

Exhibition Lighting

Supplier Conference 24.01.2024



LIGHTING CONCEPT
DYNAMIC DESIGN
3.000 K - 5.700 K

Lighting Principals: Colour contrast



LIGHTING CONCEPT
DYNAMIC DESIGN
3.000 K - 5.700 K



LIGHTING CONCEPT
DYNAMIC DESIGN

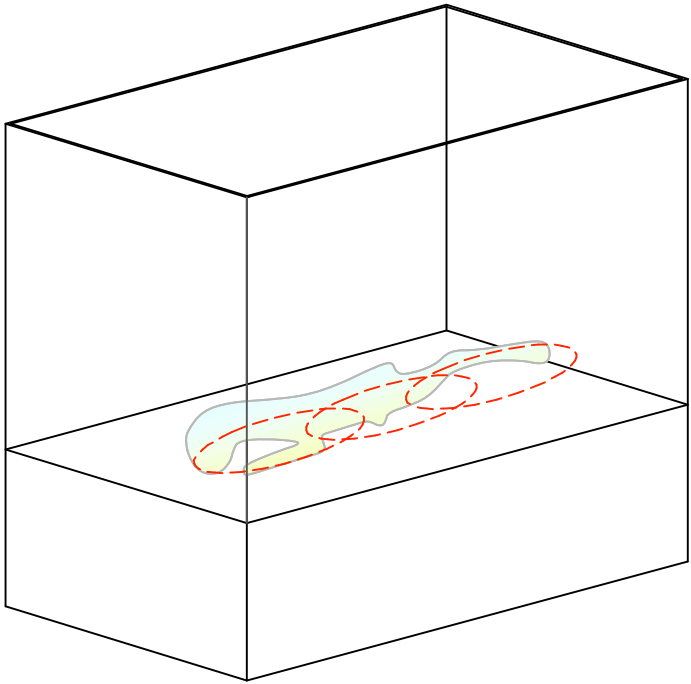
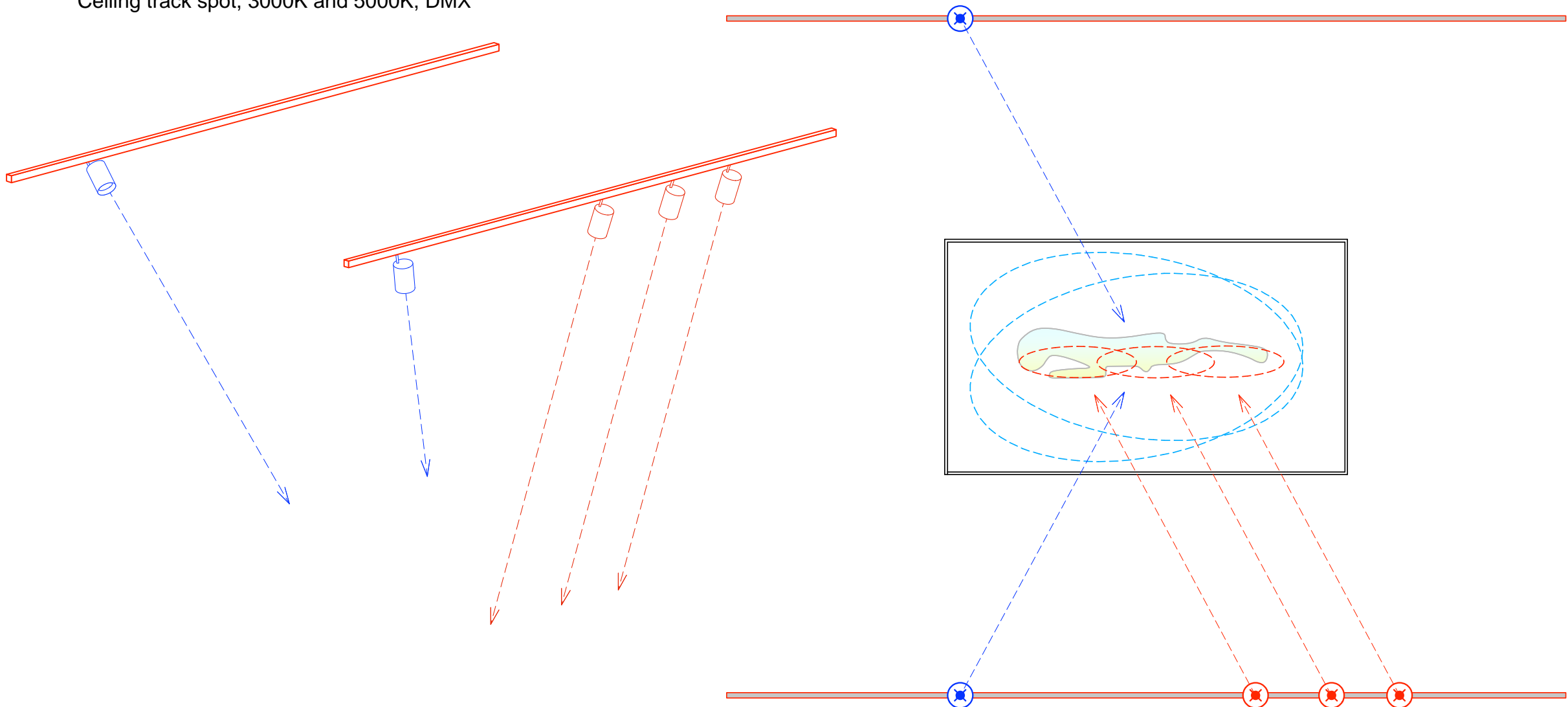
Lighting Principals: Brightness



LIGHTING CONCEPT

LIGHTING PRINCIPLES_STAND ALONE GLASS SHOWCASE

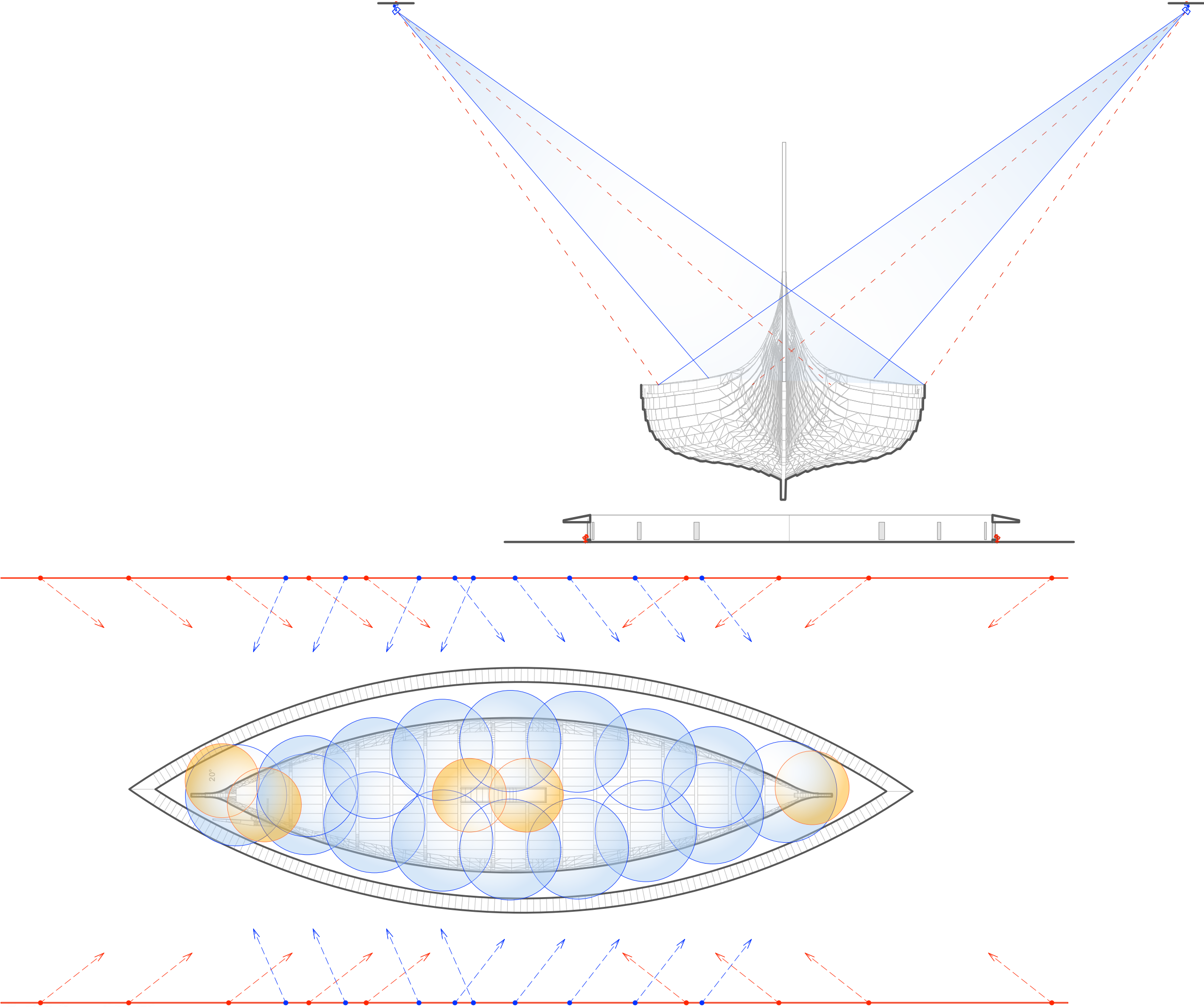
Ceiling track spot, 3000K and 5000K, DMX



LIGHTING CONCEPT

LIGHTING THE SHIPS_CEILING LIGHTS

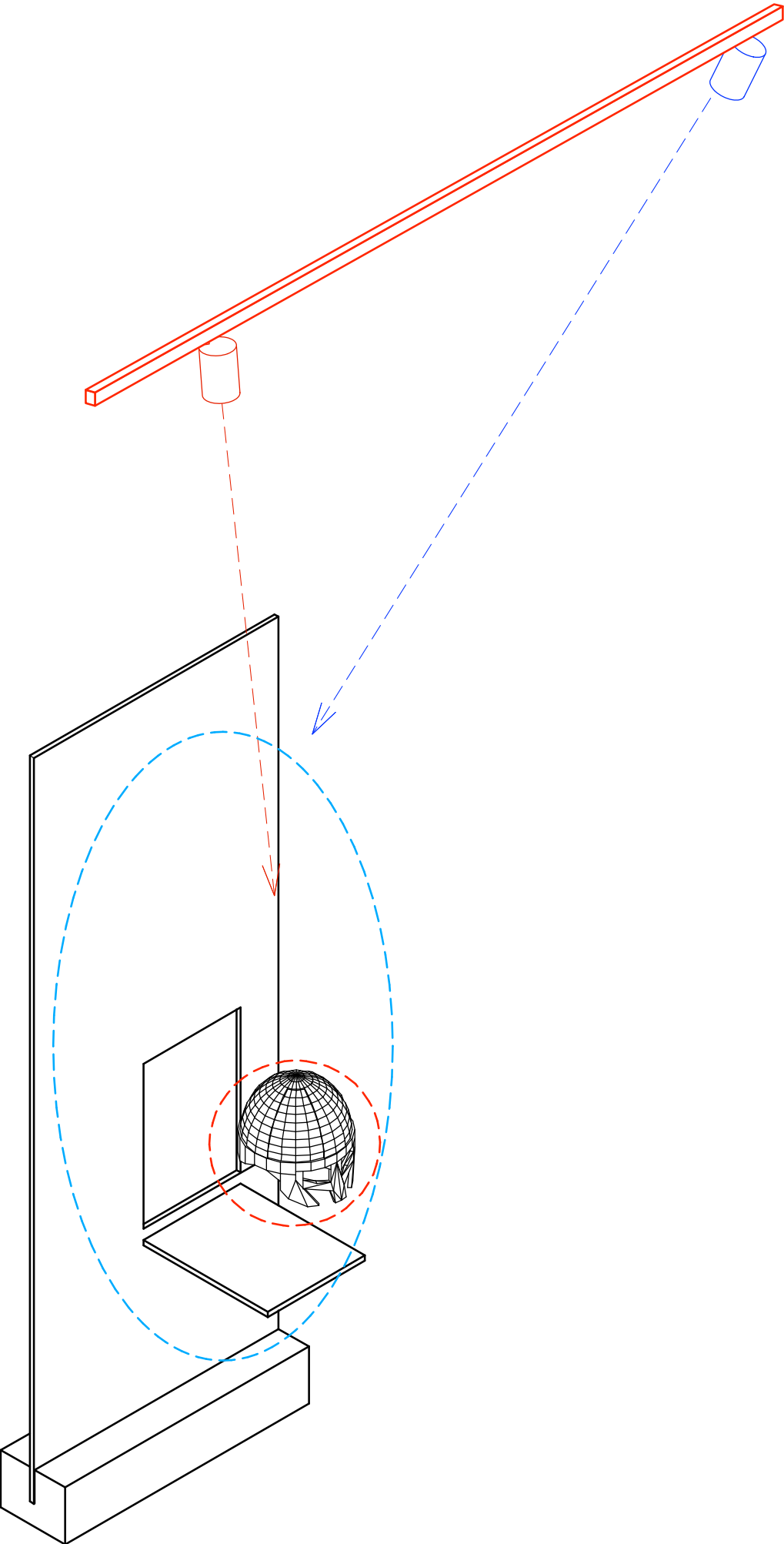
Ceiling track spot, 3000K and 5000K, DMX



LIGHTING CONCEPT

LIGHTING PRINCIPLES_STAND-ALONE PANEL WITH EXHIBIT

Ceiling track spot, 3000K and 5000K, DMX

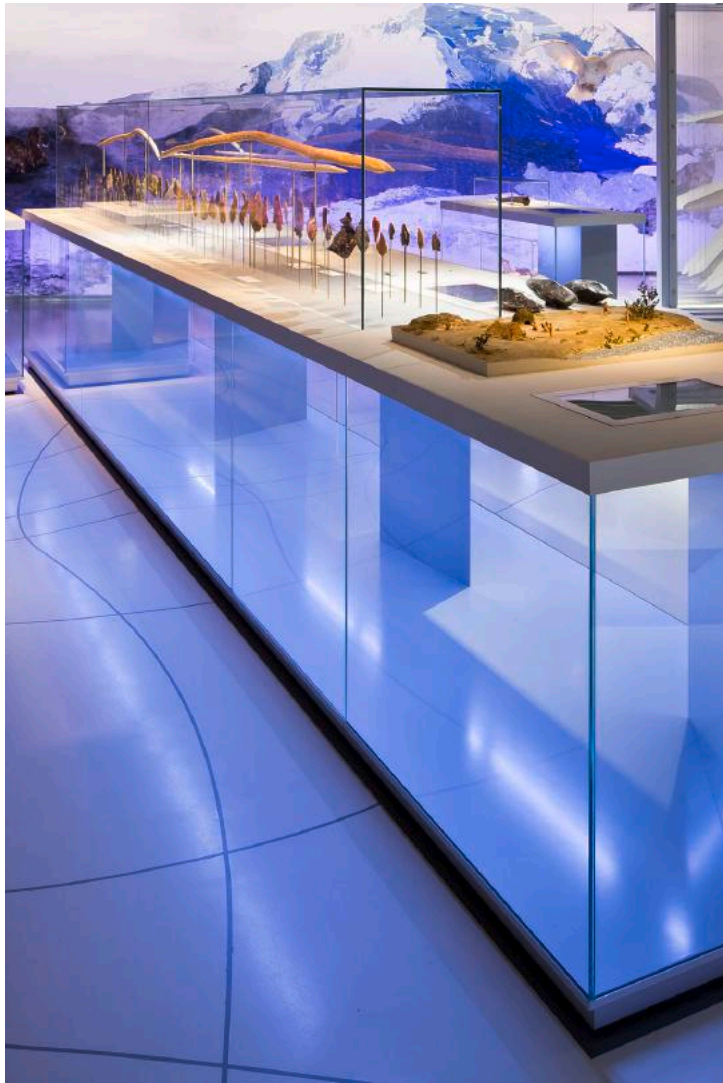
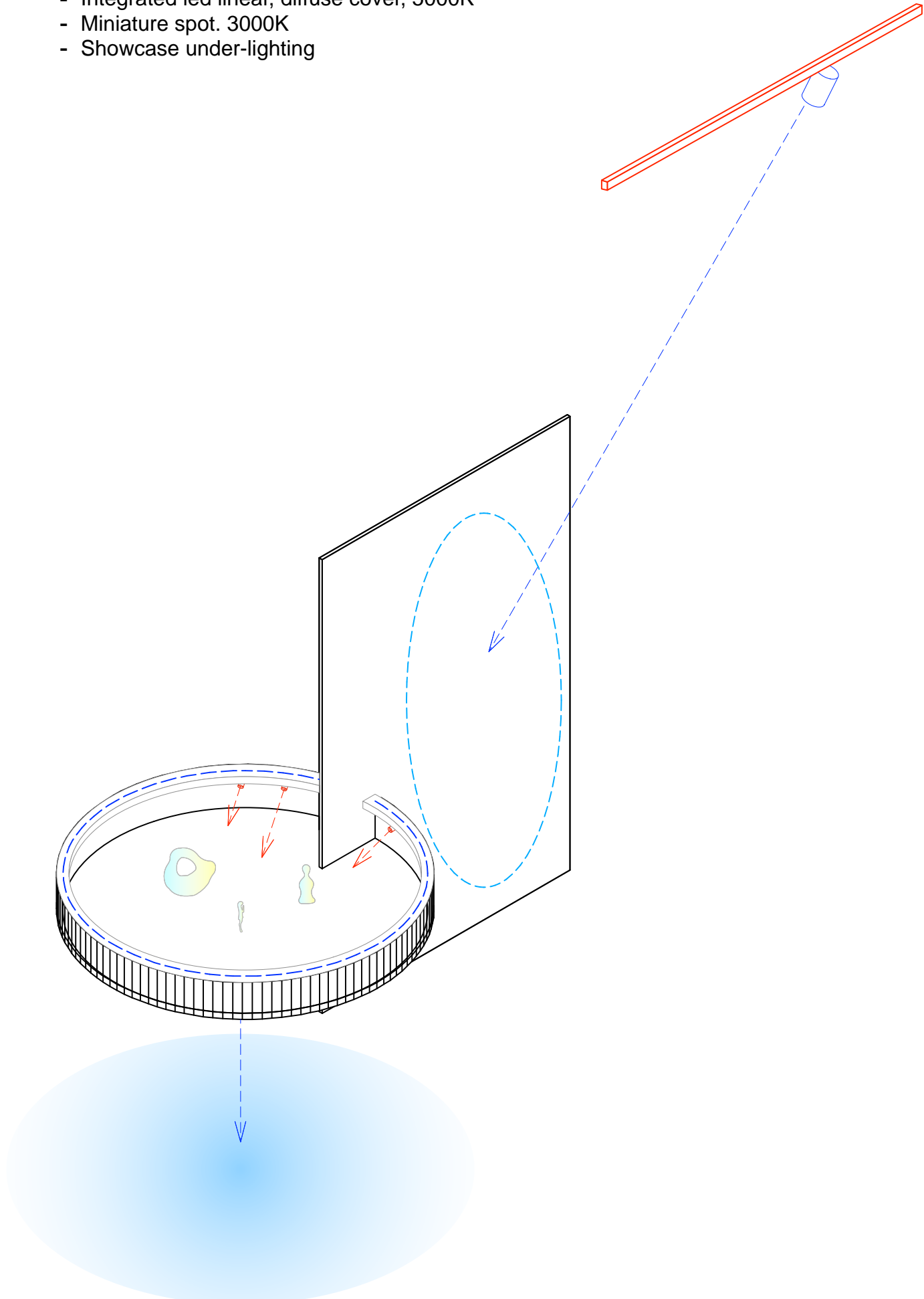


LIGHTING CONCEPT

LIGHTING PRINCIPLES_INFORMATION PANEL - ROUND SHOWCASE

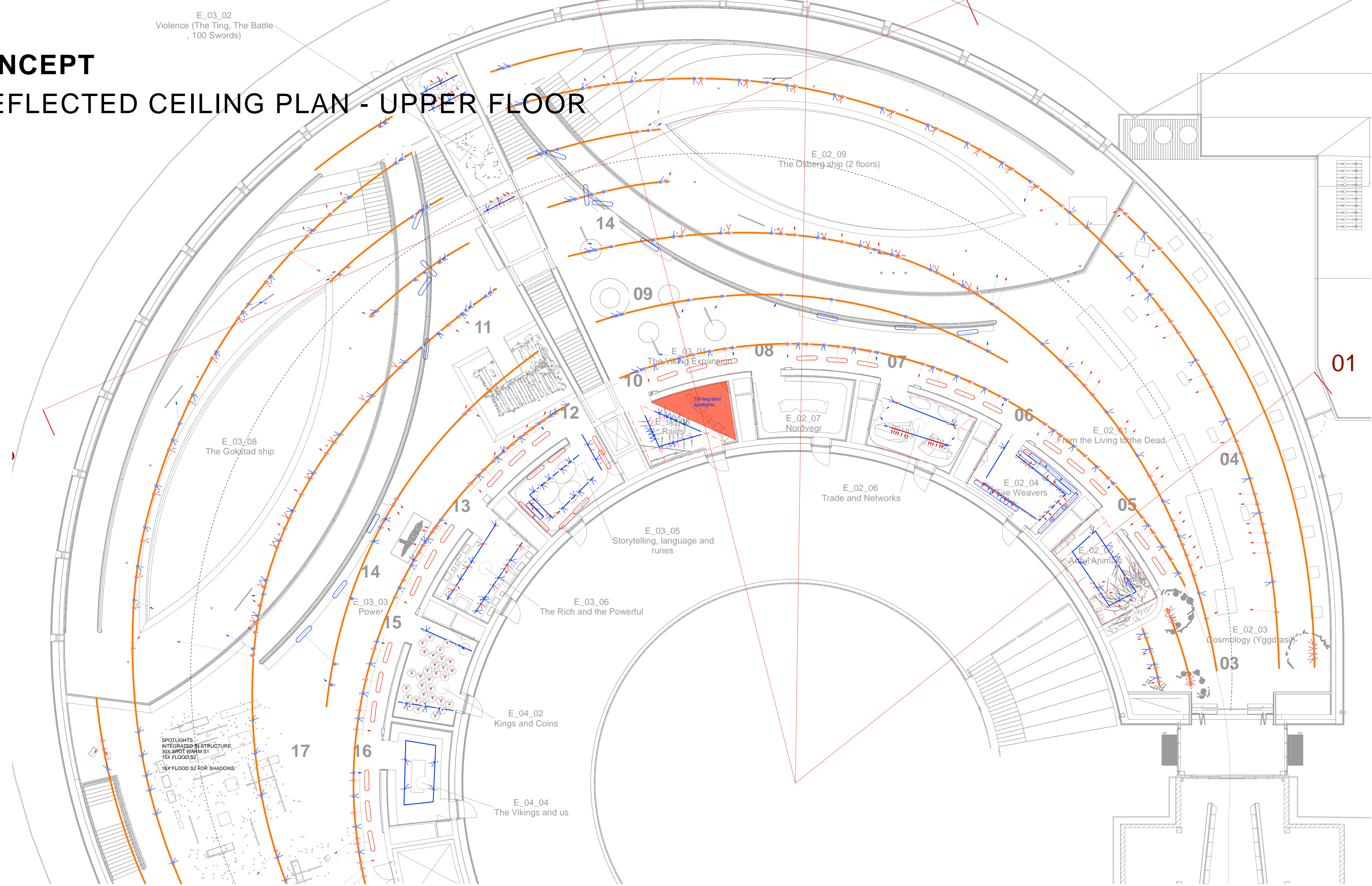
Information panel
Ceiling track spot, 3000K and 5000K, DMX

- Round showcase**
- Integrated led linear, diffuse cover, 5000K
 - Miniature spot. 3000K
 - Showcase under-lighting



LIGHTING CONCEPT

OVERALL - REFLECTED CEILING PLAN - UPPER FLOOR

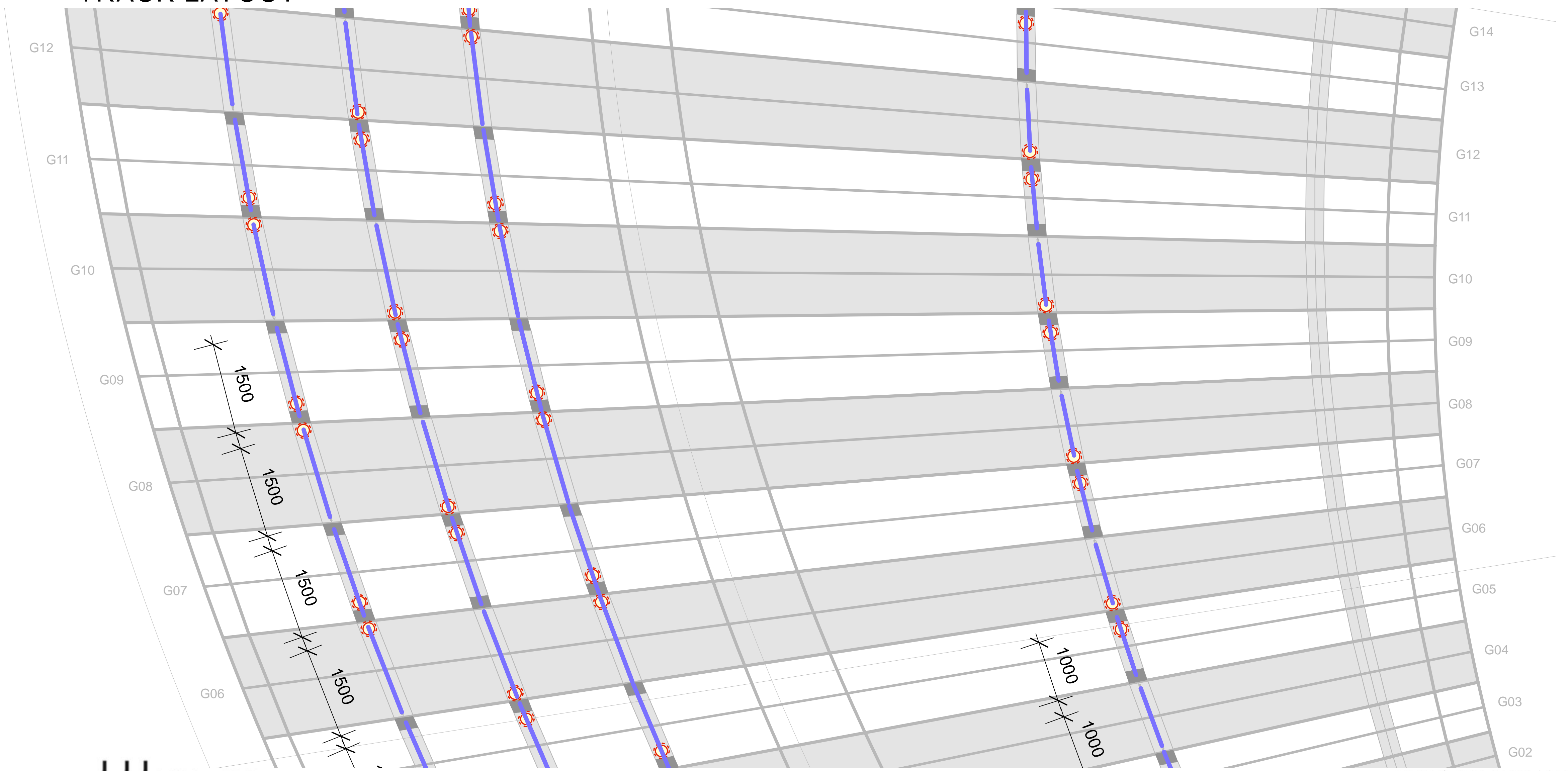


LIGHTING CONCEPT

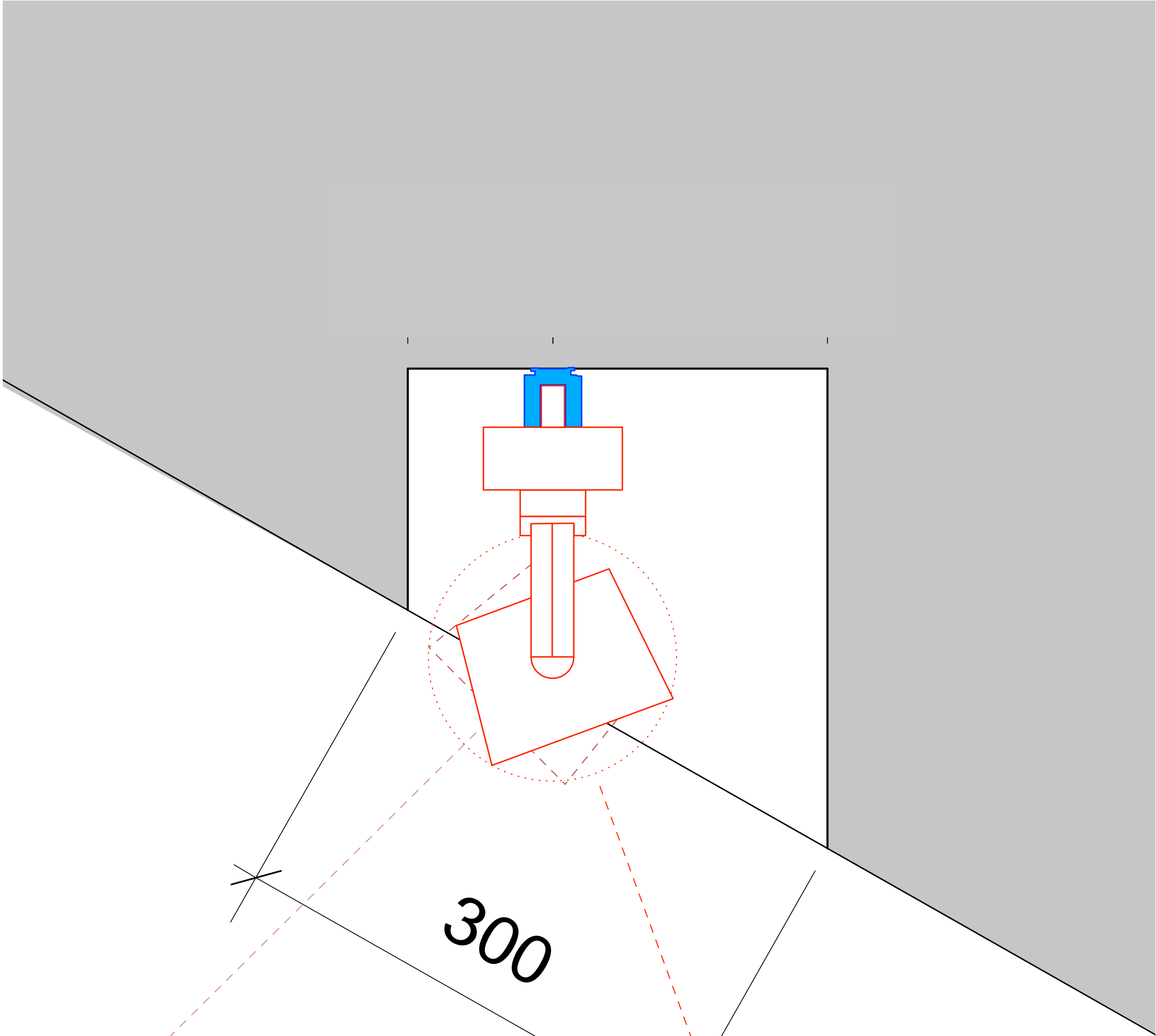
OVERALL - REFLECTED CEILING PLAN - UPPER FLOOR



LIGHTING CONCEPT TRACK LAYOUT



LIGHTING CONCEPT
SPOTLIGHTS IN CEILING GAPS
HIGH CEILINGS

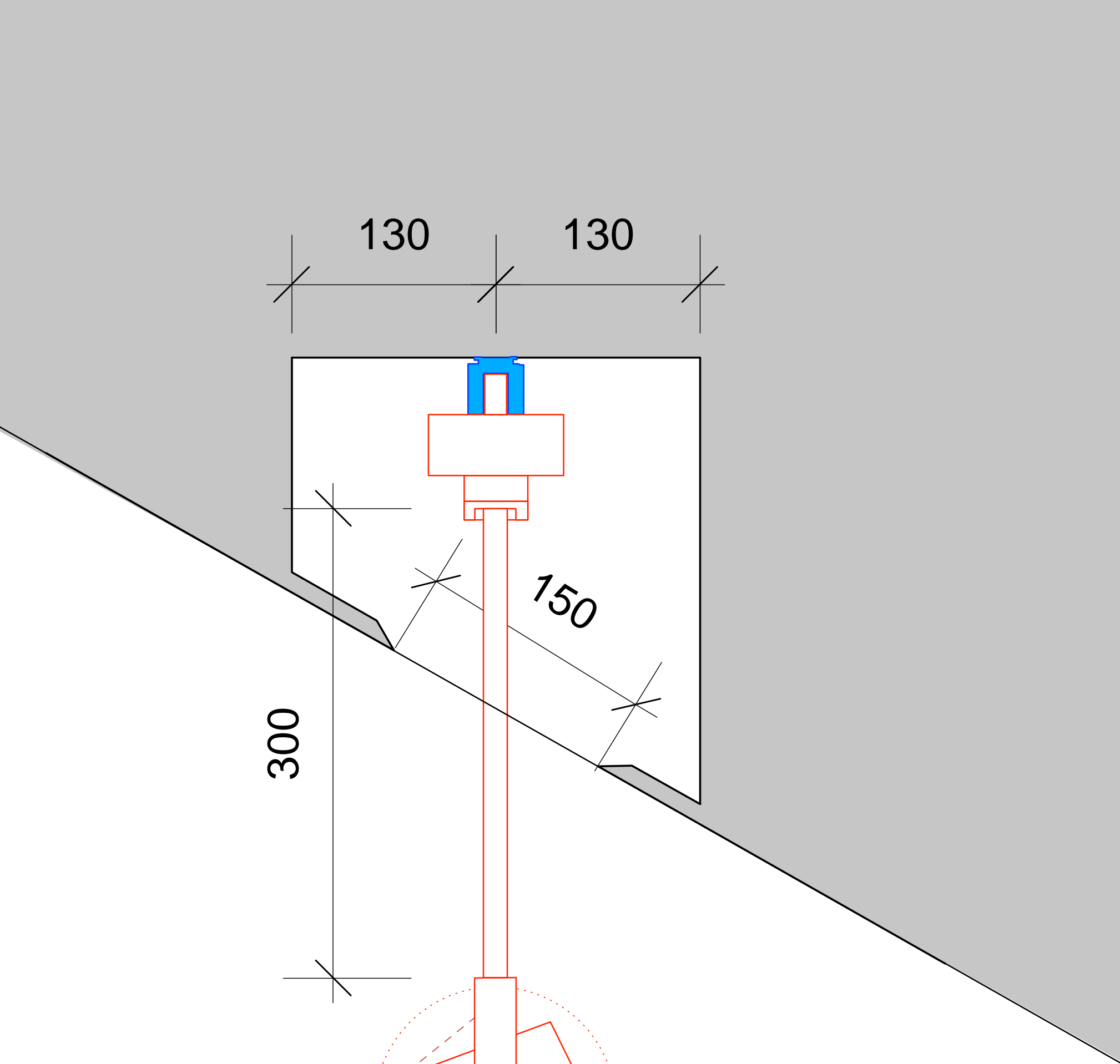


LUMINAIRES IN CEILING

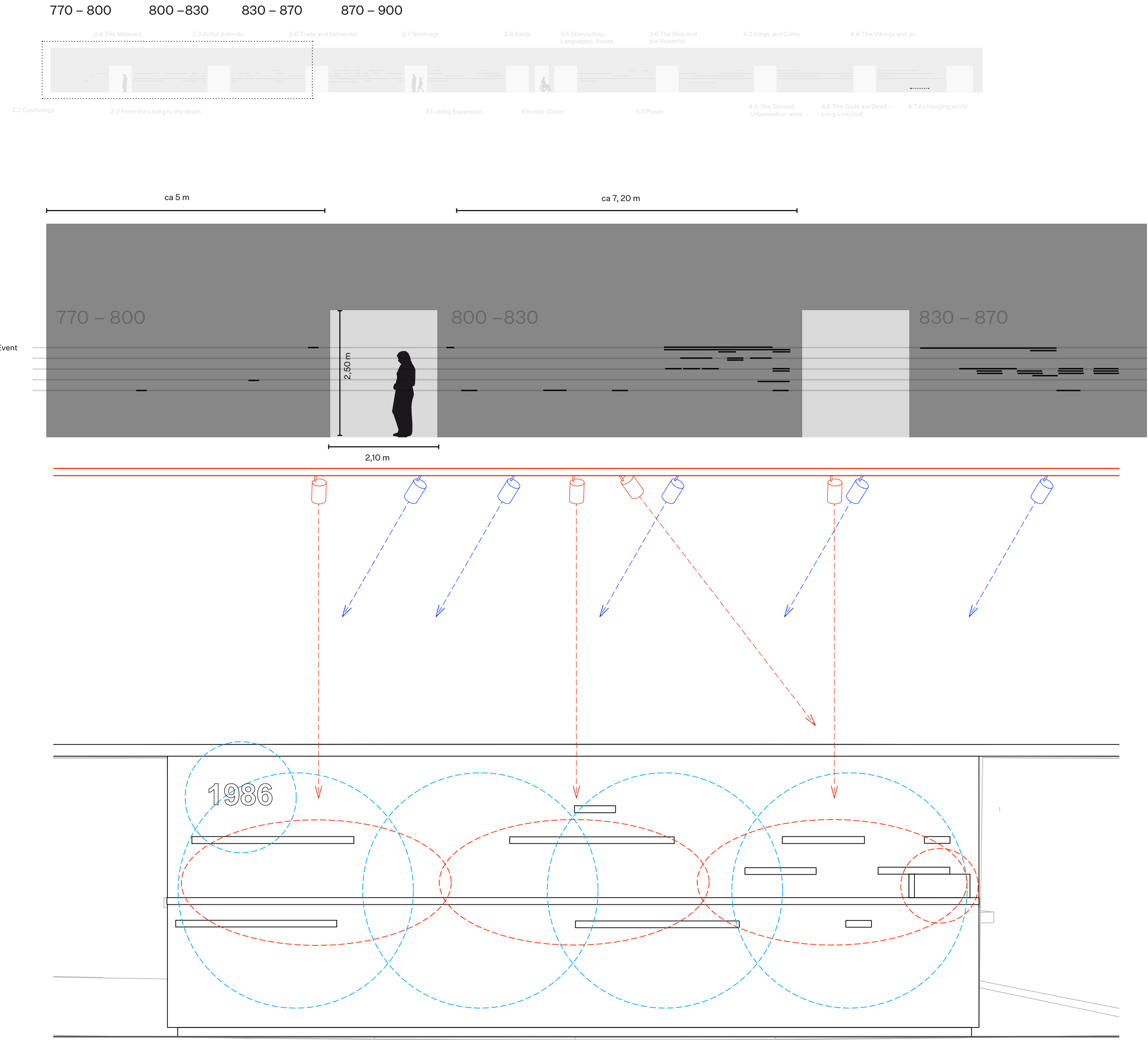
To light an exhibition one uses angles $< 45^\circ$ from the vertical. Larger angles will produce glare.

LIGHTING CONCEPT

LIGHTING PRINCIPLES_TIME LINE



RAA | TMS | BHLD



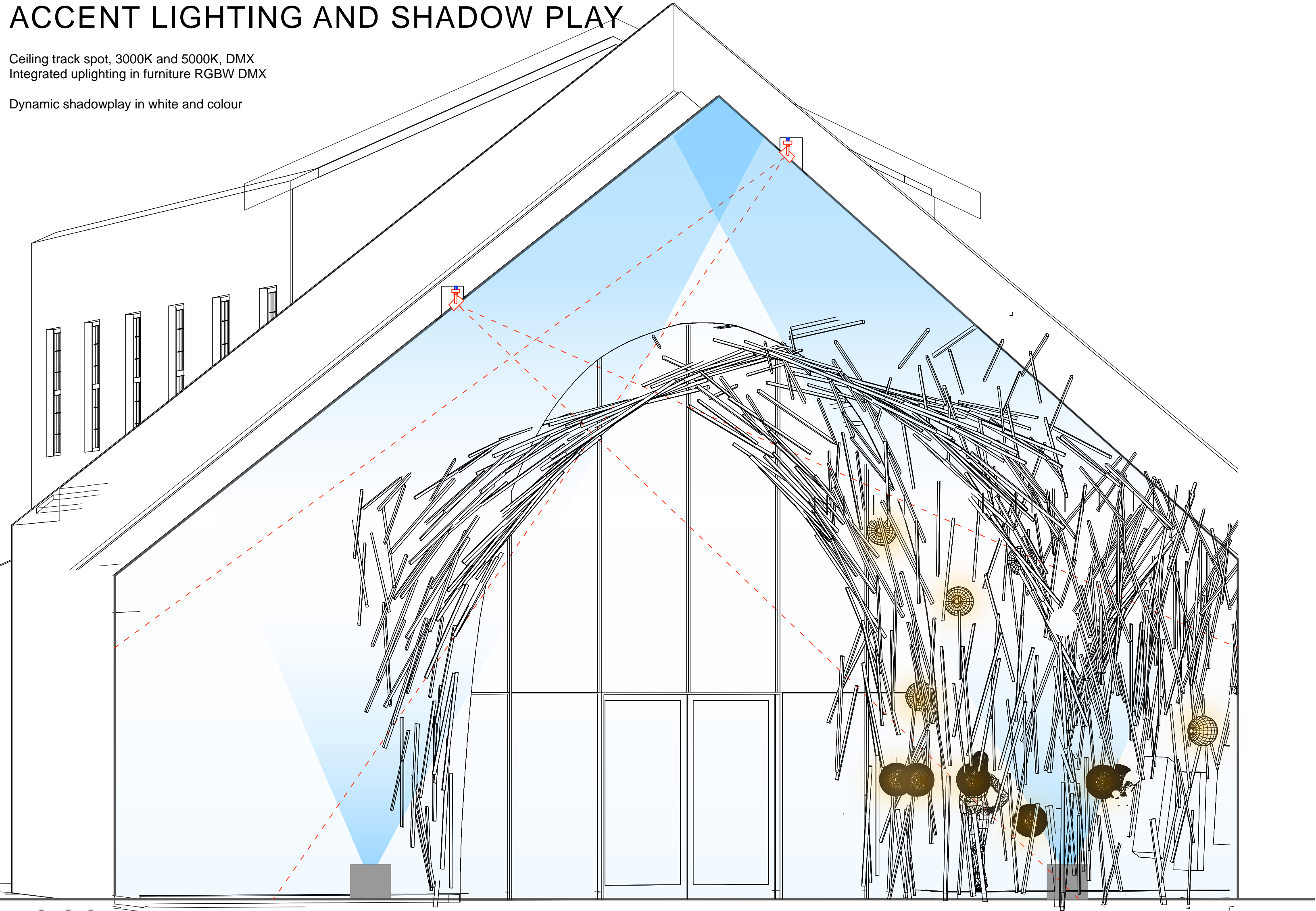
BELZNER HOLMES
LIGHT-DESIGN

LIGHTING CONCEPT

LIGHTING PRINCIPLES_COSMOLOGY - ADDITIONAL INTEGRATED UPLIGHTING ACCENT LIGHTING AND SHADOW PLAY

Ceiling track spot, 3000K and 5000K, DMX
Integrated uplighting in furniture RGBW DMX

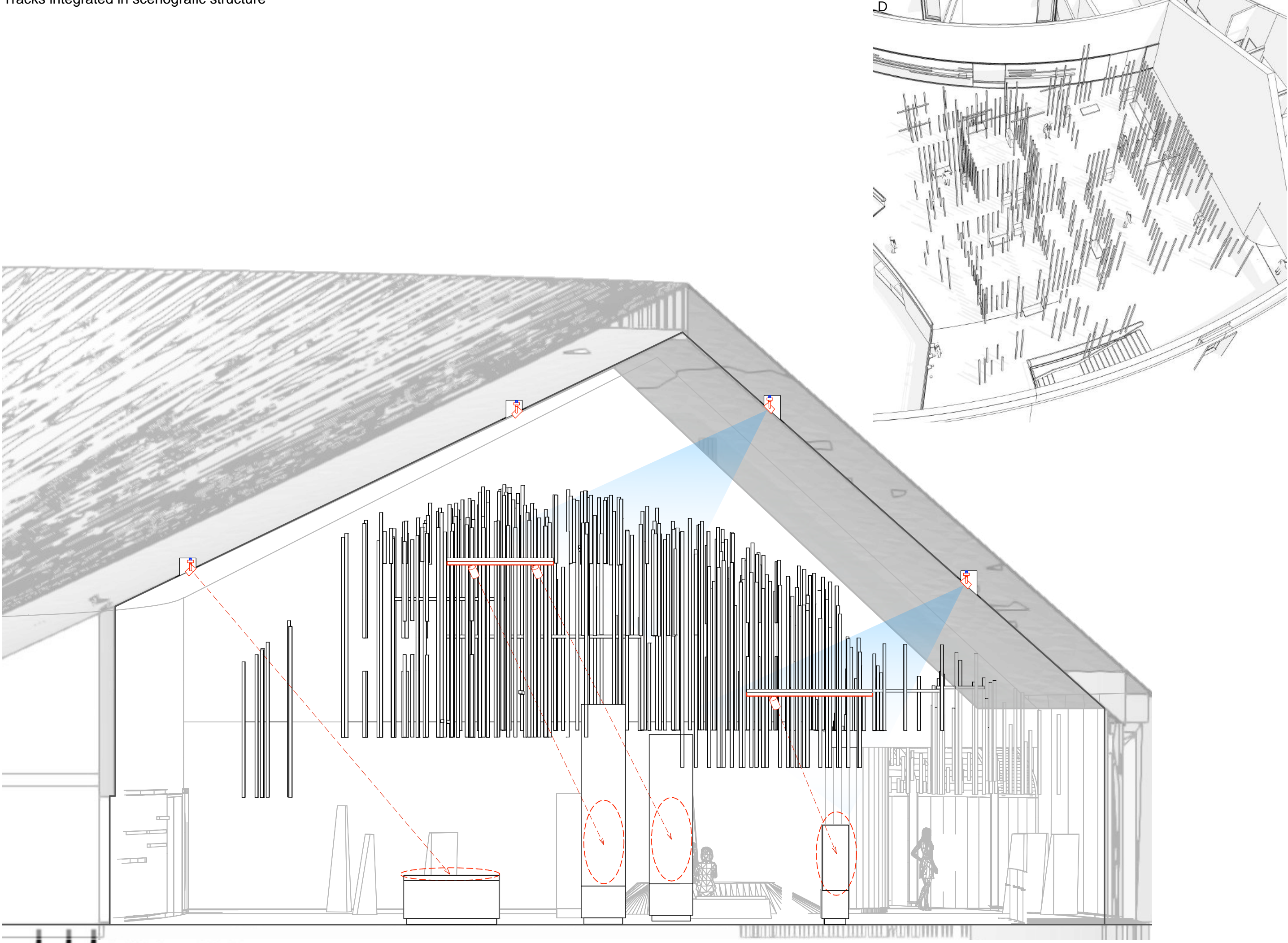
Dynamic shadowplay in white and colour



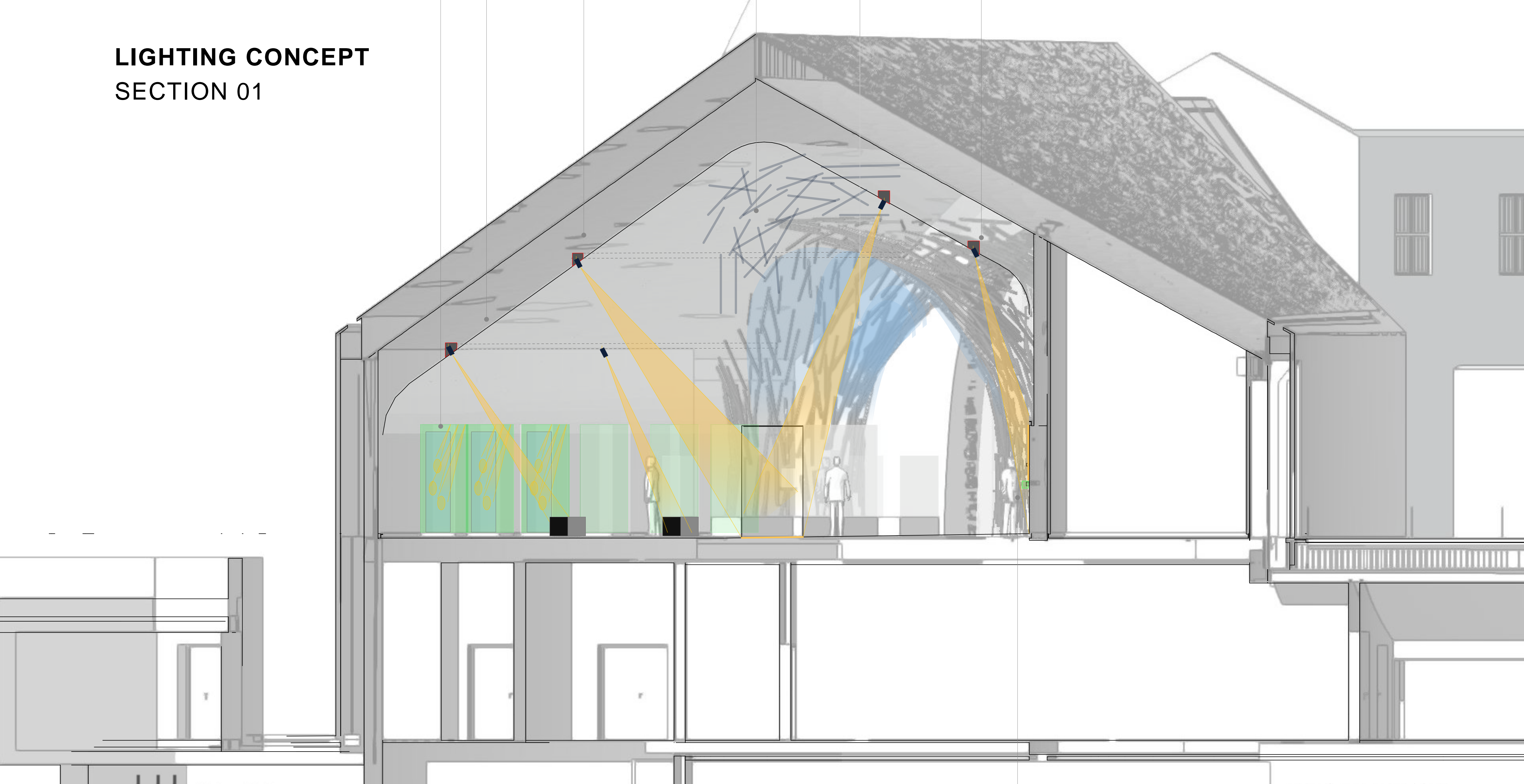
LIGHTING CONCEPT

LIGHTING PRINCIPLES_A CHANGING WORLD - ADDITIONAL SUSPENDED TRACKS - ACCENT LIGHTING AND SHADOW PLAY

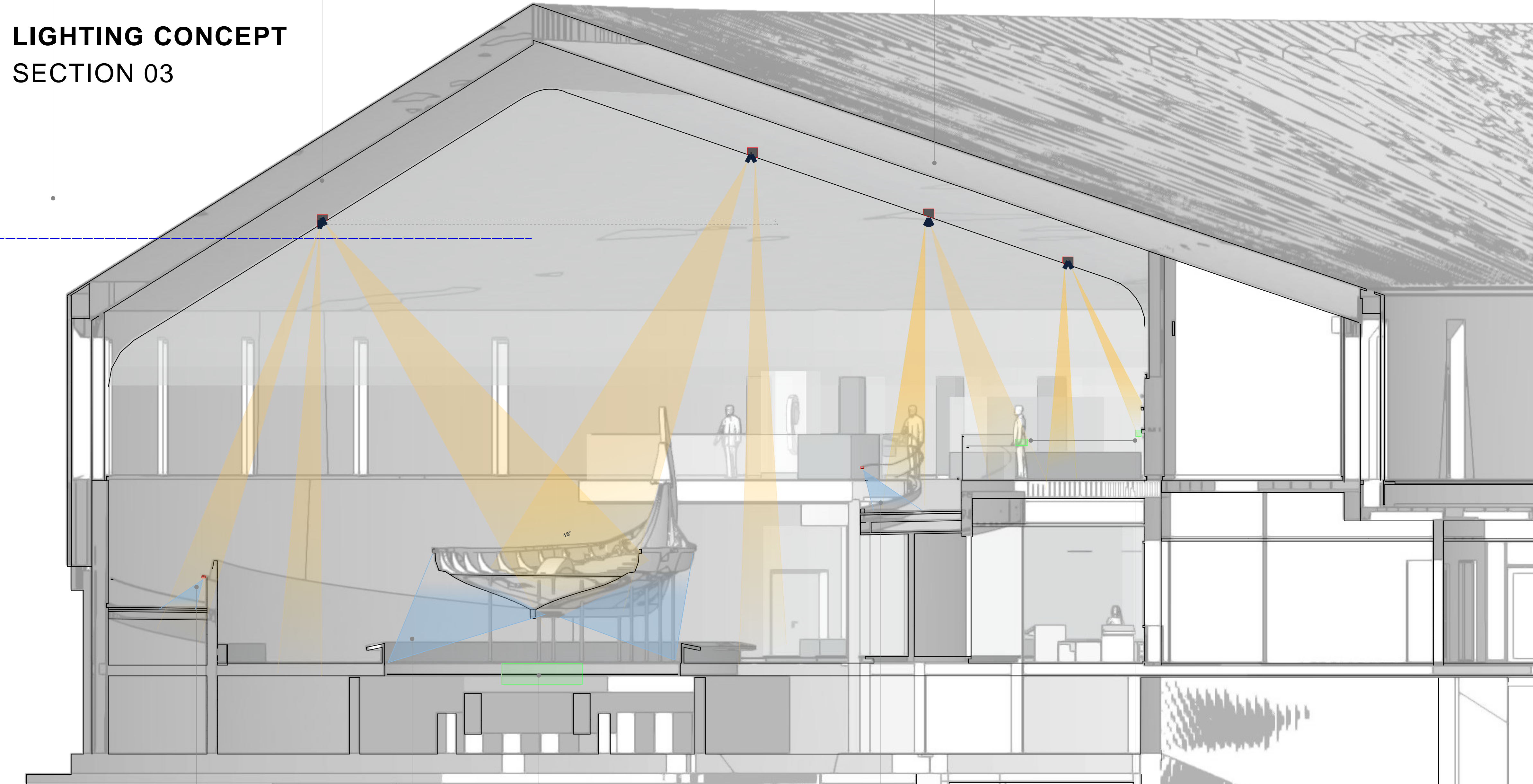
Ceiling track spot, 3000K and 5000K, DMX
Tracks integrated in scenographic structure



LIGHTING CONCEPT
SECTION 01

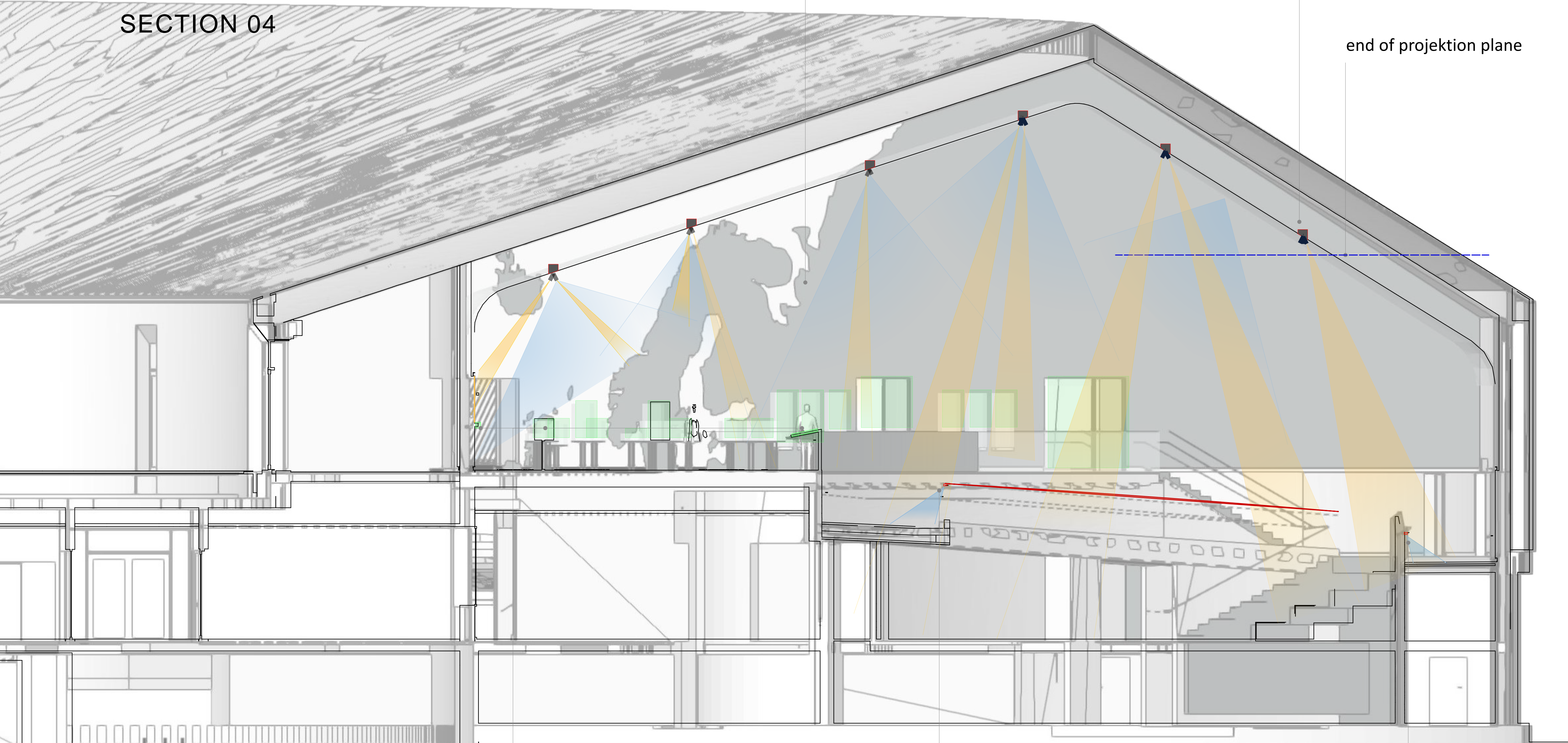


LIGHTING CONCEPT
SECTION 03

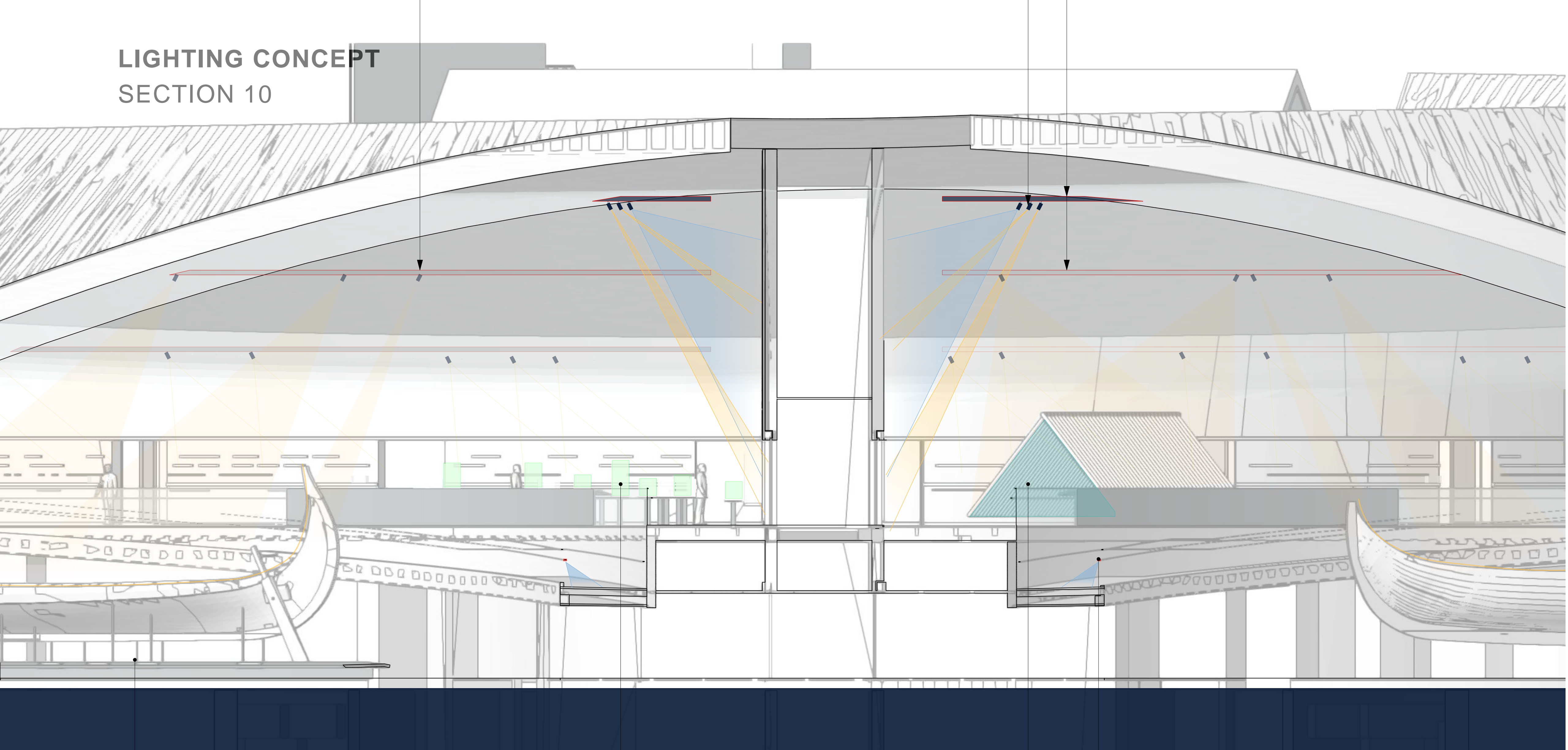


LIGHTING CONCEPT
SECTION 04

end of projektion plane

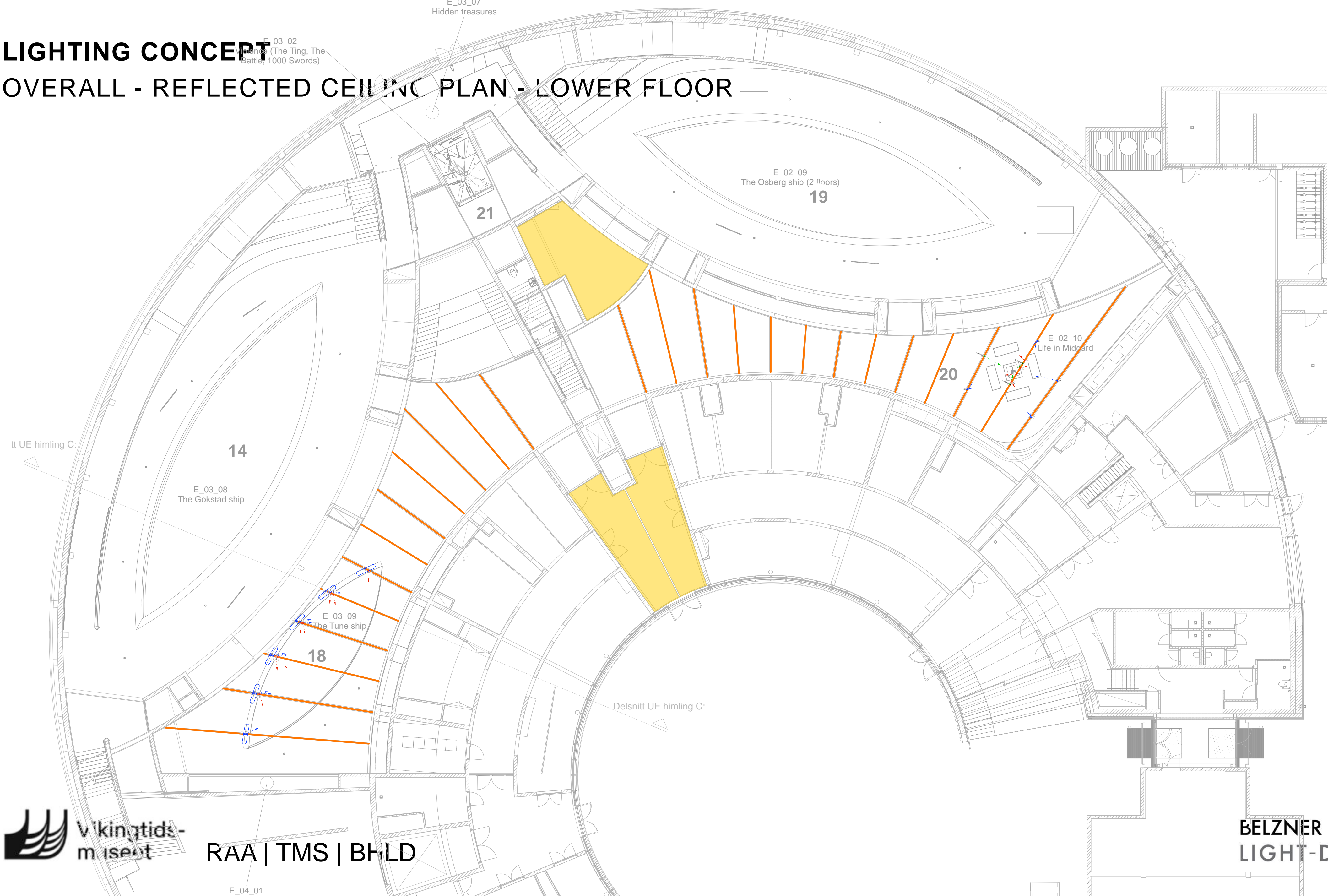


LIGHTING CONCEPT
SECTION 10

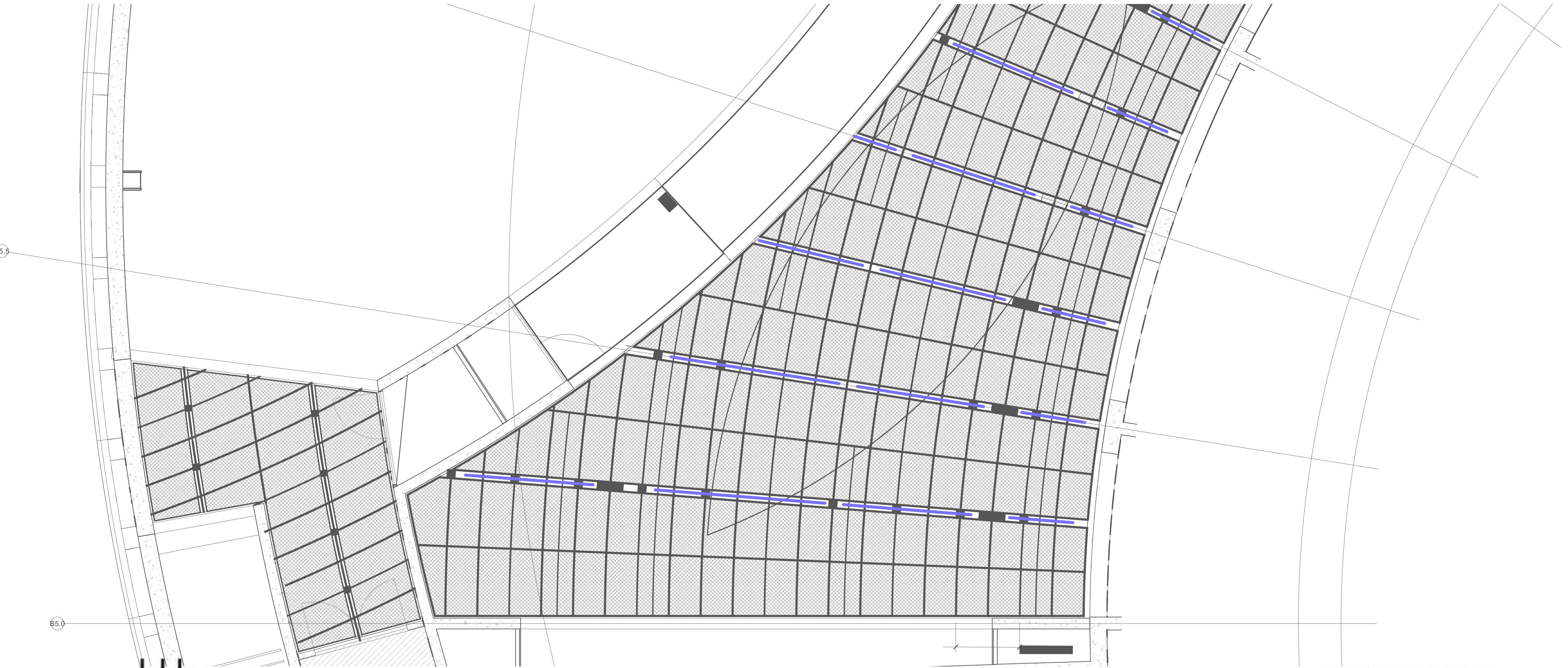


LIGHTING CONCEPT

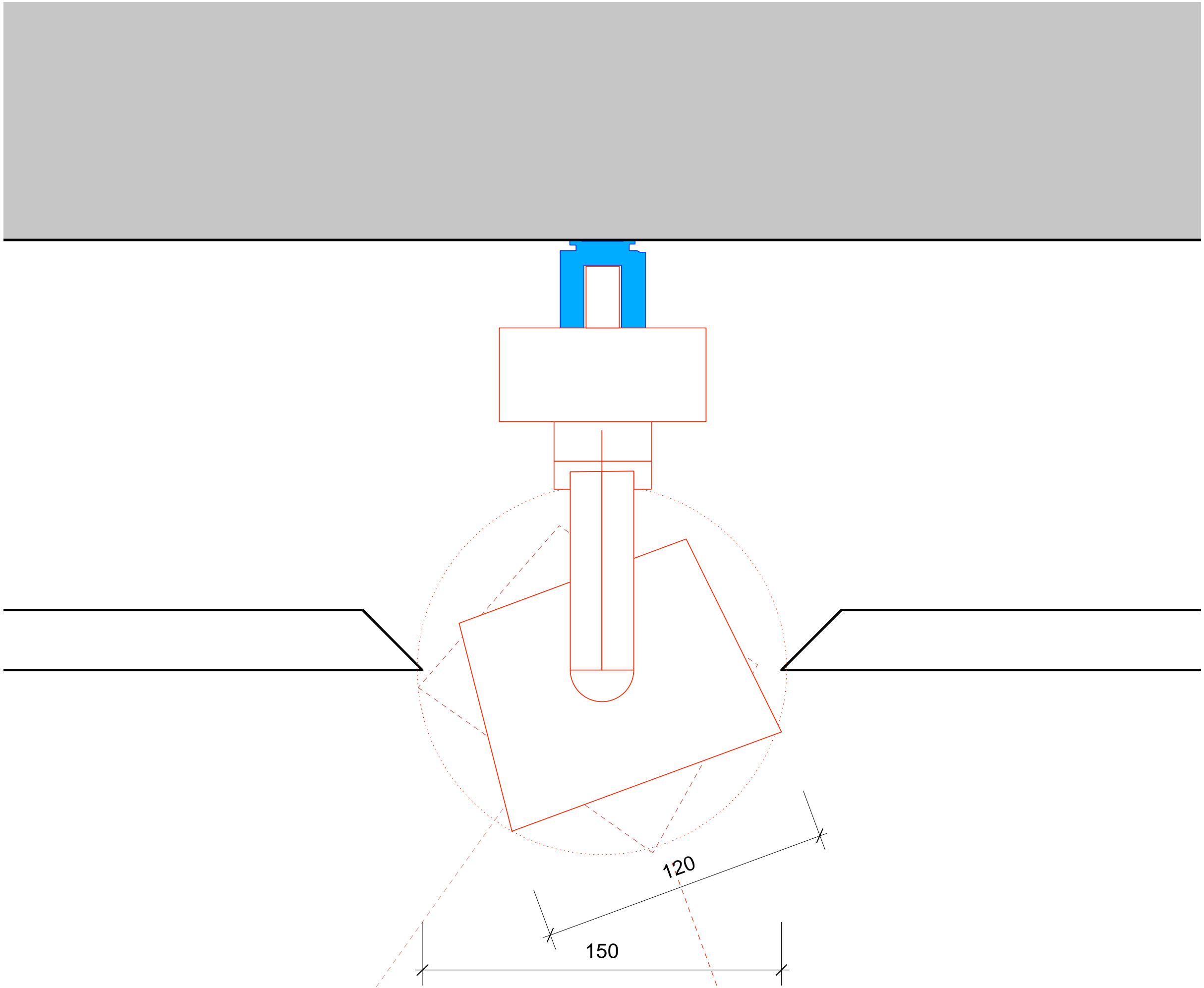
OVERALL - REFLECTED CEILING PLAN - LOWER FLOOR



LIGHTING CONCEPT
DETAIL CEILING PLAN - LOWER FLOOR



LIGHTING CONCEPT
DETAIL CEILING PLAN - LOWER FLOOR

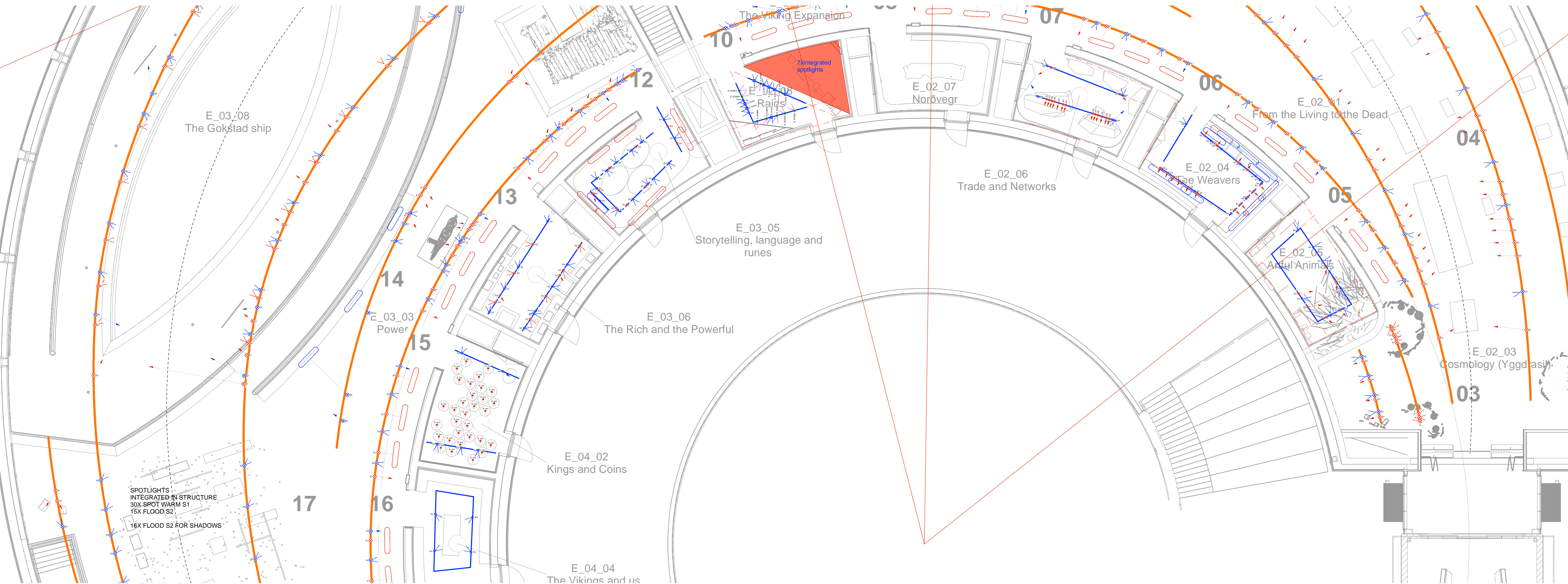


LIGHTING CONCEPT

DYNAMIC DESIGN

LIGHTING SYSTEMS USED IN THE ARCADE ROOMS - BESPOKE TRACK LAYOUT

Arcade Room Exhibition Lighting: Lighting from the ceilings of the Arcade Room Spaces for Exhibits and Graphics



LIGHTING CONCEPT

DYNAMIC DESIGN

FURTHER LIGHTING SYSTEMS USED IN THE EXHIBITION

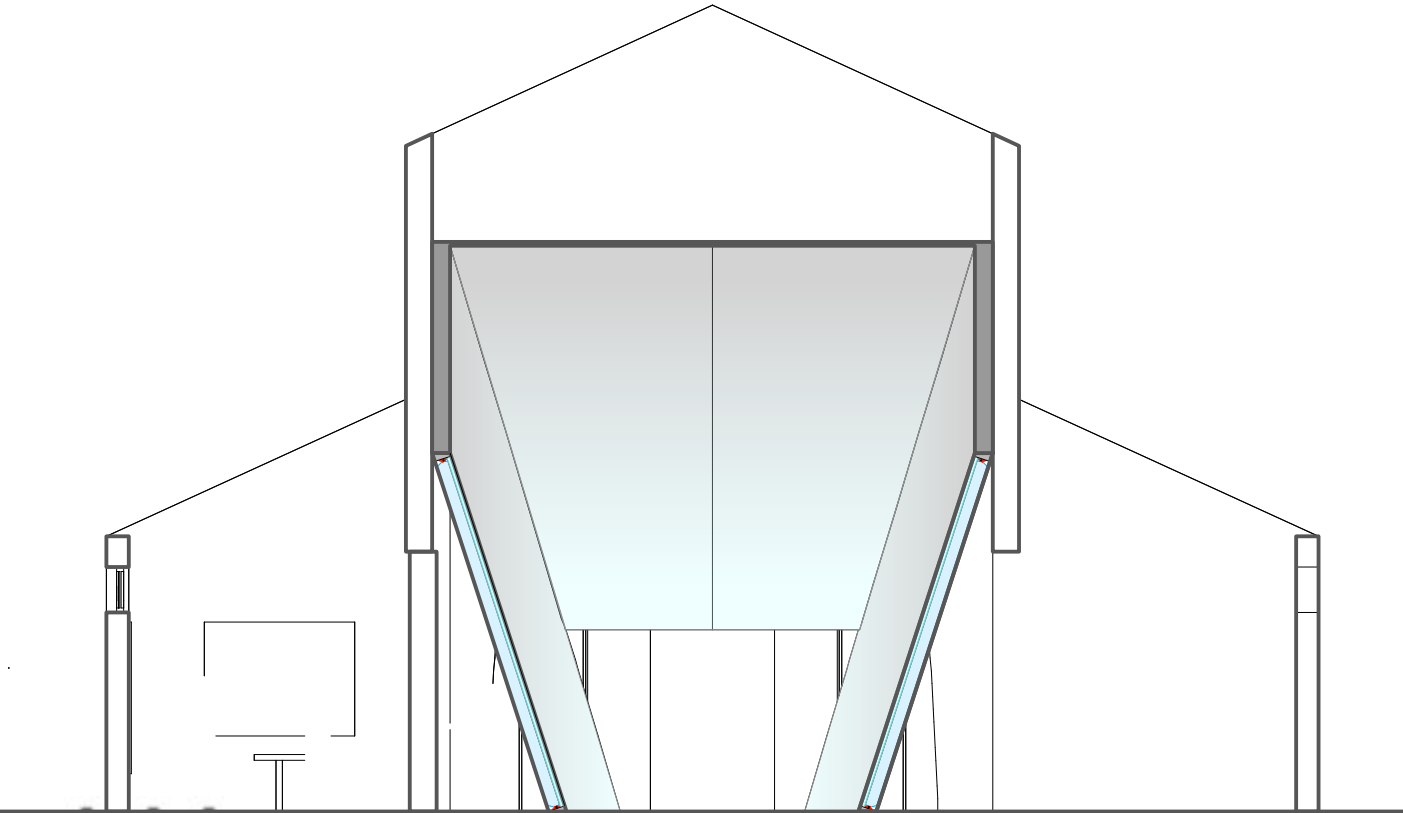
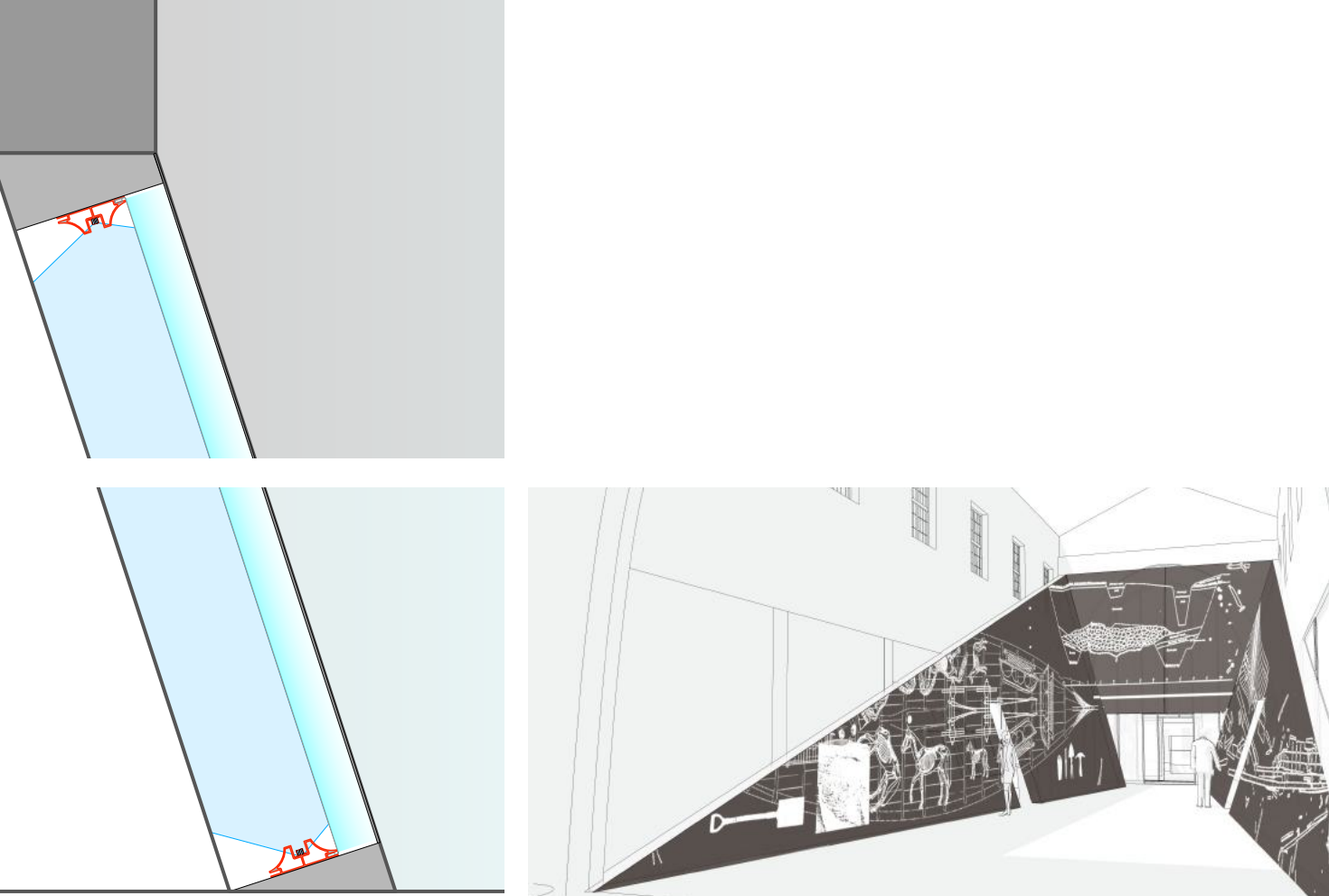
INTEGRATED LIGHTING:

Integrated lighting (not showcases) in the scenographic fitout - i.e. Intro, Cosmology, Changing World, Raids and for backlit graphics i.e. in the boundaries around the Ships and the Burial Chamber and along the railings overlooking the Ships from above or around the Ships.

LIGHTING CONCEPT

LIGHTING PRINCIPLES BACKLIGHTING GRAPHICS

Integrated linear power LED, top and bottom, 5000K-6500K, Separated dim top and bottom



Vikingtids-
museet

RAA | TMS | BHLD

BELZNER HOLMES
LIGHT-DESIGN

LIGHTING CONCEPT

LIGHTING PRINCIPLES_INTEGRATED LIGHTING GABLE WALLS

PE_03_01 VIKING EXPANSION

STORYBOARD OF THE DYNAMIC LIGHT-MAP ON THE WALL



RAID - STORYBOARD 1

One of the first frames of the light-wall.



RAID - STORYBOARD 2

One of the frames in the middle of the light wall.



RAID - STORYBOARD 3

One of the last frames of the light wall.



POLITICIAN / ASPIRE TO POWER - STORYBOARD 1

One of the first frames of the light-wall.



POLITICIAN / ASPIRE TO POWER - STORYBOARD 2

One of the frames in the middle of the light wall.



POLITICIAN / ASPIRE TO POWER - STORYBOARD 3

One of the last frames of the light wall.

LIGHTING CONCEPT

LIGHTING PRINCIPLES_INTEGRATED LIGHTING GABLE WALLS

PE_03_01 VIKING EXPANSION

STORYBOARD OF THE DYNAMIC LIGHT-MAP ON THE WALL



MIGRANT - STORYBOARD 1

One of the first frames of the light-wall-animation.



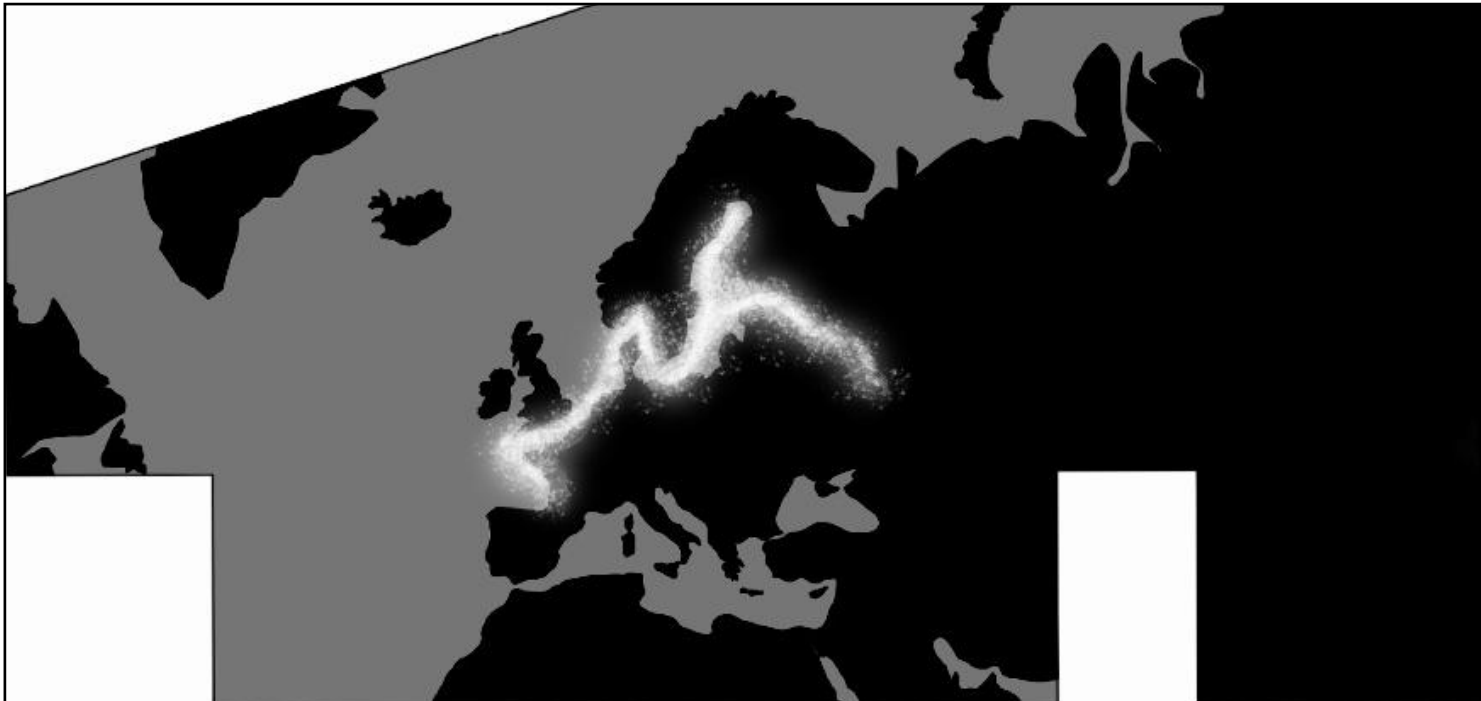
MIGRANT - STORYBOARD 2

One of the frames in the middle of the light-wall-animation.



MIGRANT - STORYBOARD 3

One of the last frames of the light-wall-animation.



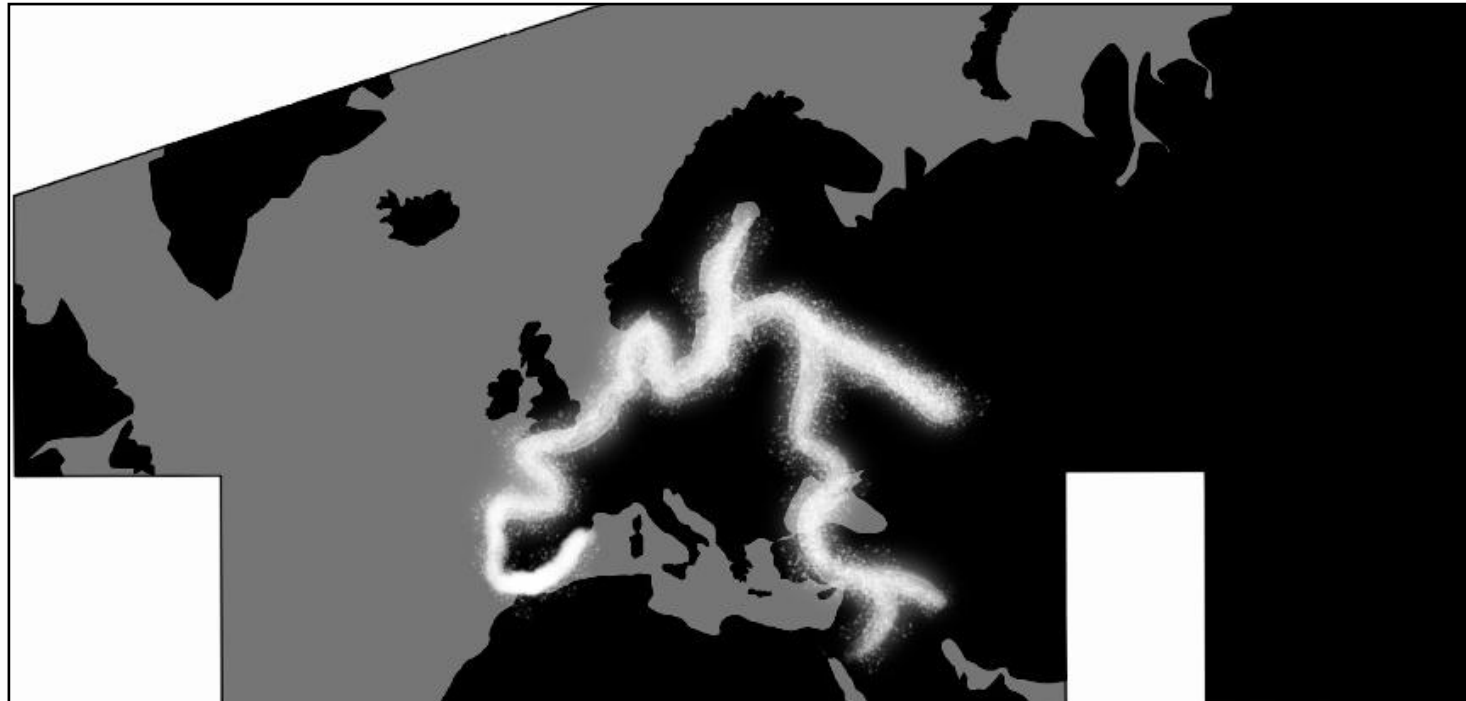
MERCHANT - STORYBOARD 1

One of the first frames of the light-wall-animation



MERCHANT - STORYBOARD 2

One of the frames in the middle of the light wall-animation.

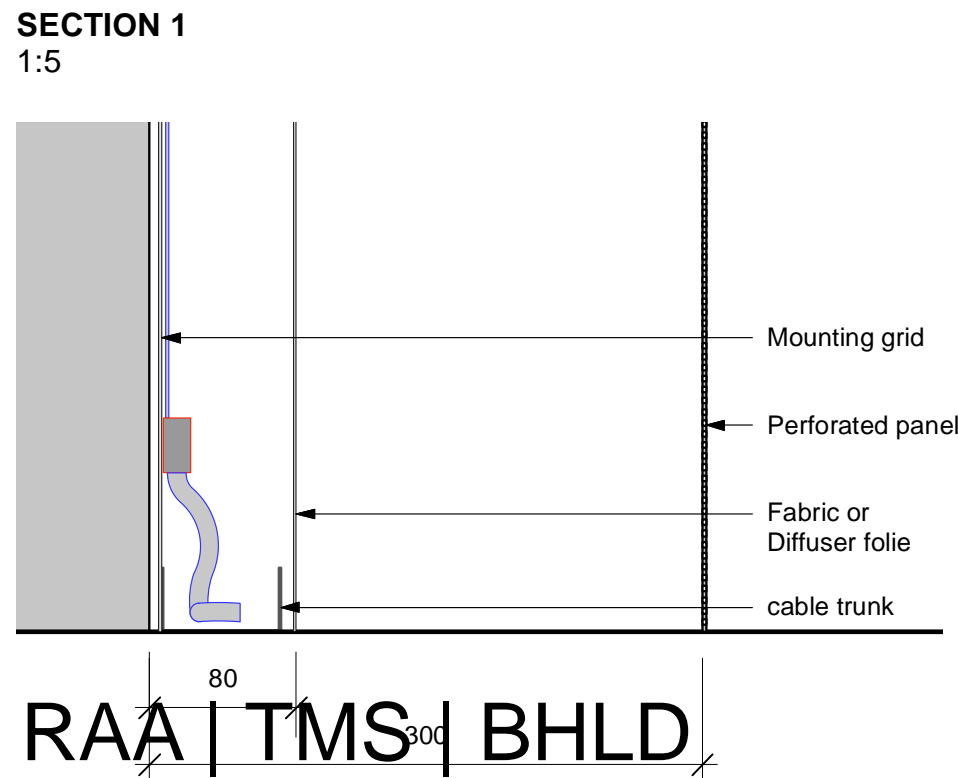
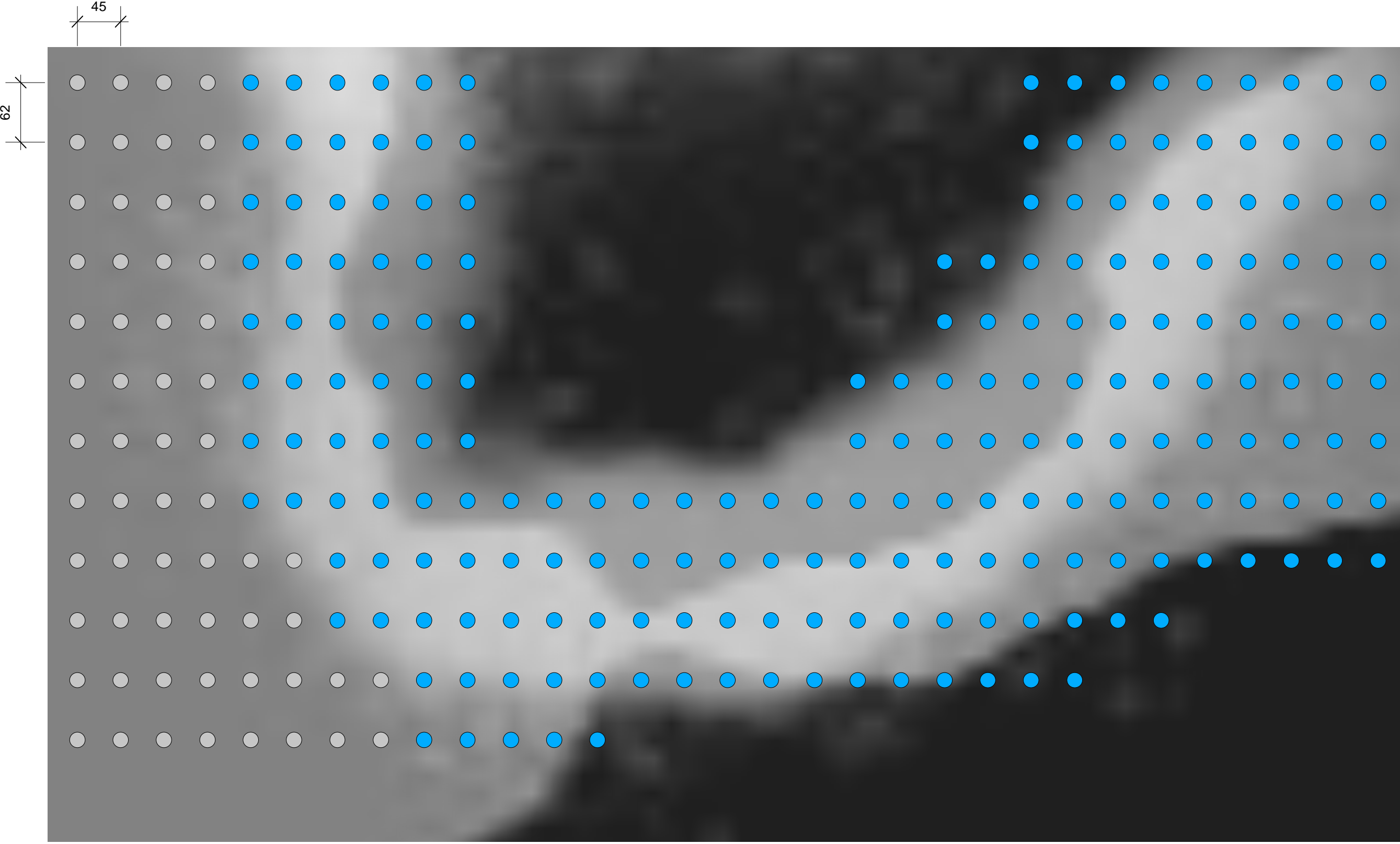
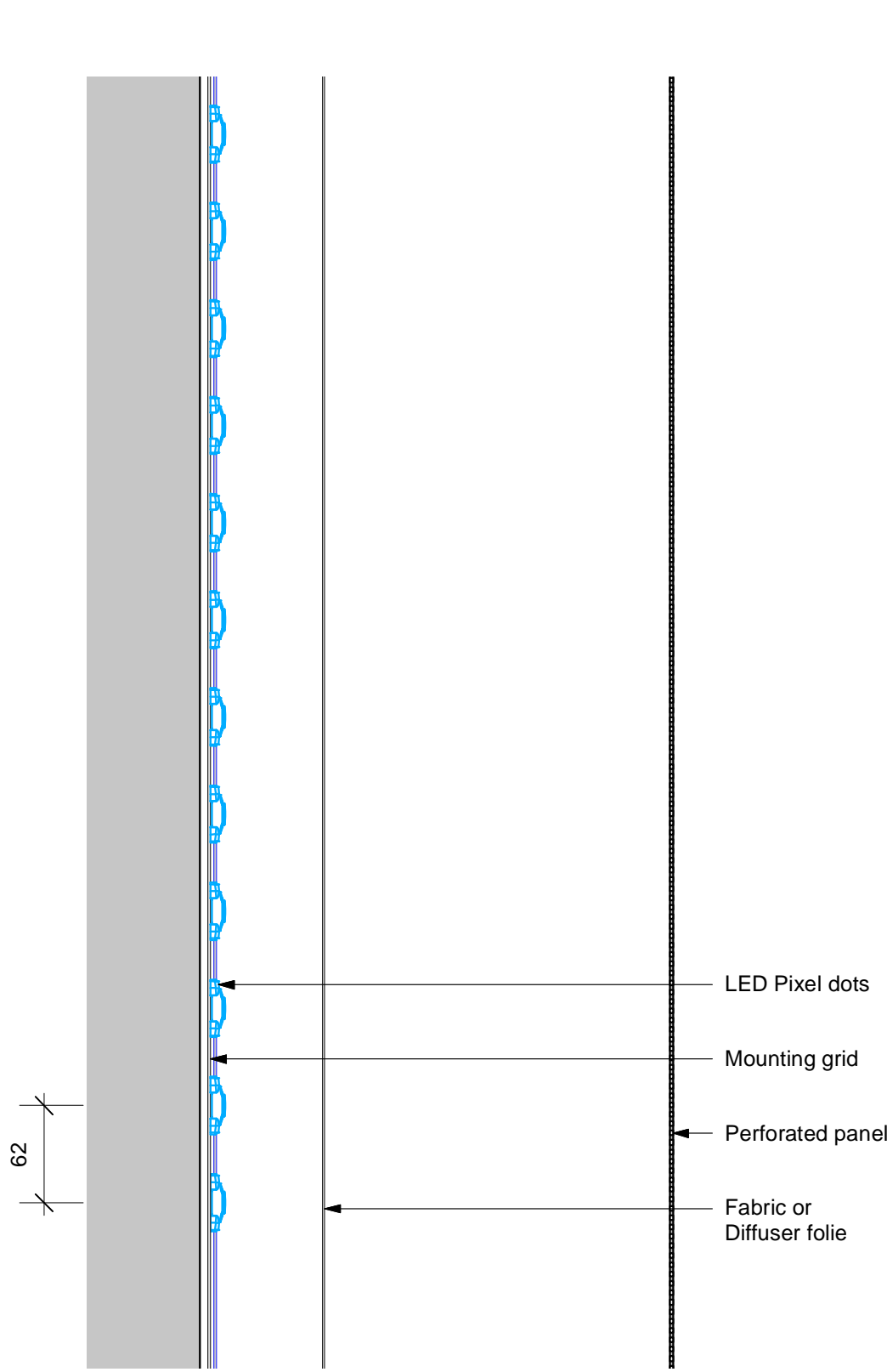


MERCHANT - STORYBOARD 3

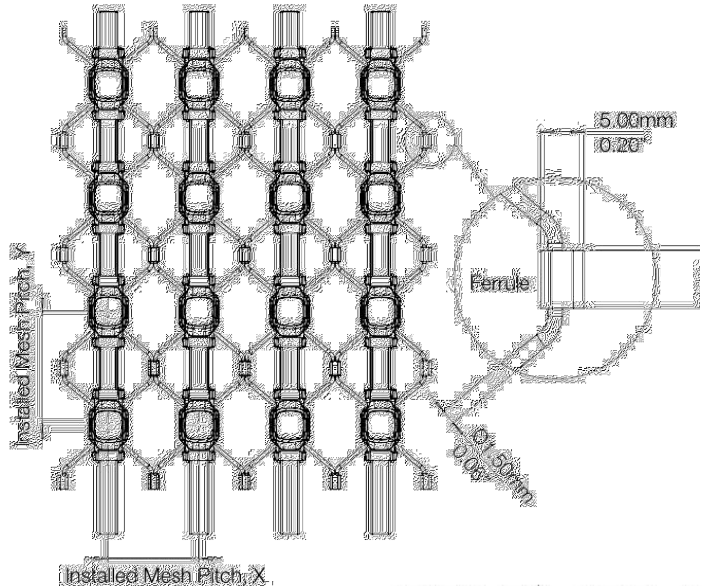
One of the last frames of the light-wall-animation.

LIGHTING CONCEPT

LIGHTING PRINCIPLES_INTEGRATED LIGHTING GABLE WALLS



LED Pixel dots

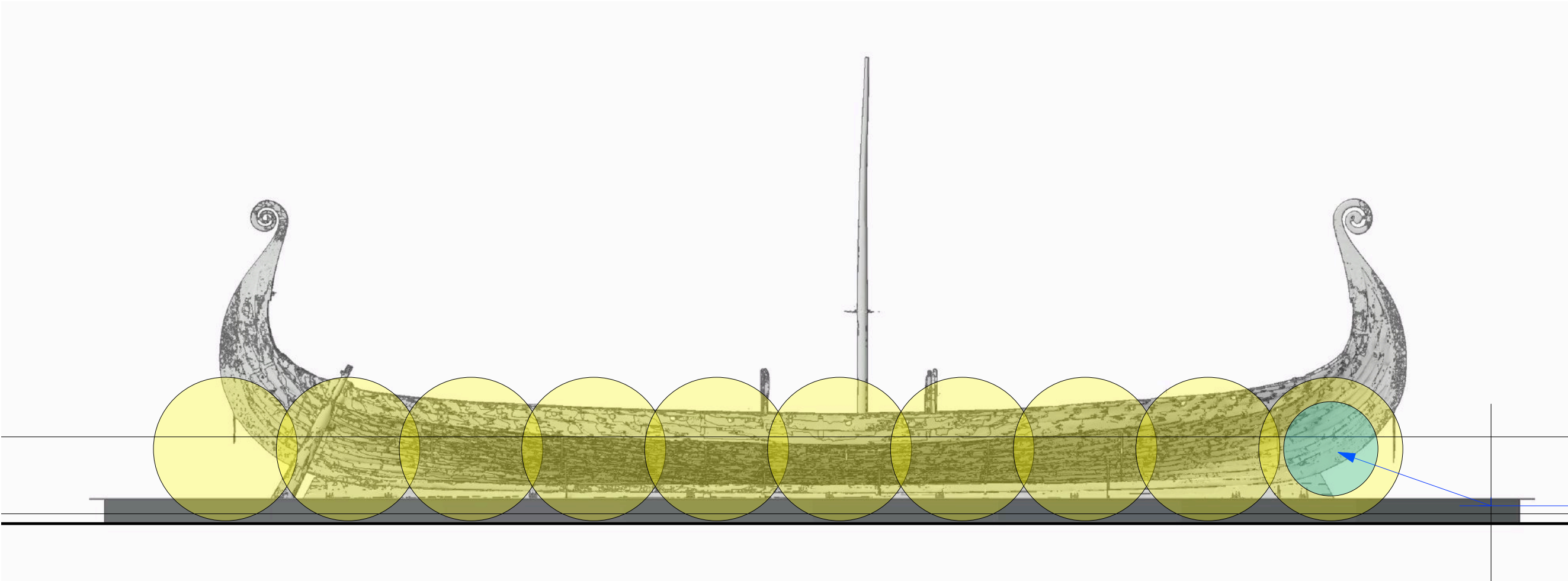
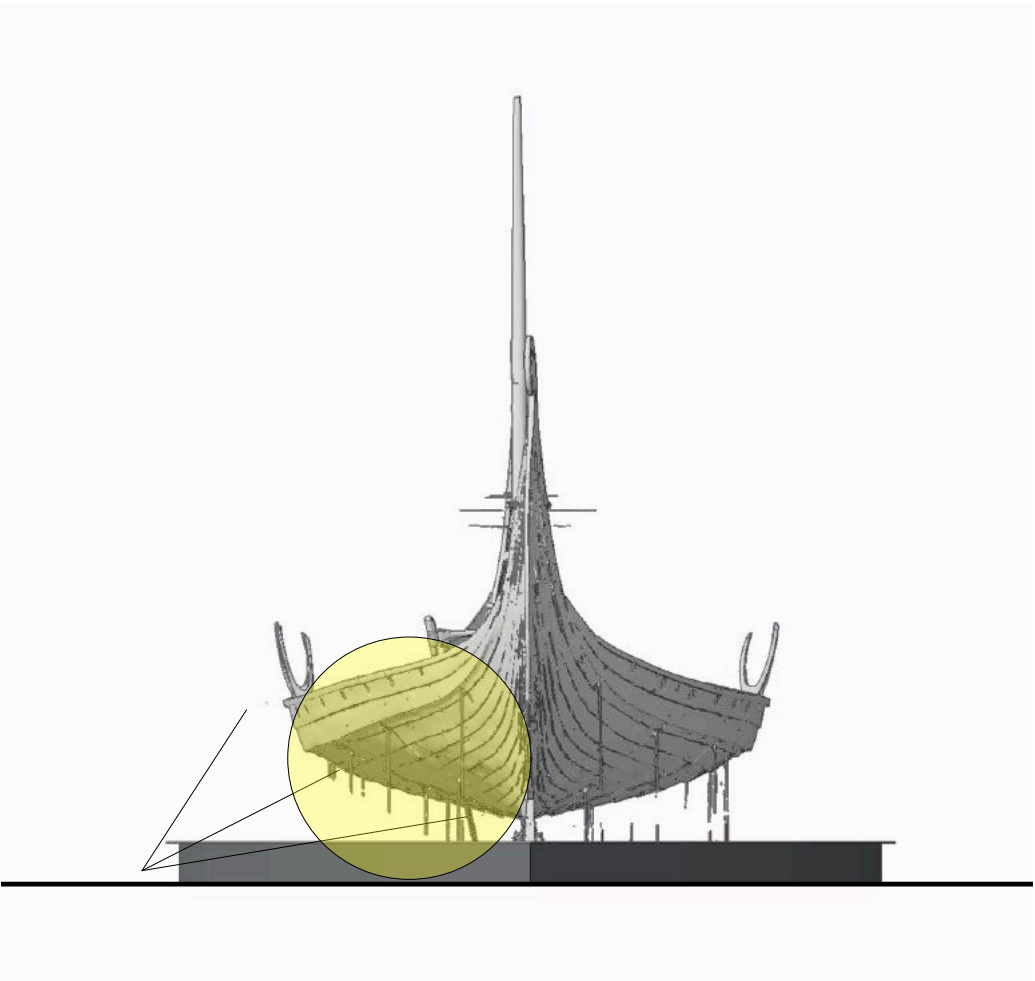
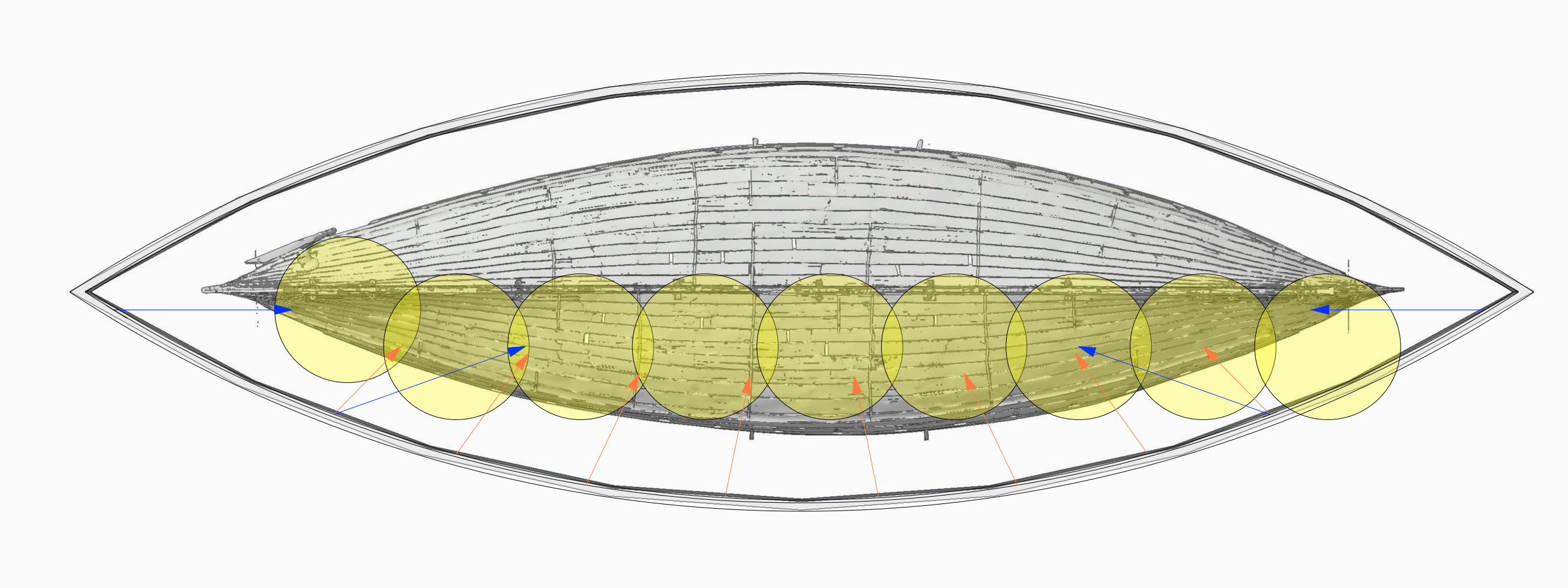


Mounting Grid System_Steel Mesh

LIGHTING CONCEPT

LIGHTING THE SHIPS - UNDERLIGHTING

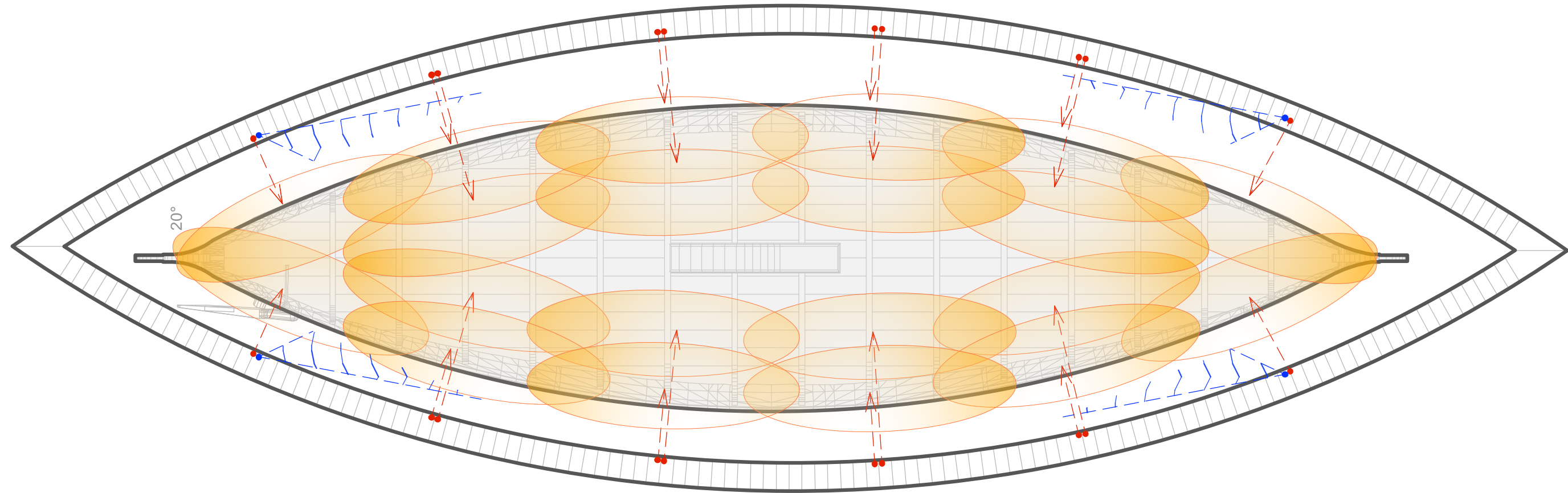
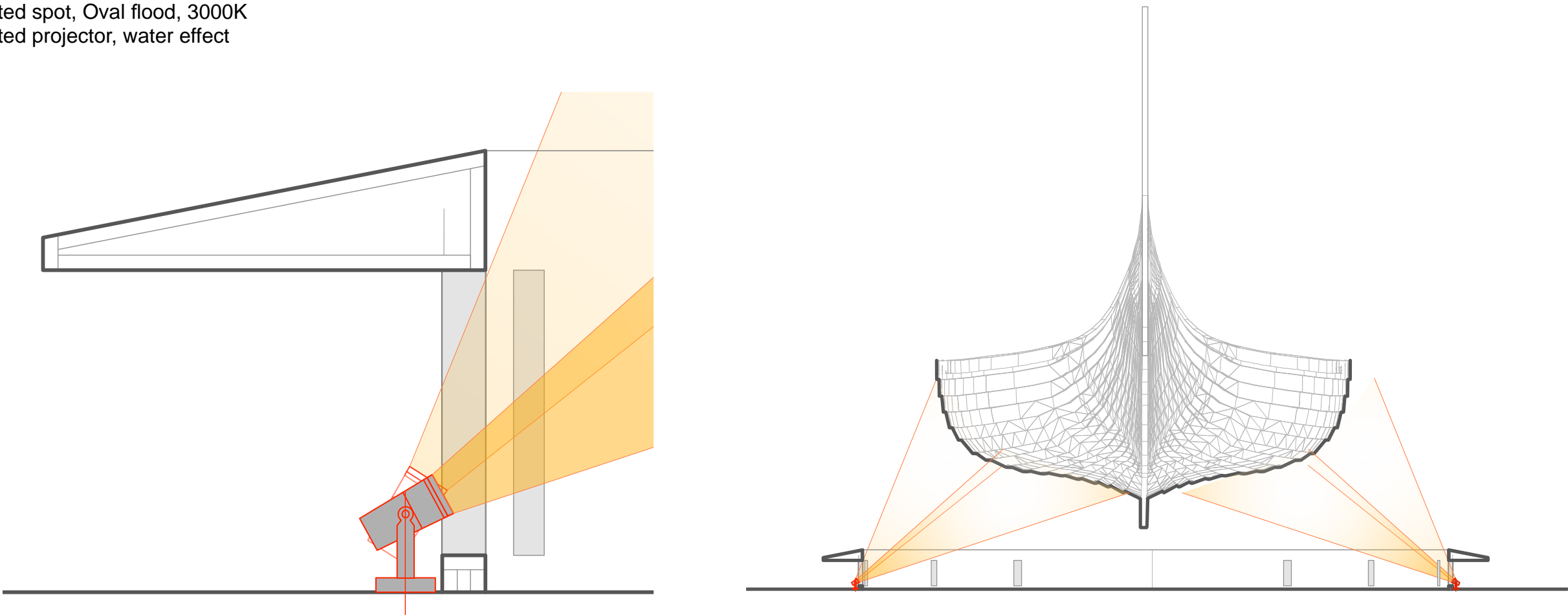
Surface mounted spot, Oval flood, 3000K
Surface mounted projector, water effect



LIGHTING CONCEPT

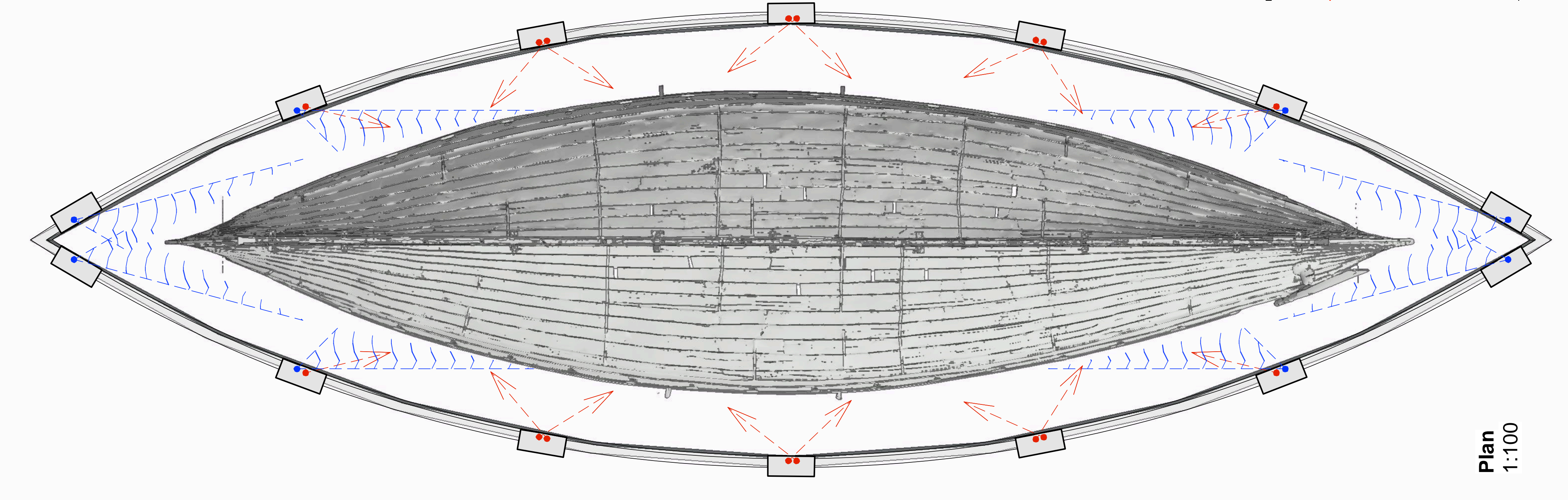
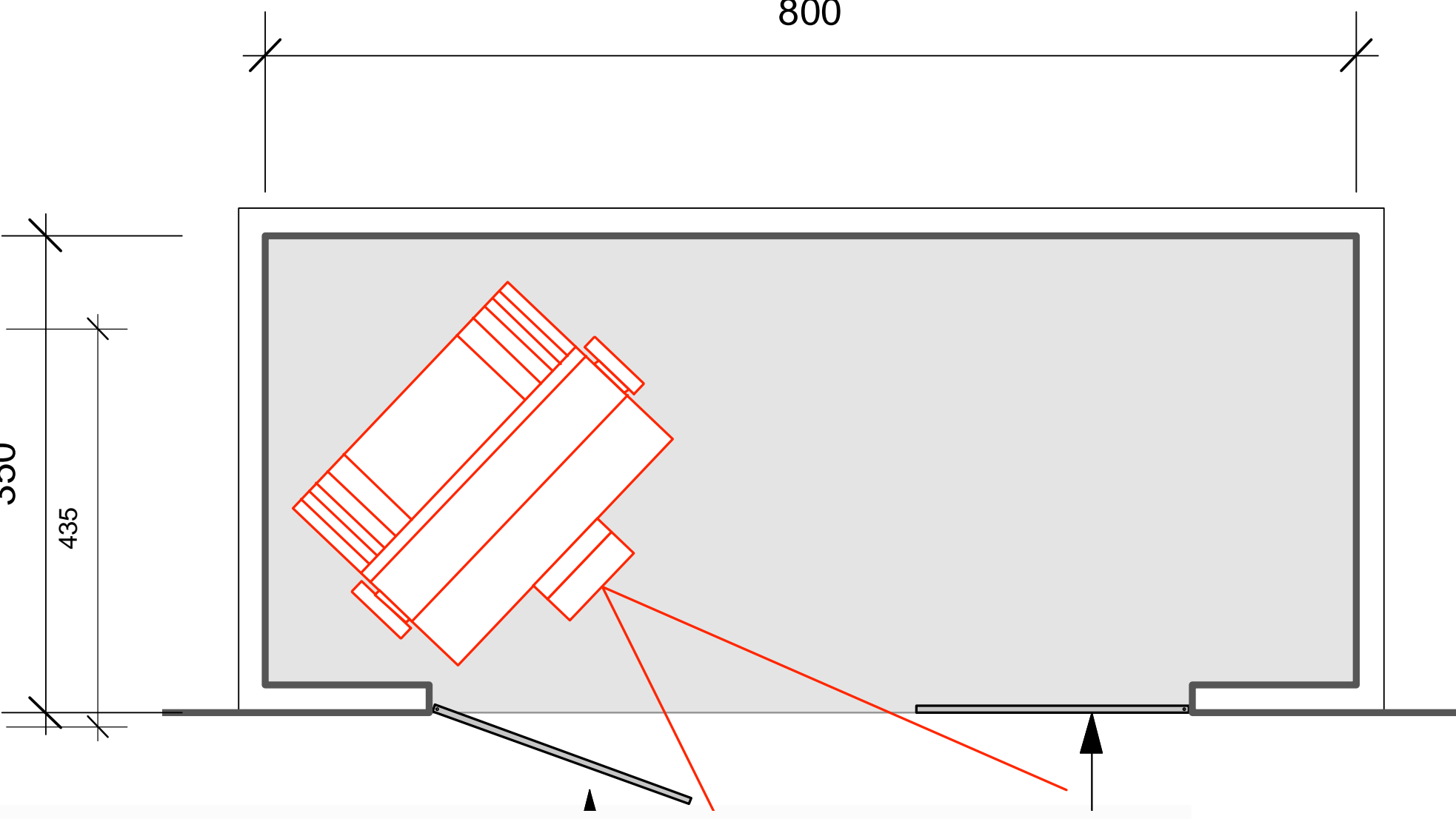
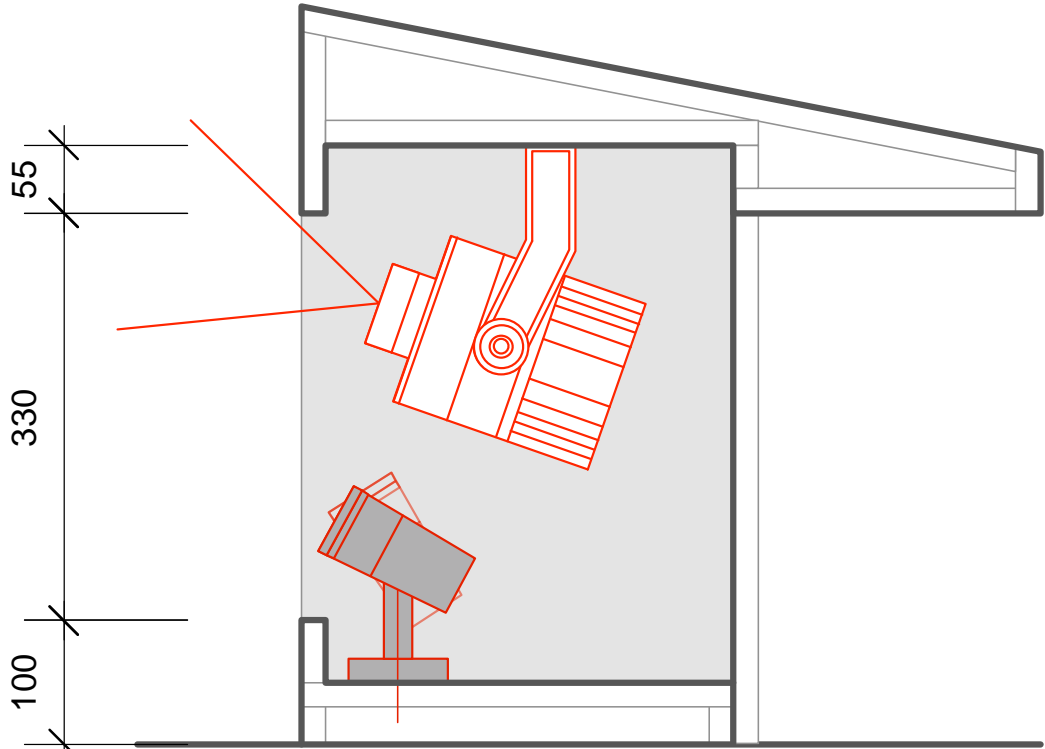
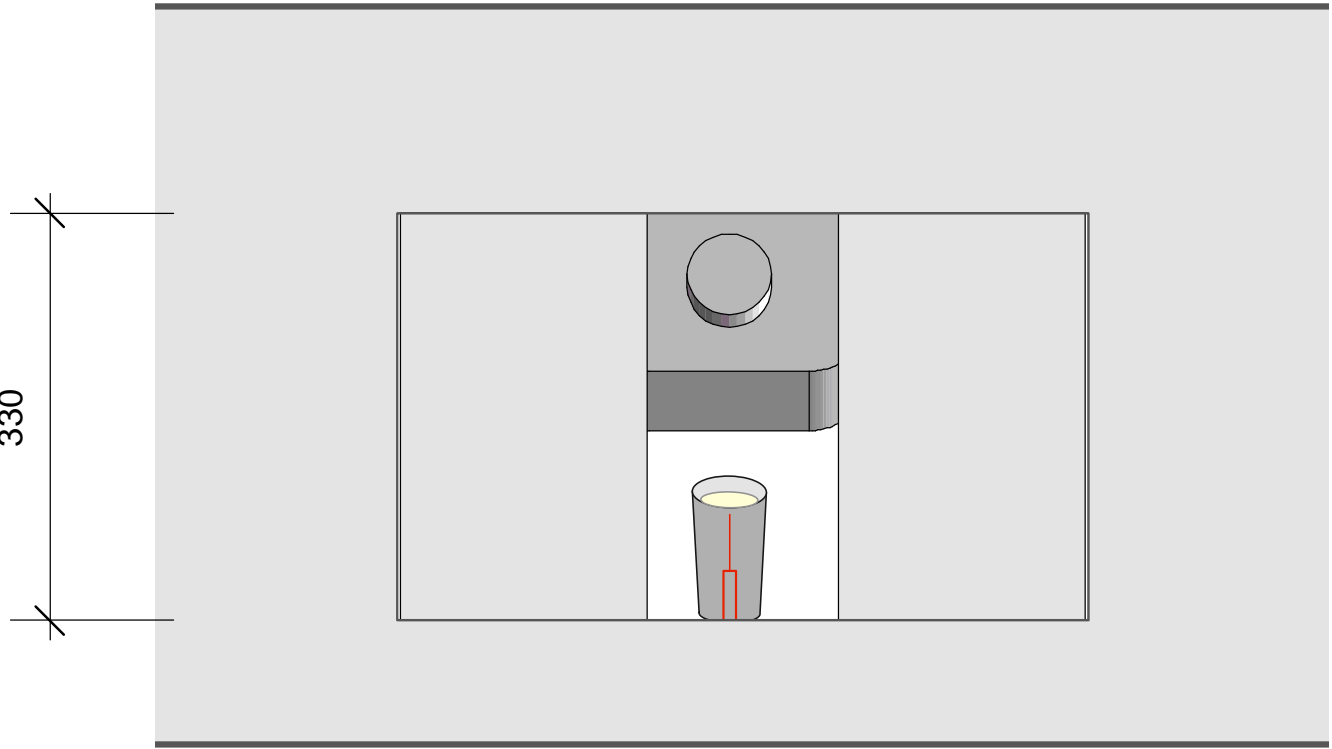
LIGHTING THE SHIPS - UNDERLIGHTING

Surface mounted spot, Oval flood, 3000K
Surface mounted projector, water effect



LIGHTING CONCEPT

LIGHTING THE SHIPS - UNDERLIGHTING



Plan
1:100

LIGHTING CONCEPT

DYNAMIC DESIGN / DAYLIGHT AS CREATIVE ELEMENT



LIGHTING CONCEPT

LIGHT TRACKS

LIGHT TRACKS IN CEILING

1 Phase Data Track

The light tracks should be conventional universal light tracks with integrated data bus connections for the DMX signal. Due to the ADFE requirement for electrical installation in the Museum the track will most likely be 1 Phase 230V + Data Track. The option of 3-Phase 230V + Data Tracks is being researched.

Due to general lighting and other technical house installations that will be installed in the ceiling slits and the polygonal geometry of the ceiling the 12,5m track lengths will need to be split down into short daisy-chained segments of 1,0 m 1,5 m in the high ceilings. In the low ceilings and arcade rooms the lengths vary but do not exceed 12,5m in total.

The track is planned with centrally placed junction boxes (power/data) between 2 trackchains split into 12,5 m left and 12,5 m right throughout the groves ("slits") in the ceiling. The junction boxes may be doubled to 1 per 12,5 m trackchain. The length of each track segment from one junction box should not exceed 12,5 m as the data cables in the tracks are not shielded and longer segments could be prone to signal interferences. In the arcade Rooms there will be 2 junction boxes/space above the dropped ceiling.

Each 12,5 m-track-segment should be equipped with a maximum of 32 DMX controlled instruments (0,4 m-spacing).

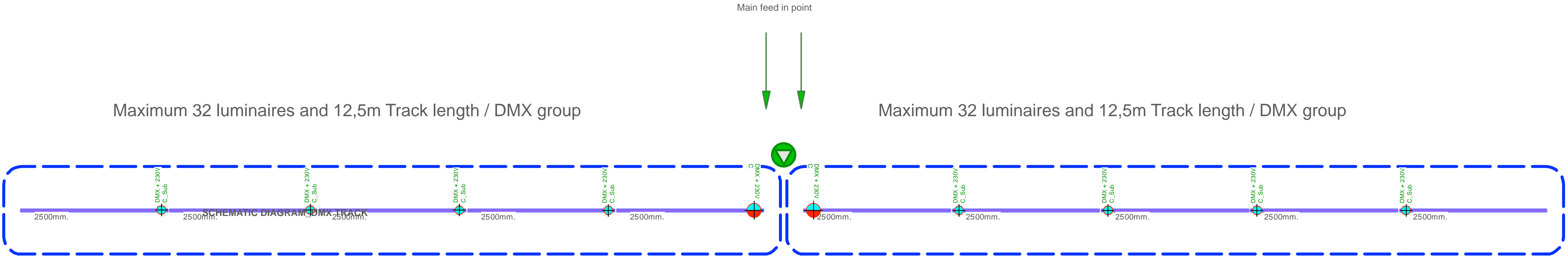
LIGHTING CONCEPT

LIGHT TRACKS

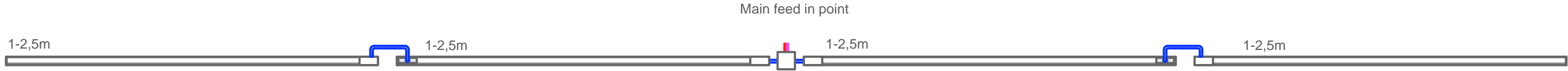
Ceiling Slits DMX Track SYSTEM

Maximum 32 luminaires and 12,5m Track length / DMX group

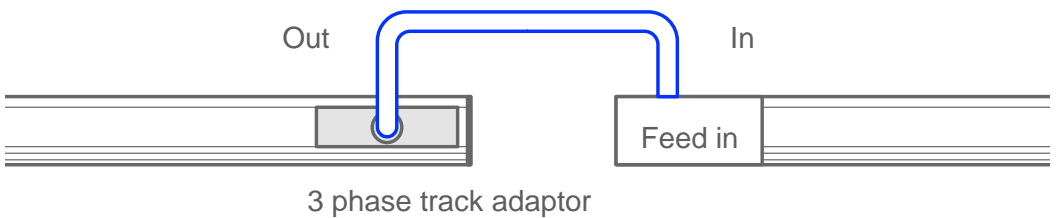
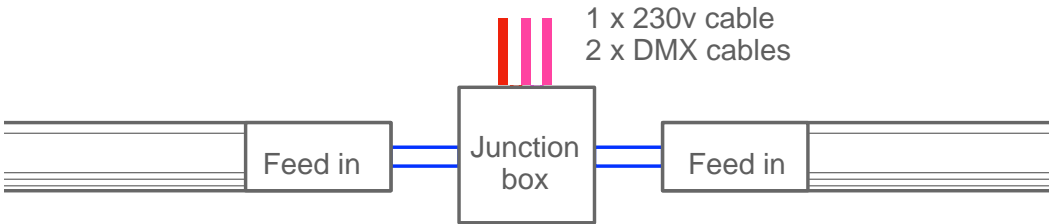
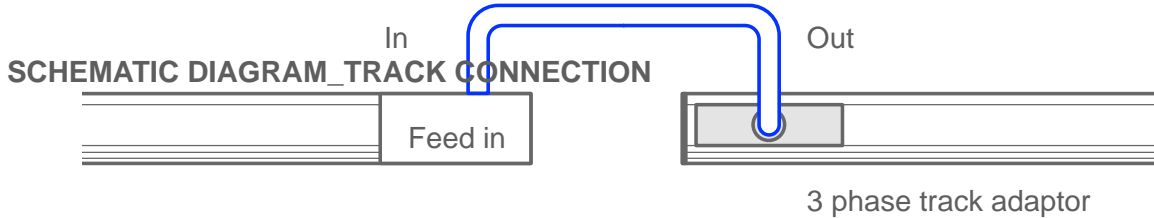
Maximum 32 luminaires and 12,5m Track length / DMX group



Schematic diagram_DMx TRACK



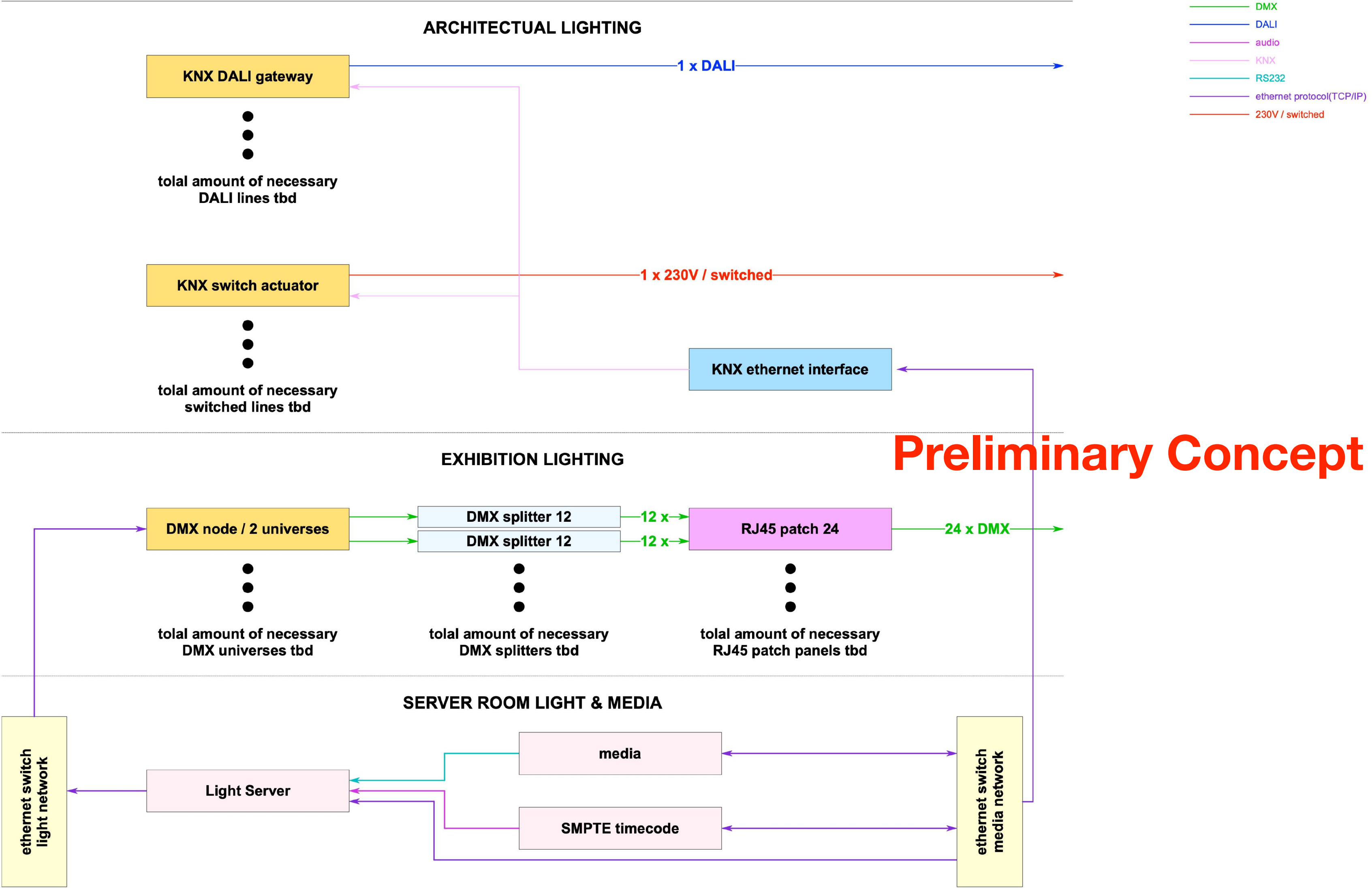
Schematic diagram_TRACK CONNECTION



LIGHTING CONCEPT

LIGHT CONTROL

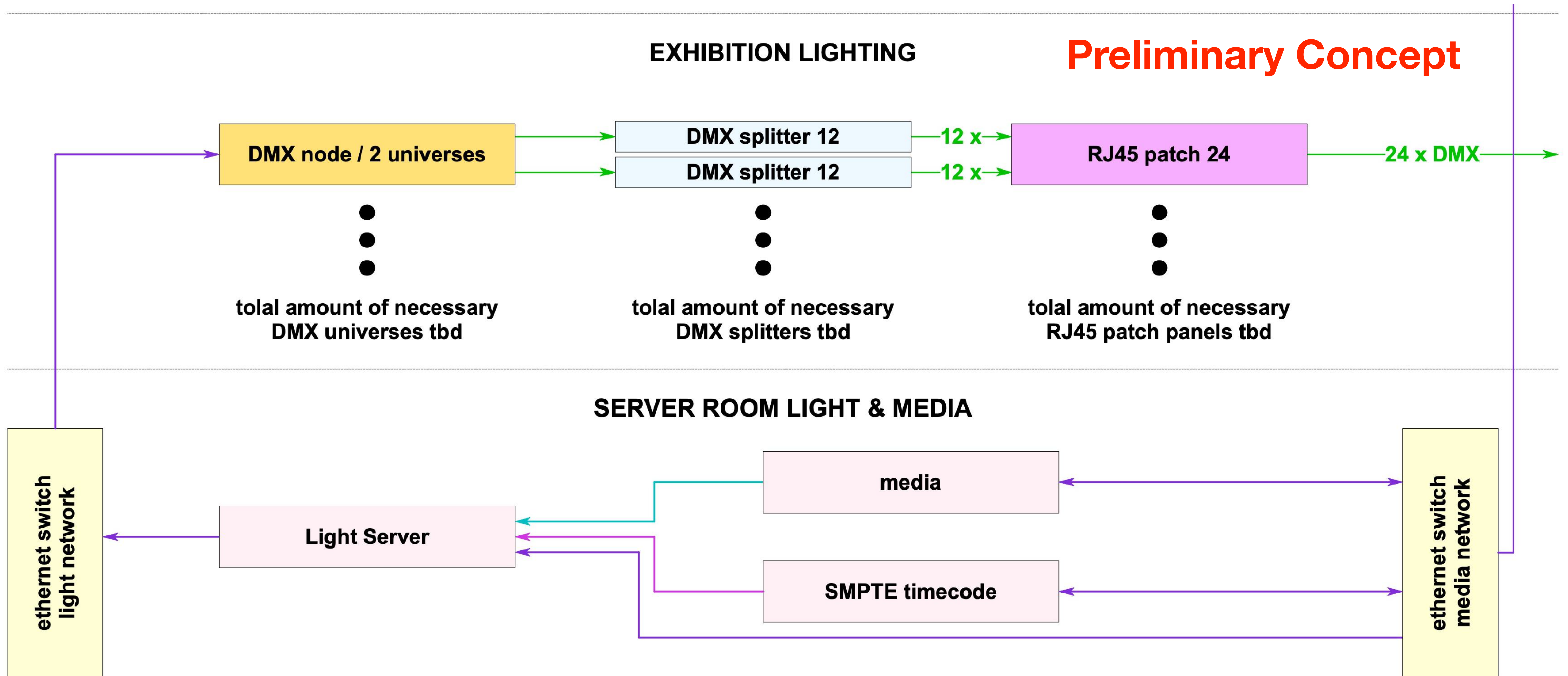
GENERAL LIGHT CONTROLLING DIAGRAM



Preliminary Concept

LIGHTING CONCEPT

LIGHT CONTROL



LIGHTING CONCEPT SUMMARY

Preliminary Numbers

Parameters									
Lighting System									
	Approximate Amount	Color Temp	CRI	Beam Angles approx or Zoom	Lumen Output	max Size Ø max	Control	Dimm	Assesories
Large Luminaires for High Ceilings									
Track Light LED	200 pcs	3.000 K	> 95	5°, 10°, 20°, 30°	± 2.000 lm	200 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Track Light LED	220 pcs	± 5.000 K	> 95	5°, 10°, 20°, 30°, 40°	± 2.000 lm	200 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Small Luminaires for Low Ceilings									
Track Light LED	10 pcs	3.000 K	> 95	10°, 20°, 30°	± 2.000 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Track Light LED	80 pcs	± 5.000 K	> 95	10°, 20°, 30°, 40°	± 1.200 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Track Light LED	40 pcs	3.000 K	> 95	4°	± 500 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Track Light LED	12 pcs	RGBW	> 95	10°, 20°, 30°, 40°	± 1.500 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Track Gobo Projektors	8 pcs	5.000 K		30°	± 2.000 lm	120 mm	DMX	0-100	

LIGHTING CONCEPT SUMMARY

Preliminary Numbers

Parameters									
Lighting System									
	Approximate Amount	Color Temp	CRI	Beam Angles approx or Zoom	Lumen Output	max Size Ø max	Control	Dimm	Assesories
Furniture Integrated Luminaires									
Linear Profile LED	40 m	tunable white		120°		25 mm	DMX	0-100	Mounting Assesories
Linear Wall Wash	100 m	6.500 K	> 95	wallwash		25 mm	DMX	0-100	Mounting Assesories
Spotlight LED	10 pcs	RGBW	> 95	30°, 40°	± 1.500 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Spotlight LED	48 pcs	3.000 K	> 95	oval	± 1.500 lm	120 mm	DMX	0-100	Anti-Glare Honeycomb, Exchangable Lenses
Effect Projectors	16 pcs	5.500 K	> 90	30°	± 1.500 lm	260 x 250 x 200	DMX	0-100	Exchangable Lenses and Effects
Effect Projectors	8 pcs	3.000 K	> 90	30°	± 1.500 lm	260 x 250 x 200	DMX	0-100	Exchangable Lenses and Effects
Light Ceiling Backlighting	13 sqm	Red/White		120°			DMX	0-100	Mounting Assesories
100 sqm Pixel Dot Matrix	400 pixels	5.000 K		120°		Spacing 50 x 50 cm	DMX	0-100	Mounting Assesories
DMX Light Track									
1 or 3 Phase, DMX Surface Mounted	650 m	Light track segments according to Ceiling Geometrie approx 1,0m to 1,5 m							Feeders, Connectors, Mounting Assesories
1 or 3 Phase, DMX Suspended	150 m	Arcade Rooms, Cosmology, Changing World - Light track segments approx 2,0 m to 4,0 m							Feeders, Connectors, Mounting Assesories
DMX Control									
DMX Control System incl. Backup	approx 6 Universes	Positioned centrally in Electrical Space with Media Control in Basement. All Wiring between Junction Boxes and Light Control (Data and Power) will be provided - Base Built							All Components incl. Control, Splitters, Patchpanel, Rack

LIGHTING CONCEPT SUMMARY

Scope:

- Delivery
- Installation according to Plan
- Mounting of Luminaires According to Plan
- Functional Testing
- Functional Preprogramming of DMX Control System
- Hand over Ready for use
- Assistance during Focussing and Programming

Final Focussing and Programming to be done by others

LIGHTING CONCEPT

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