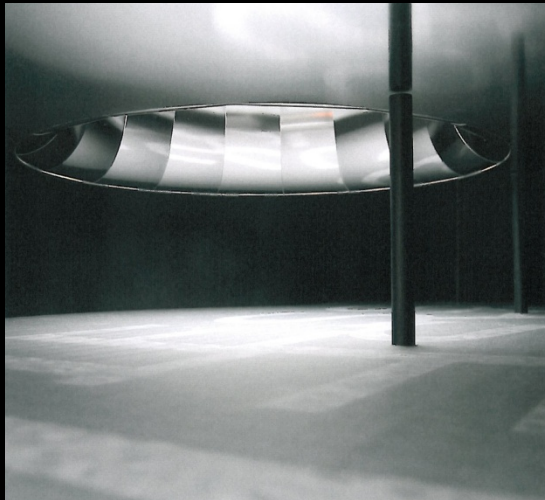
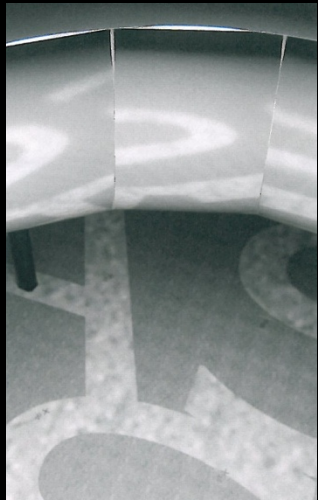
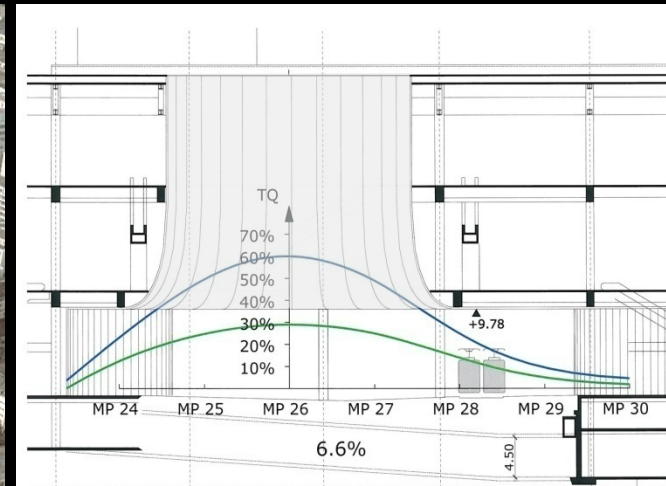
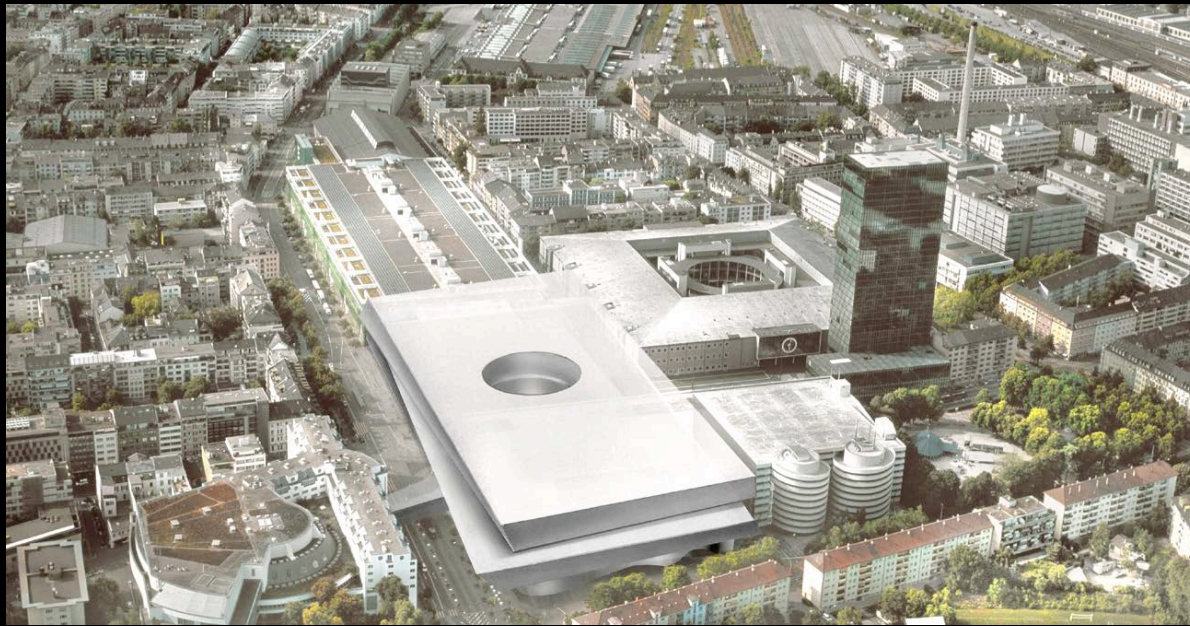


Elefant house – Zoo Zürich
Architect: Schietsch Architect



Exhibition Center, Basel

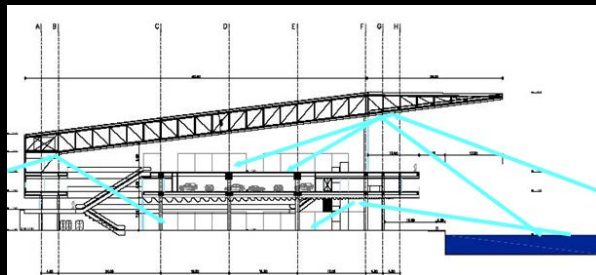
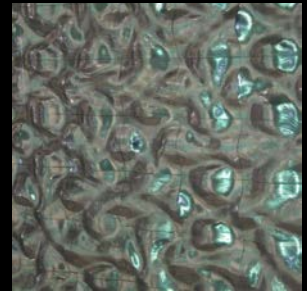
Architect: Herzog de Meuron



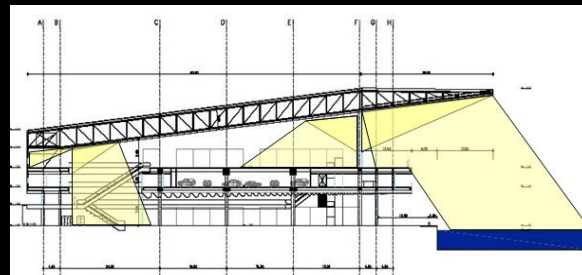
Exhibition Center, Basel
Architect: Herzog de Meuron



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



daytime



nighttime

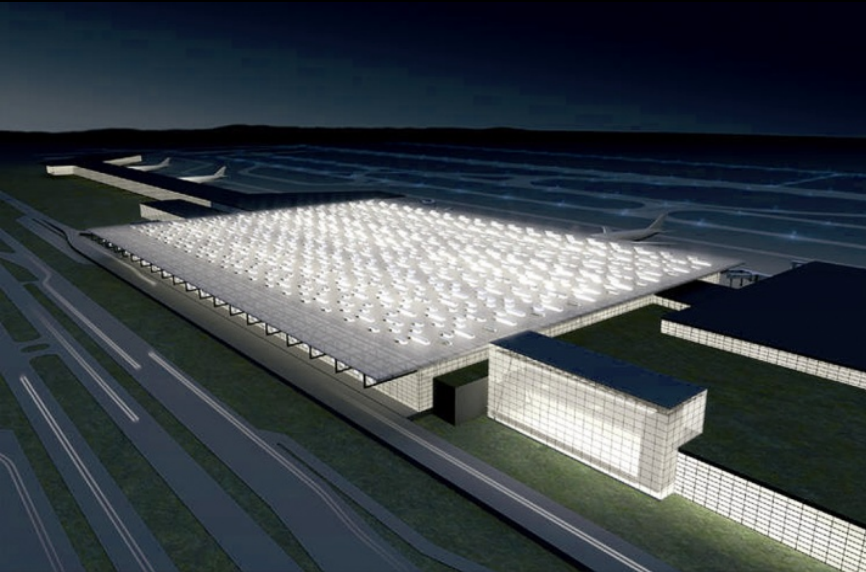


Fiera di Genova, Italy
Architect: Jean Nouvel, (I)



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

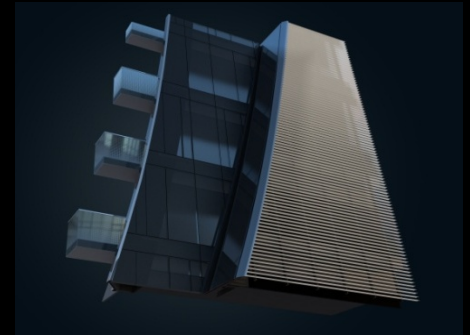
King Abdullah Financial District, Riyadh

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



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

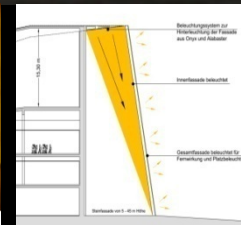
statuario venato

aphion dorato

white cloud onyx

alabaster marble

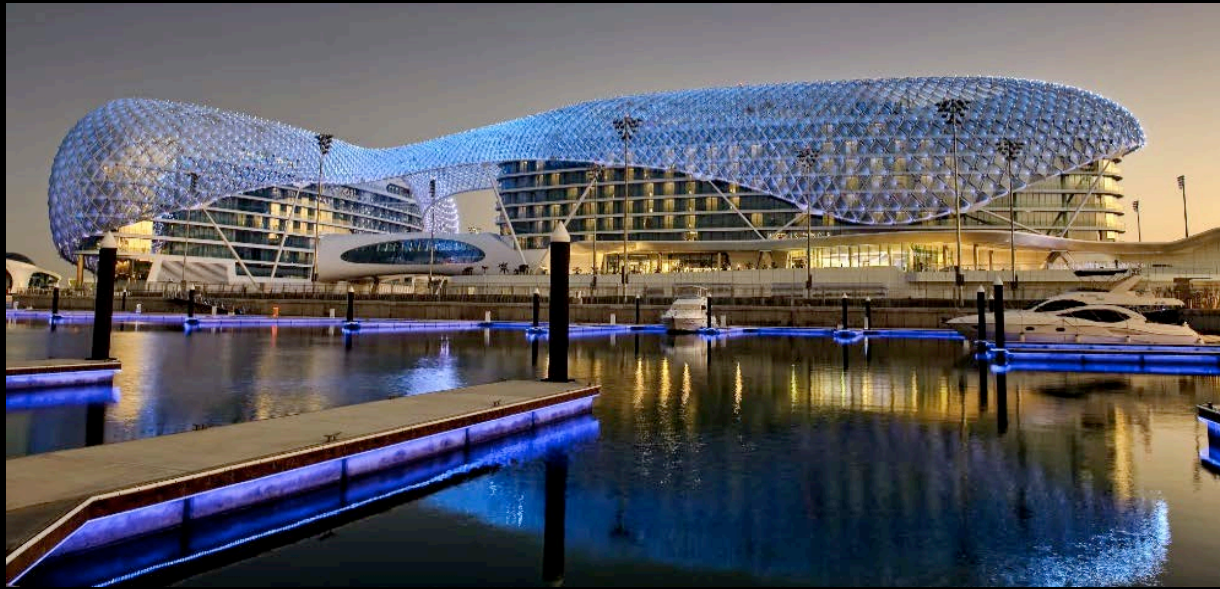
hony onyx



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



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



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Architect Asymptote Architect – New York



Sheikh Zayed Desert Learning Center

Vielen Dank für Ihre Aufmerksamkeit



Robert Müller
Head of Lighting Design

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