



LIGHT GUIDELINES

Specific requirements for the last stage (one court) of the event.

SUMMARY

1. Introduction
2. Requirements
3. Lighting plan for the playing area (included entertainment sequences)
4. Shoot (measurements)
5. Alternative and specific areas
 - A. Setup with trusses from the floor
 - B. Coach Benches
 - C. Player's entrance (Walk in)
 - D. Awarding ceremony
6. Technical book



1. INTRODUCTION

Create the perfect conditions
for competition, TV and
spectators



1. INTRODUCTION

The foundations of a sporting event are very similar to that of a theatrical production; the athletes are the actors, and the spectators accompany them in the course of their emotions throughout the competition. This requires a subtle balance to create an entertaining atmosphere that arouses the interest of spectators while maintaining an environment conducive to the respect of athletes and safety rules to deliver the best show.

“The light setup is one of the key elements of the success of an event.”

The stakes are high for the competition, for television and for the quality of the show offered to the spectators.

This document has been produced to help the organizers design their lighting plan in accordance with the requirements of the ITTF.

Each arena/event has its own configuration and must meet its own requirements and constraints.

However, each organizer must be able to carry out his own study on the basis of this document in order to produce :

- Light sketch
- “Shoot” with properties of the luminaires, positions, illuminance and uniformity of the different areas



2. REQUIREMENTS

First and foremost, it is necessary to keep in mind that athletes are the priority. However, it is also essential to take into consideration the two audiences that the sport presentation should serve, namely **arena spectators and TV viewers**.

The light design must integrate the main objectives of the sport presentation:

- Allow athletes to play in the best conditions and referees to be able to take the right decisions.
- Allow media (TV / photographers) to capture the competition with adapted lighting that can meet the highest quality requirements (HD production, eventually 4K).
- Contribute to the drama of the event.

2. REQUIREMENTS

A. Measuring principles

Vertical illuminance (EV)

A sufficient contrast between the 2 players (or 4 players in case of doubles) is necessary to clearly identify them. This contrast will only be good if there is enough vertical illuminance. For television broadcasting, this criteria is essential to ensure quality HD recording and especially on the axis of the main camera, as well as for slow-motion.

Horizontal illuminance (EH)

This value measures the amount of light falling on the FOP. The playing area (9.60m x 17.80m) being the main part to light (like a boxing ring) and captured by the TV broadcasting, it means this value must be as homogeneous as possible over the entire Field Of Play (included benches and marketing A-board or LED surrounds). The ratio between the average of the horizontal illuminance and the average of the vertical illuminance must remain as close as possible level. Lighting on the horizontal plane allows the eye to adapt to the overall mood. It is important to create a background and depth of field for the footage.

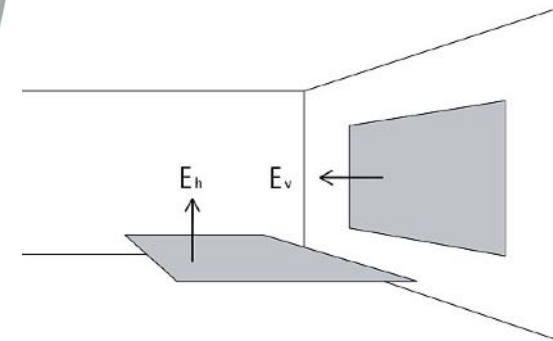


Illustration E_v (Vertical illuminance) and E_h (Horizontal illuminance) notions

2. REQUIREMENTS

B. Illuminance level & uniformity

The following criteria define the expected requirements for any event involving TV broadcasting. More than the overall perception of the spectators naked eye, the TV cameras are much more sensitive and requires a perfect homogeneity.

Vertical Illuminance EV From main directions camera			Horizontal Illuminance EH		
Average (lux)	U ¹ Min/max	U ² min /average	Average (lux)	U ¹ Min/max	U ² min /average
1500	0,7	0,8	1700	0,7	0,8

These values must be calculated on any measuring point (grid point) of the playing area.

Note: The measurement of the vertical illuminance is to be considered at 1.5m from the ground. The measurement of the horizontal illuminance is calculated on the ground.

$$U^1 = \frac{\text{lowest illuminance}}{\text{Highest illuminance}}$$

$$U^2 = \frac{\text{lowest illuminance}}{\text{average illuminance}}$$

2. REQUIREMENTS

C. Lights position

In order to avoid glares or shadows, it is necessary to factor the position of the lights, their height and their direction. To avoid these issues, place the lights in a geometric way by calculating the necessity to cover the playing area.

There is more than one option (depending on the arena's configuration), but it is recommended regarding competition and TV matters to setup lights both right over the table area (horizontal) and around the playing area. For entertainment sequences, it is authorized to use lights from others areas/positions.

Recommendation for the perfect lighting position:

Height : 10m from the floor to the bottom of the machines (lens)

Distance : from 0m (zenithal position) up to 10/12m beside the center of the table

Light cone angle : 40 / 90° (wide angle)

2. REQUIREMENTS

D. Color appearance and color rendering

Good color perception is really important for the setup. If variations are acceptable in the venue, they are much less so for the TV broadcast.

The source lights must have a rendering color index of at least Ra 80 and a color temperature between 4000K and 6000K (maximum average +/- 500k).

Color temperature variations can create flicker effects not visible to the naked eye but really visible on ultra-slow motion footage due to the camera shutter speed being faster than the light cycle. To avoid this phenomenon, it is highly recommended to use flicker-free machines. Recent technologies such as the LED guarantee flicker-free lighting.



3. LIGHTING PLAN

As said in the introduction, each arena/event has its own configuration and has its own requirements and constraints. There are many options to implement a specific lighting plan for the final stage depending on your goals, your budget and level of sport presentation that you are looking for.

So this part of our recommendation is only a “study case” as a option among a thousand but we strongly recommended to use :

- LED moving head products
- Rigging from the roof

RECOMMENDATION

The perfect lighting set for the final stage of the competition, for TV broadcasting but also for others keys moments (line up, toss, entertainment during break...)

- 56 ROBE ROBIN SPIIDER (Wash)
- 16 ROBE BMFL BLADE (Spot)
- 8 ROBE MEGAPOINTE (Hybrid > Spot / beam)



ROBE BMFL BLADE
1700W



ROBE Spiider
600W



ROBE Robin MegaPointe
470W

Note: Those products references are among the best on the international market at the time of this study (2018) but can obviously be replaced by other equivalent references respecting the machine type distribution (wash, spot, beam) and their light output.

Other brands such as CLAY PAKY, MARTIN are excellent alternatives.







Legend

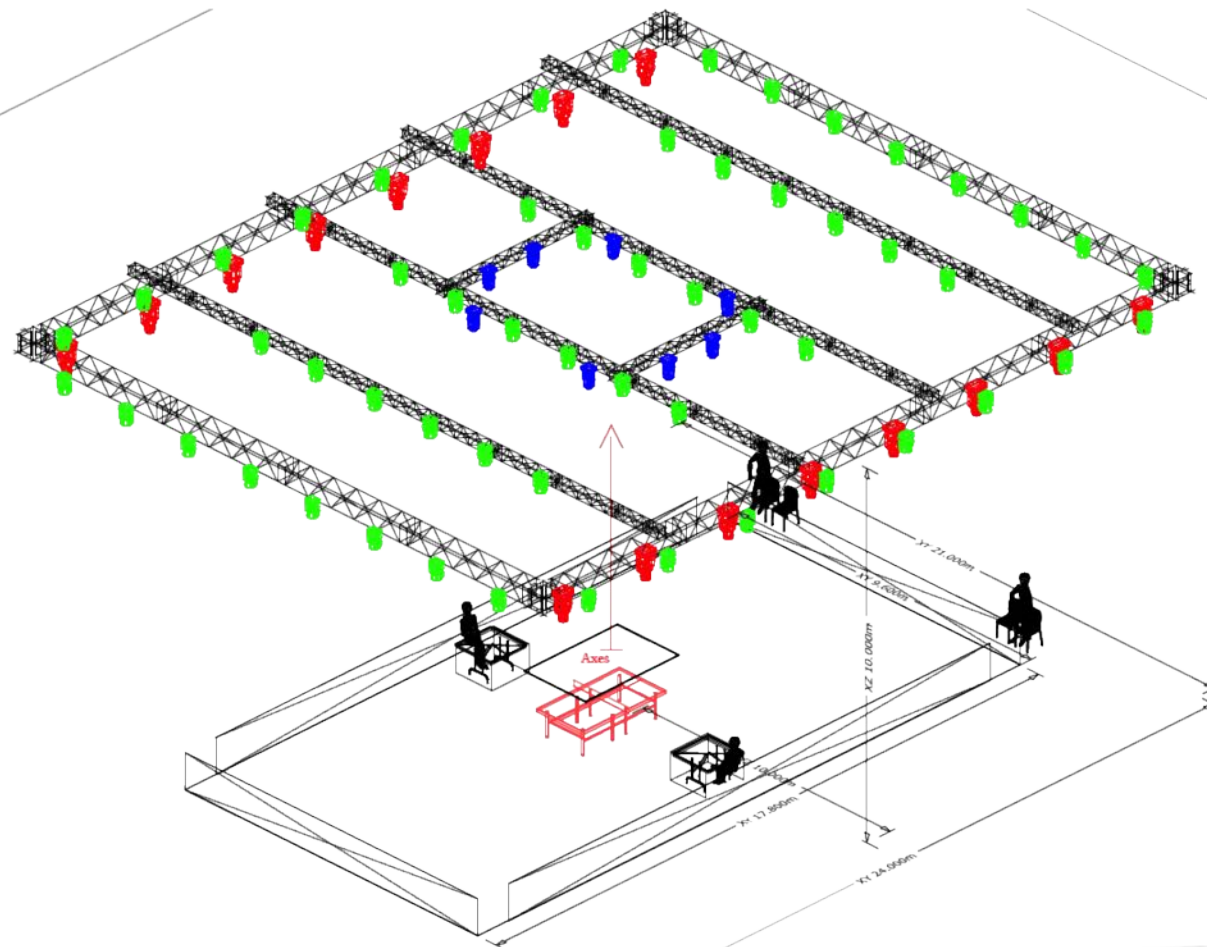
Symbole	Nom	Compte	Puissance	Lampe
	BMFL Blade	16	1700	1500W/60/P50
	Spiider	56	600	LED
	Robin Pointe	8	470	HRI 280w-R30

SCHEME

Perspective view

Legend







Symbole	Nom	Compte	Puissance	Lampe
 	BMFL Blade	16	1700	1500W/60/P50
 	Spider	56	600	LED
 	Robin Pointe	8	470	HRI 280w-R30

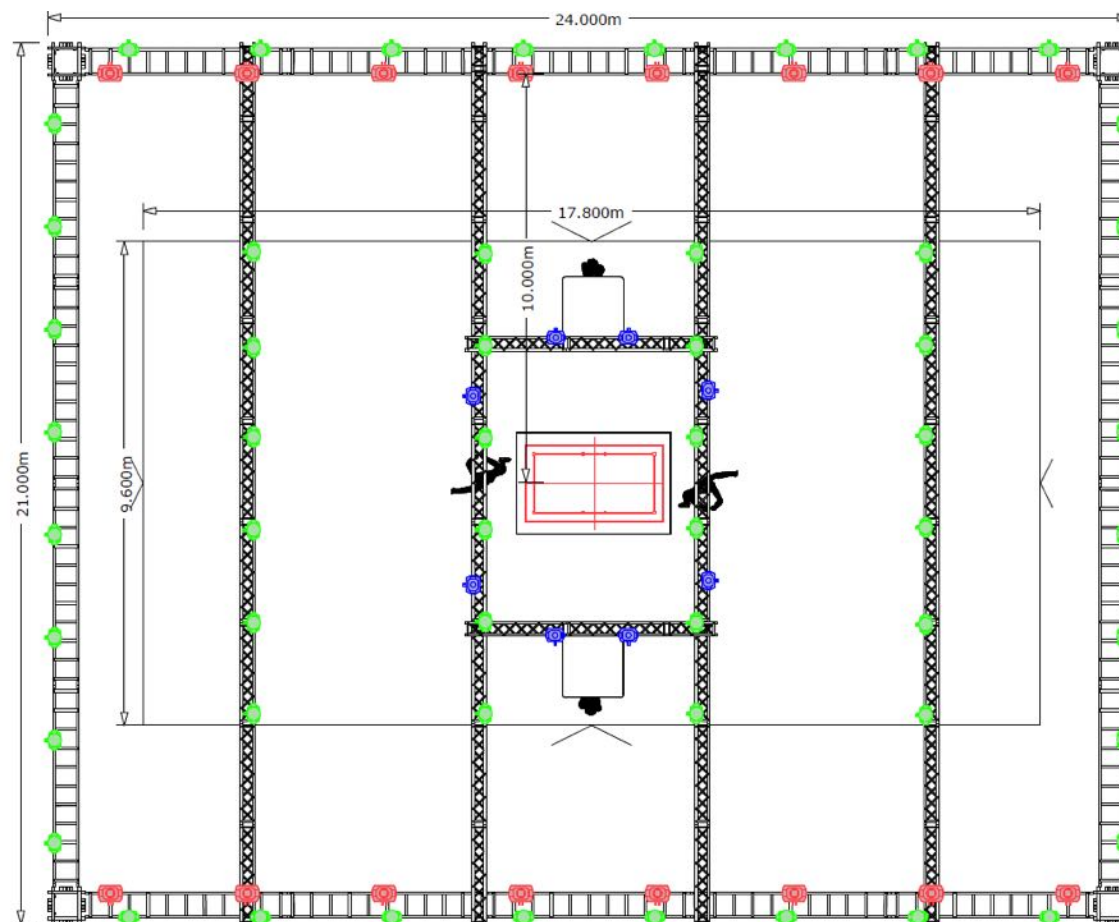


SCHEME

Top view

Legend







Symbole	Nom	Compte	Puissance	Lampe
 	BMFL Blade	16	1700	1500W/60/P50
 	Spiider	56	600	LED
 	Robin Pointe	8	470	HRI 280w-R30

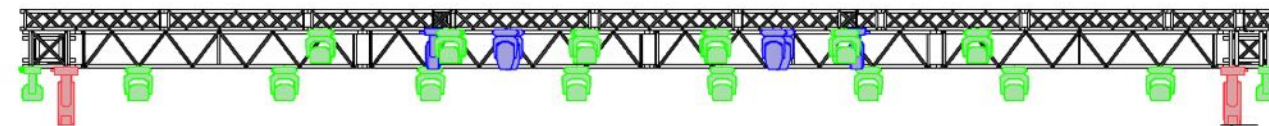


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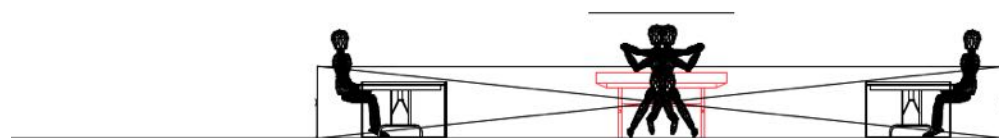
Sectional view

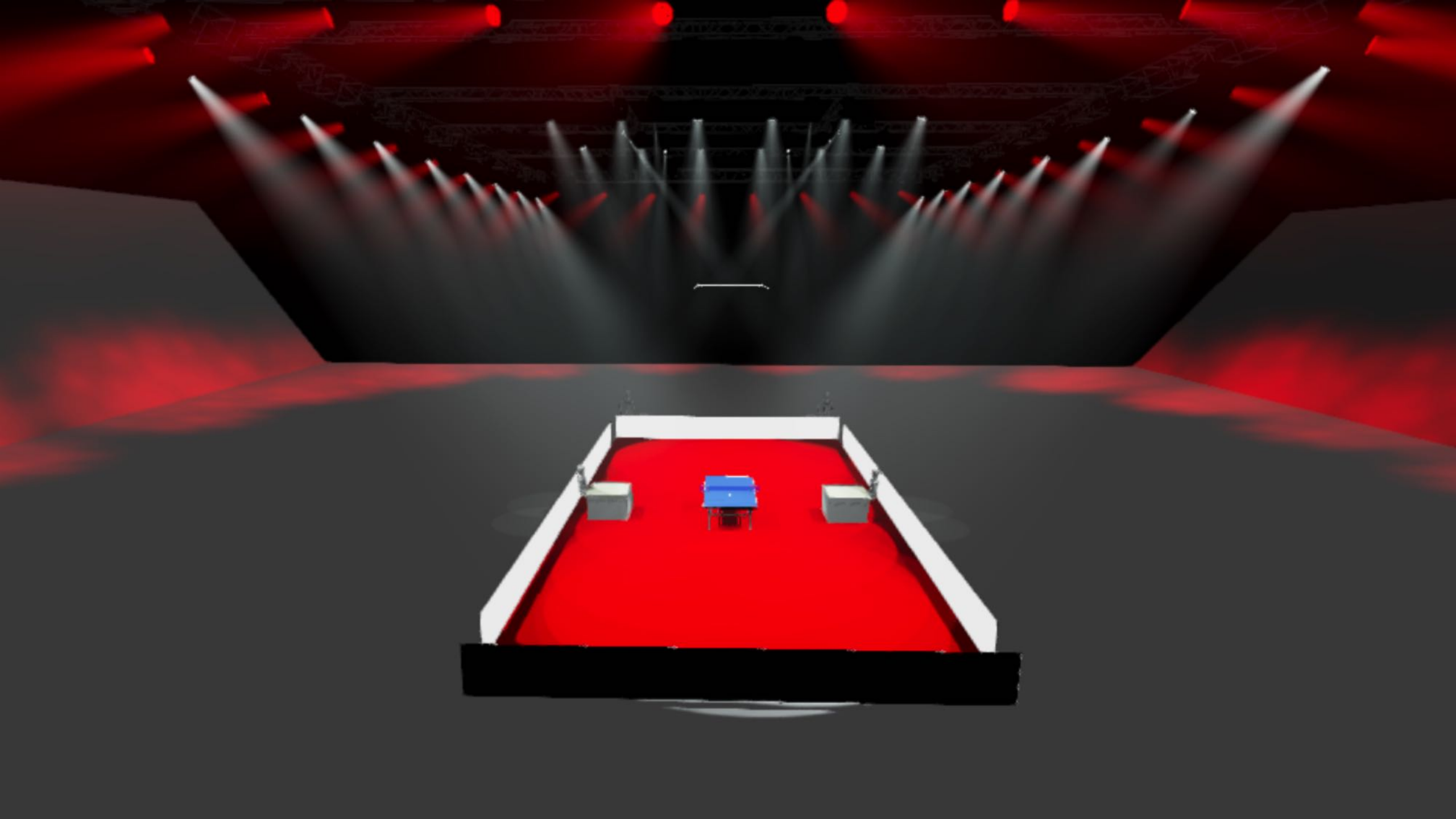
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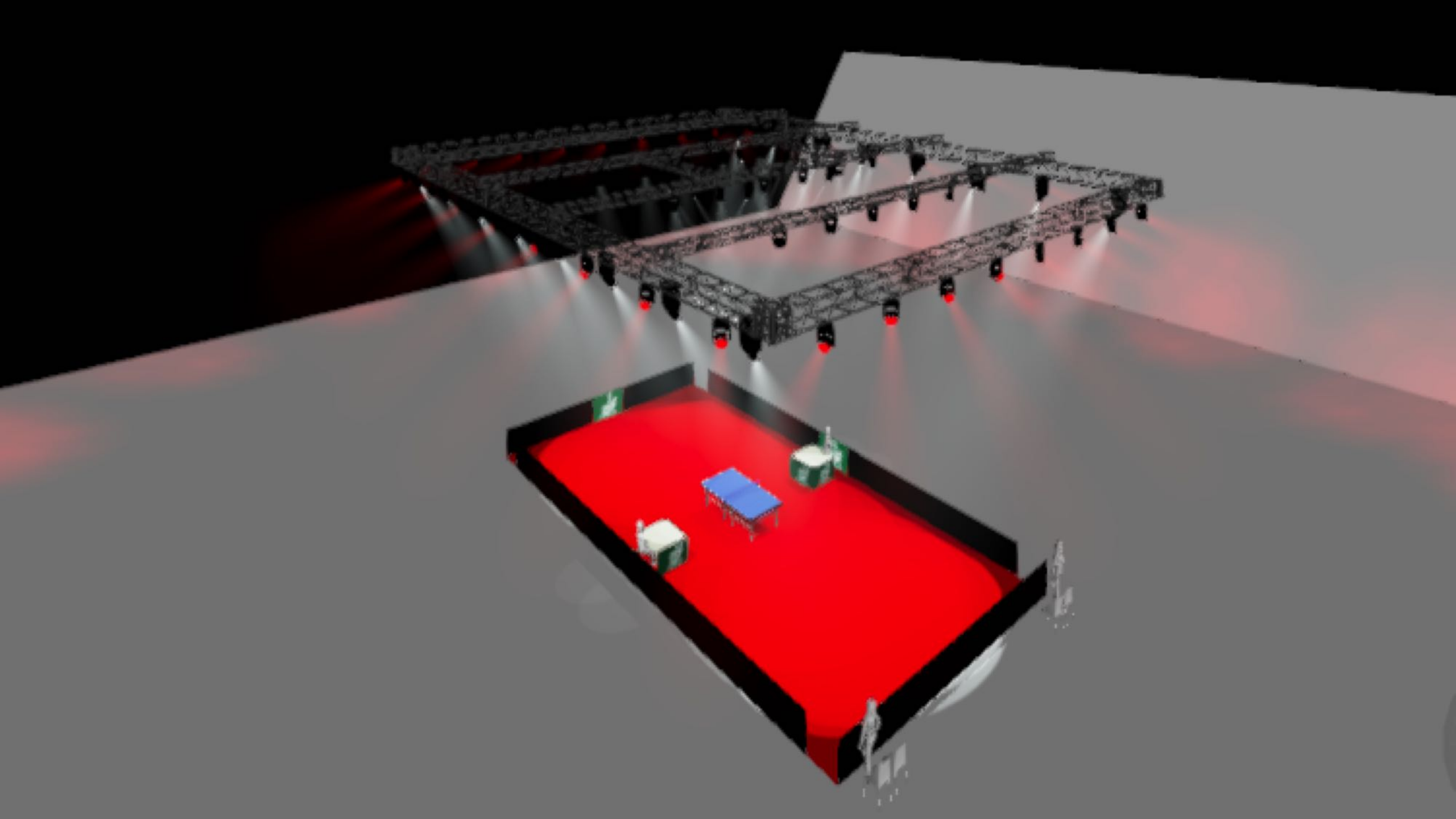
Symbole	Nom	Compte	Puissance	Lampe
 	BMFL Blade	16	1700	1500W/60/P50
 	Spiider	56	600	LED
 	Robin Pointe	8	470	HRI 280w-R30

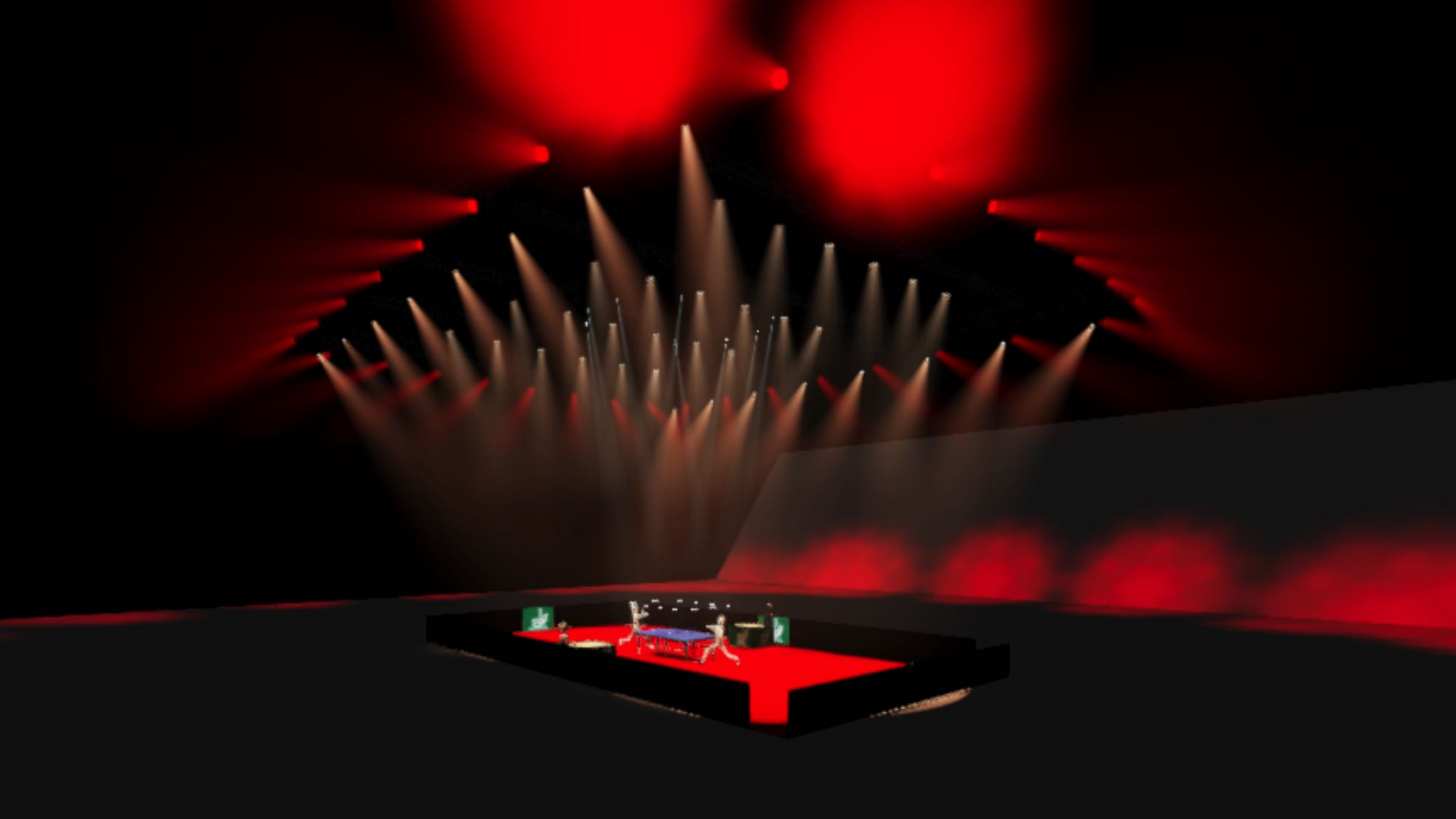


10.000m

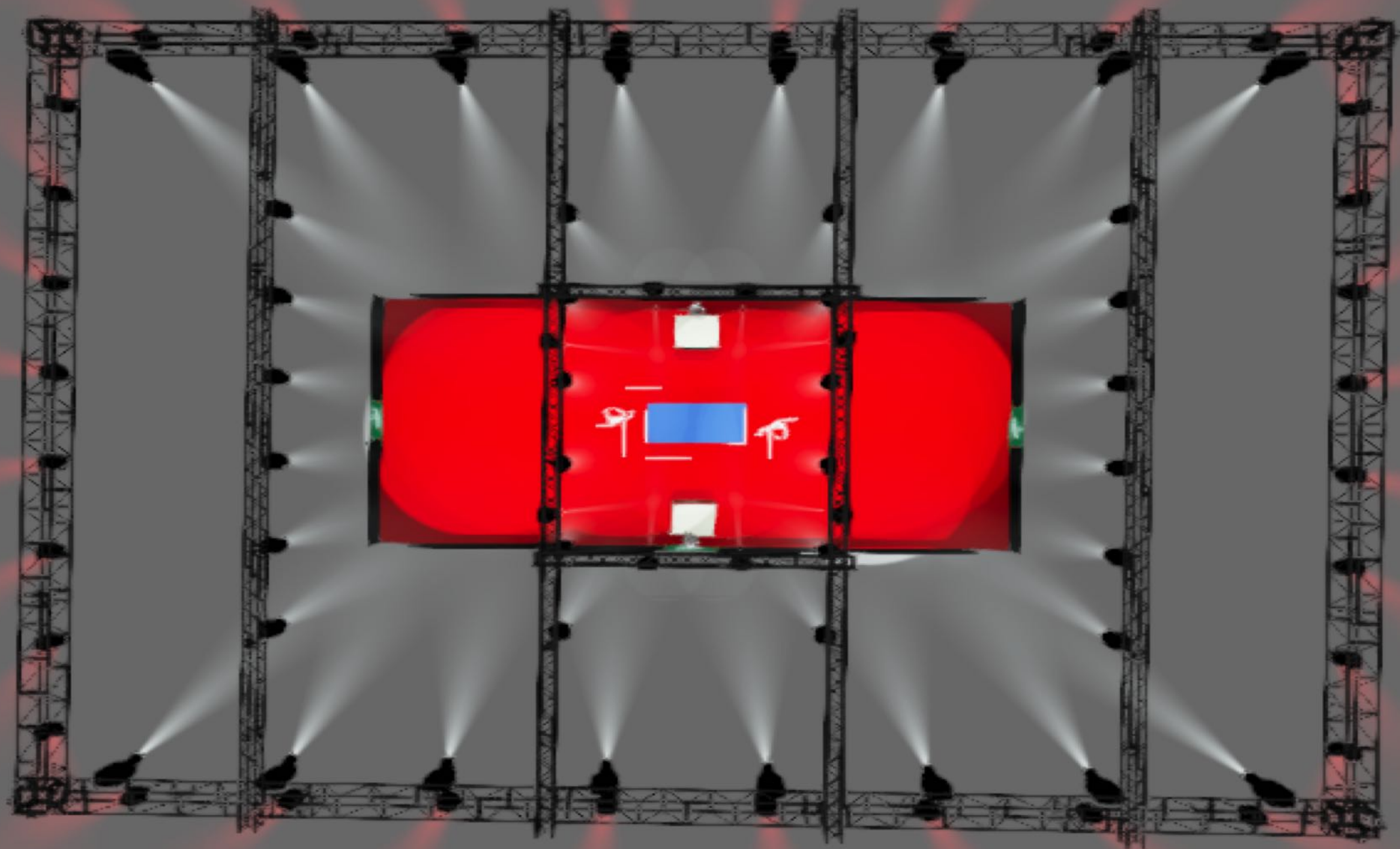


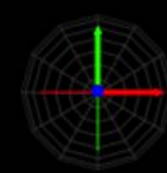
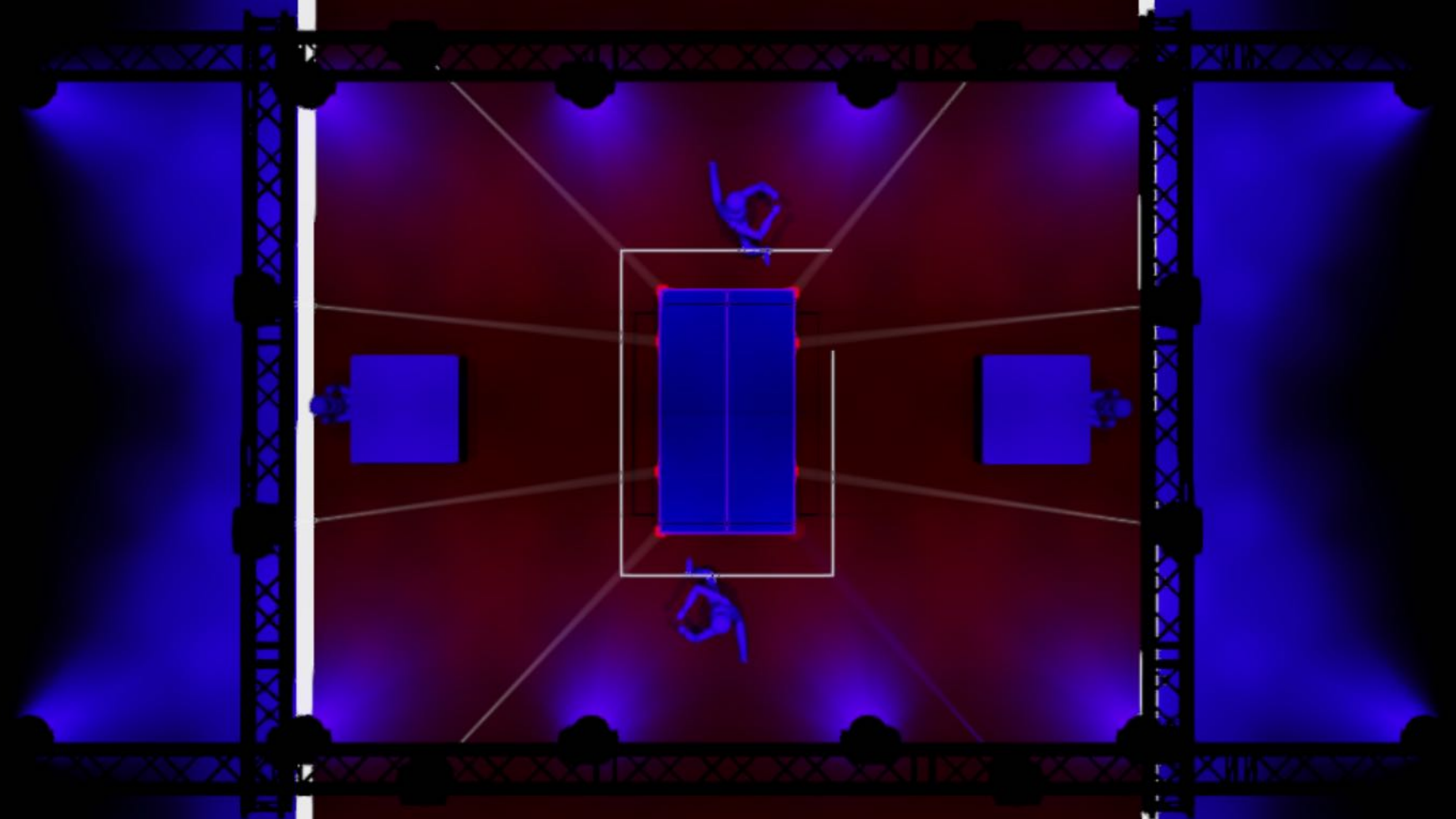














4. SHOOT

Measurements

Following this lighting plan, you can find on this section the measurements of lux.

As required, each lighting plan has to respect a minimum illuminance ($E_v > 1500\text{lux}$ / $E_h > 1700\text{ lux}$) and a good homogeneity.

These values are obtained from DIALUX software.



5. ALTERNATIVE & SPECIFIC AREAS

In this section, you will find alternative option in case there is no rigging point in the venue and specific requirements for others areas such as coach benches, player's entrance, ceremony.

5. ALTERNATIVE

A. Trusses from the floor







In case the venue doesn't allow to use rig from the roof and even if it's not the best way to implement lighting, you can use trusses directly from the floor.

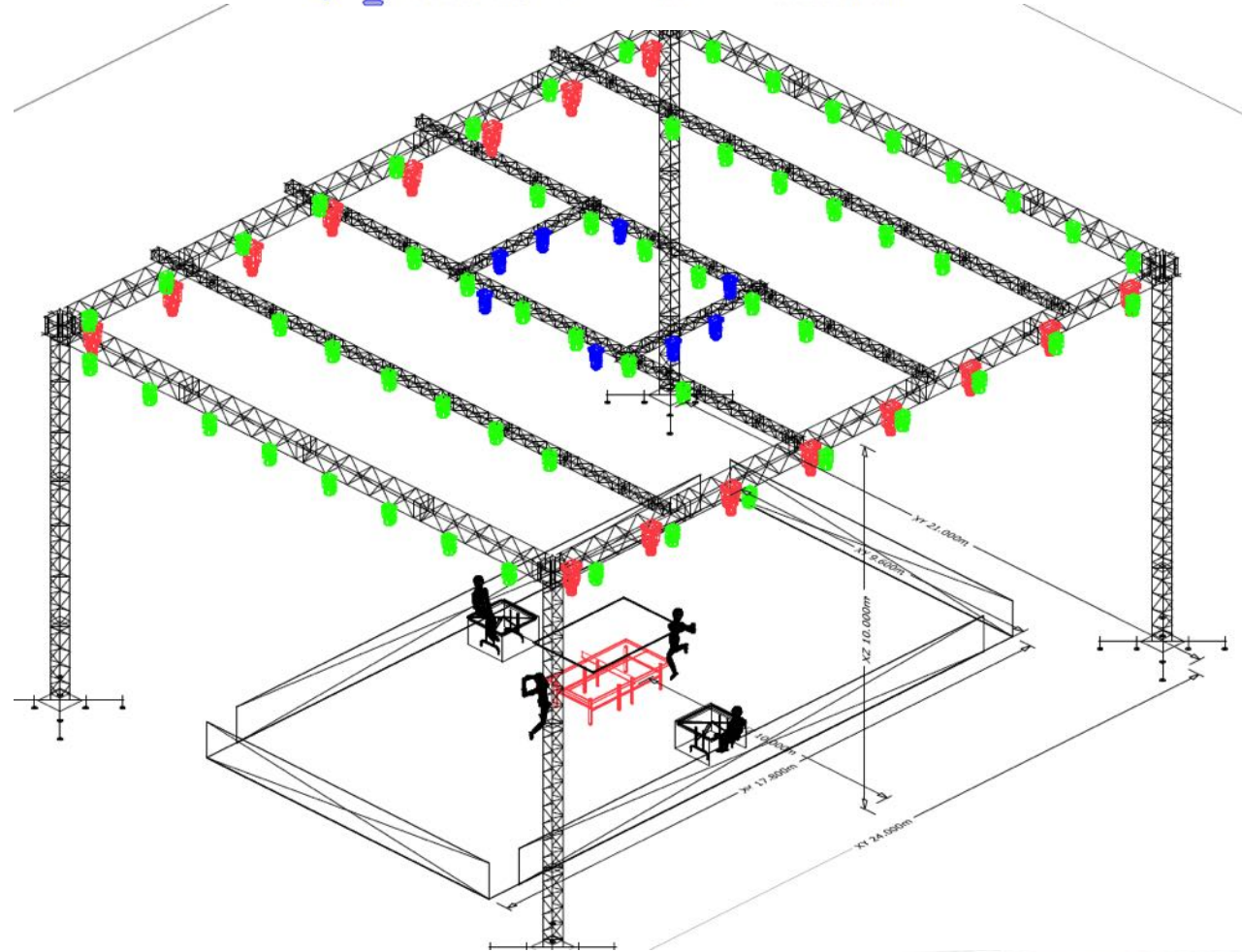
In that case, the idea is to keep the same requirements (position, height, equipments...) and just add appropriate trusses

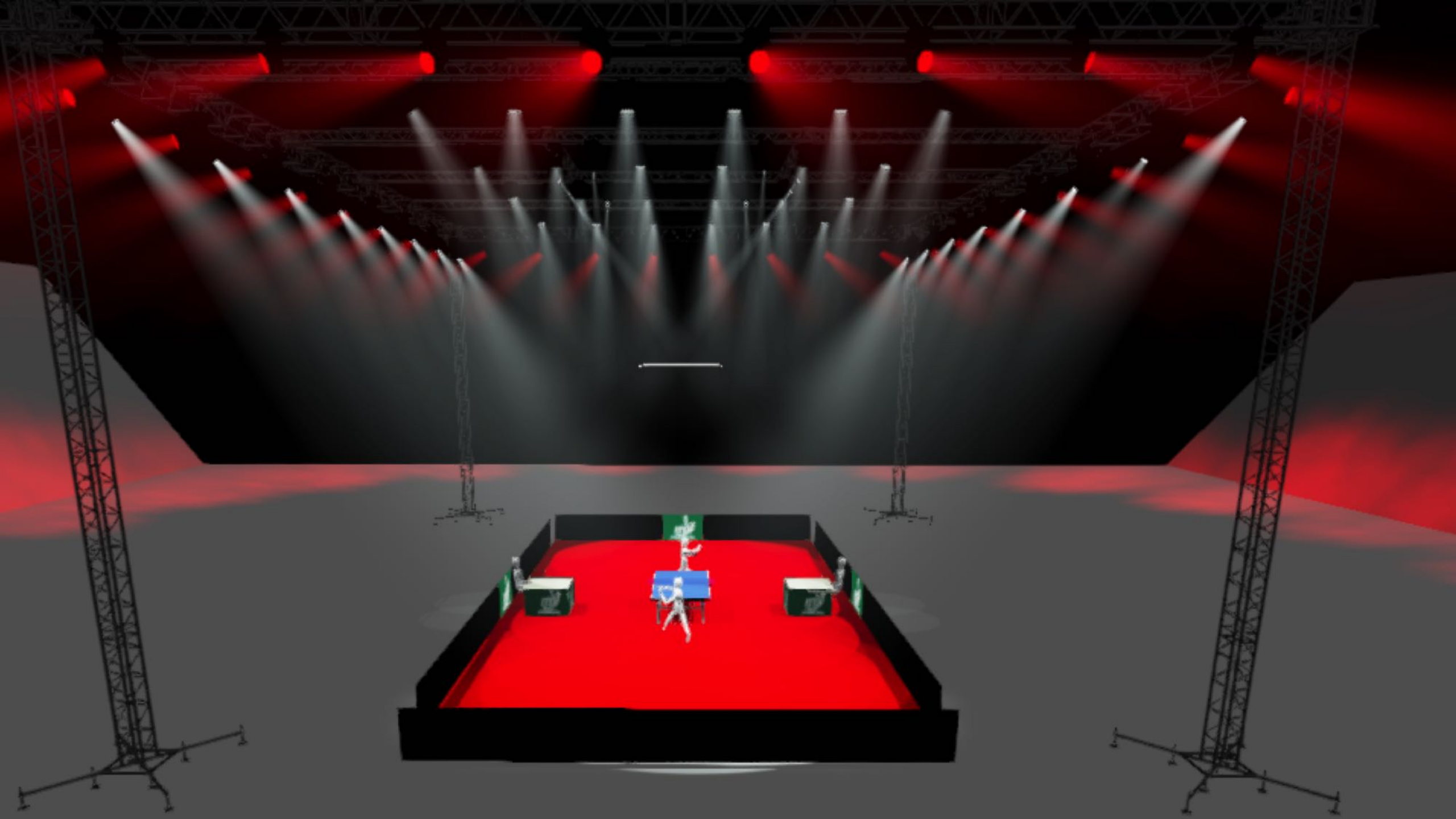
SCHEME

Sectional view

Legend

Symbole	Nom	Compte	Puissance	Lampe
 	BMFL Blade	16	1700	1500W/60/P50
 	Spiider	56	600	LED
 	Robin Pointe	8	470	HRI 280w-R30





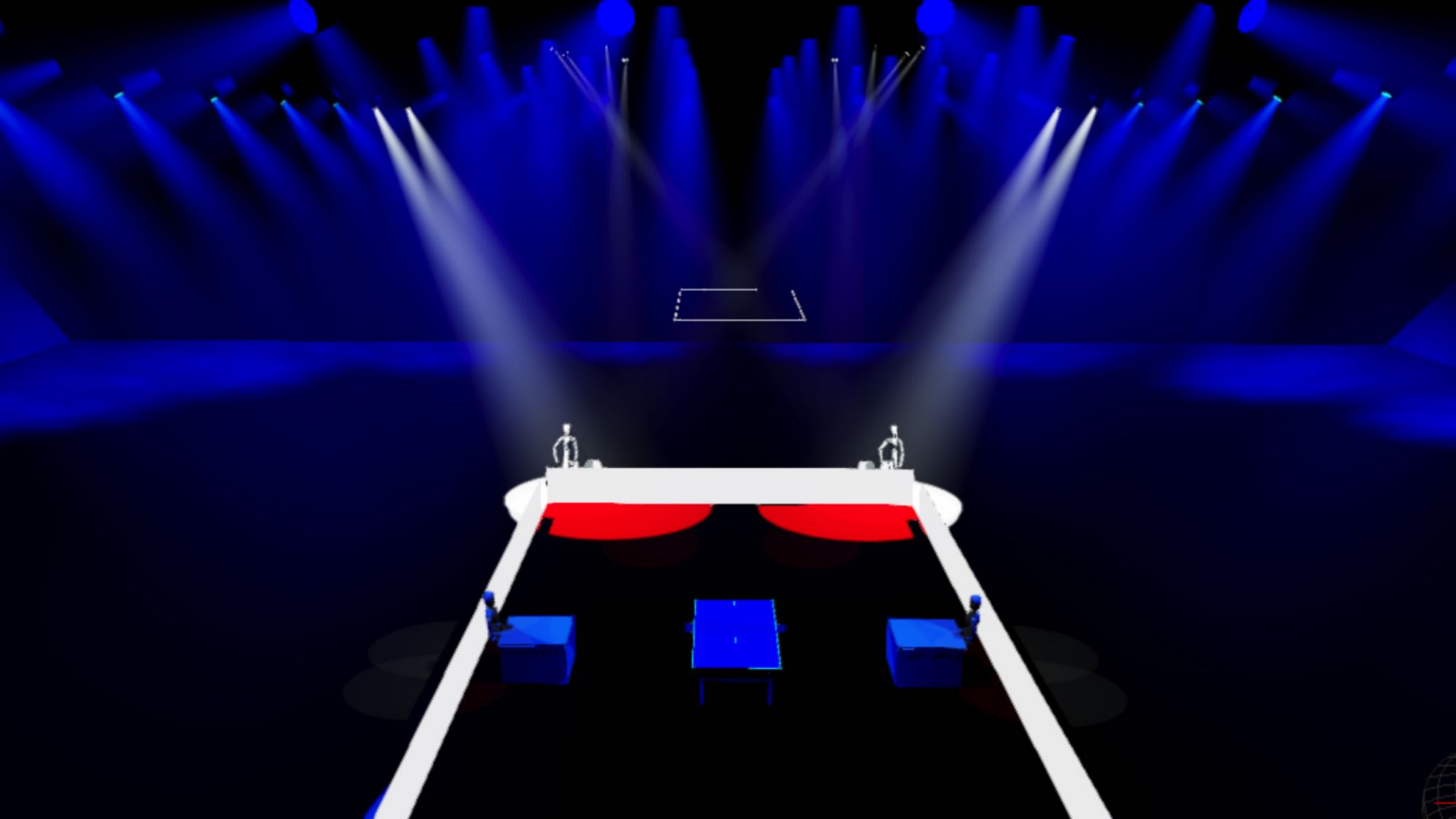
5. SPECIFIC AREAS

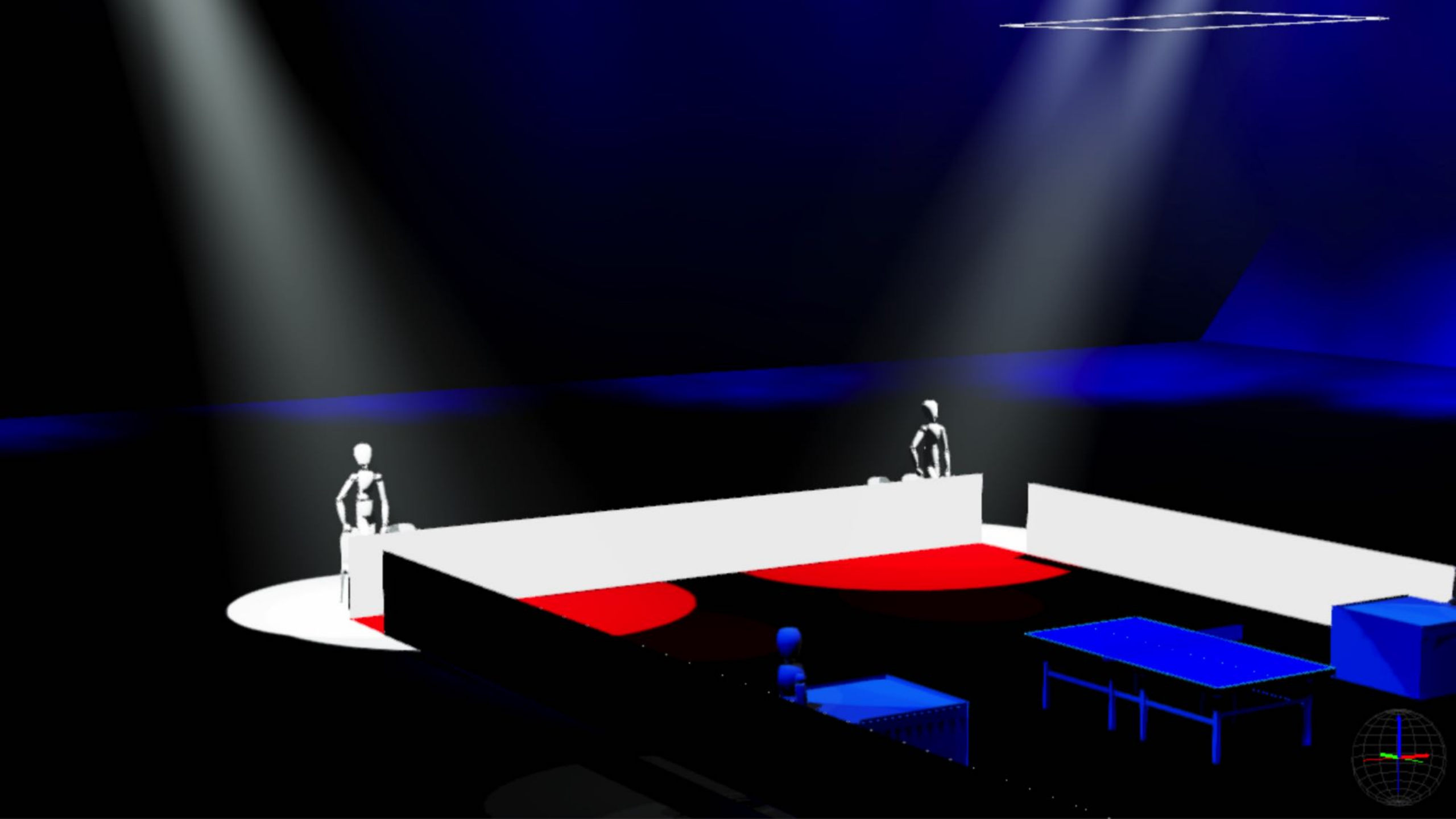
B. Coaches Benches

Particularly during break, coach benches need to be illuminated.

This lighting plan allows few spot lights to be directive and specific to the coaches' positions. Without taking away the focus lighting on the competition area, we suggest using effects dedicated to the entertainment (beam effects / short angle) to avoid too soft and widespread lighting on those positions.

For TV broadcasting, this specific lighting needs to be the same color temperature with the playing area.





5. SPECIFIC AREAS

C. Player's entrance (walk in)

This moment is essential to contribute to the drama of the sport. It offers a unique experience for all spectators in the stands but also the players themselves, as they are featured as real heroes of their sport.

It's a great way to capture audience attention and produce high-intensity images. This presentation requires close attention to its development, its production value (Video, Light, FX) and its entertainment (Announcers and music).

During the walk-in, the players need sufficient light from follow spot lights and/or a hall of light to guarantee his visibility on the TV broadcast.



Once again, there is not only one way to implement but the player's entrance must include following products :

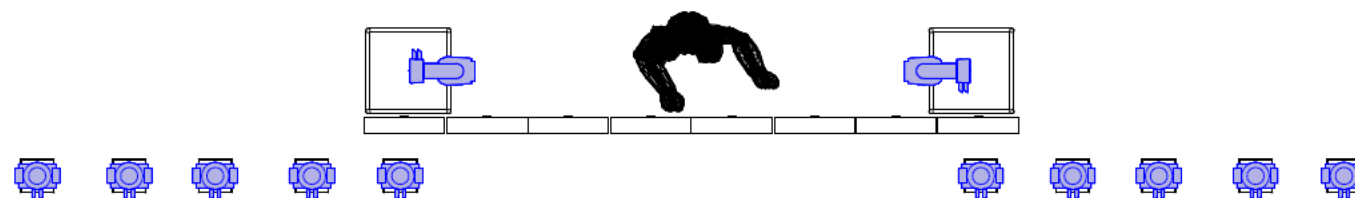
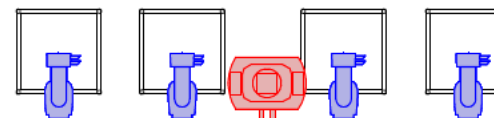
- Technical Arch/tunnel with a significant drop to be able to create field depth
- Hall of light from the roof (and in addition from the floor as a look & feel element)
- Follow spot (with operators) to avoid darkness on player's face (see details on the luminaire book)

SCHEME

Top view



Legend

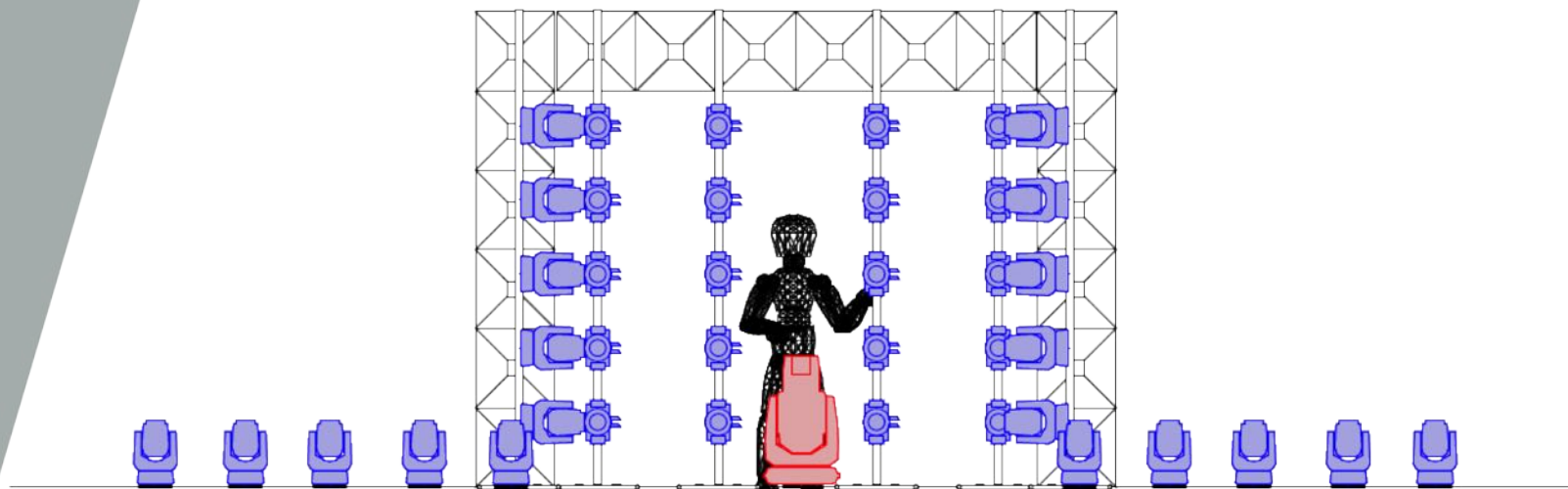
Symbole	Nom	Compte	Spares	Puissance	Lampe	Lentille	Mode	# Channels
	BMFL Blade	1		1700	1500W/60/P50 Lok-it!		2	42
	Spikie	40		200	LED		2	21



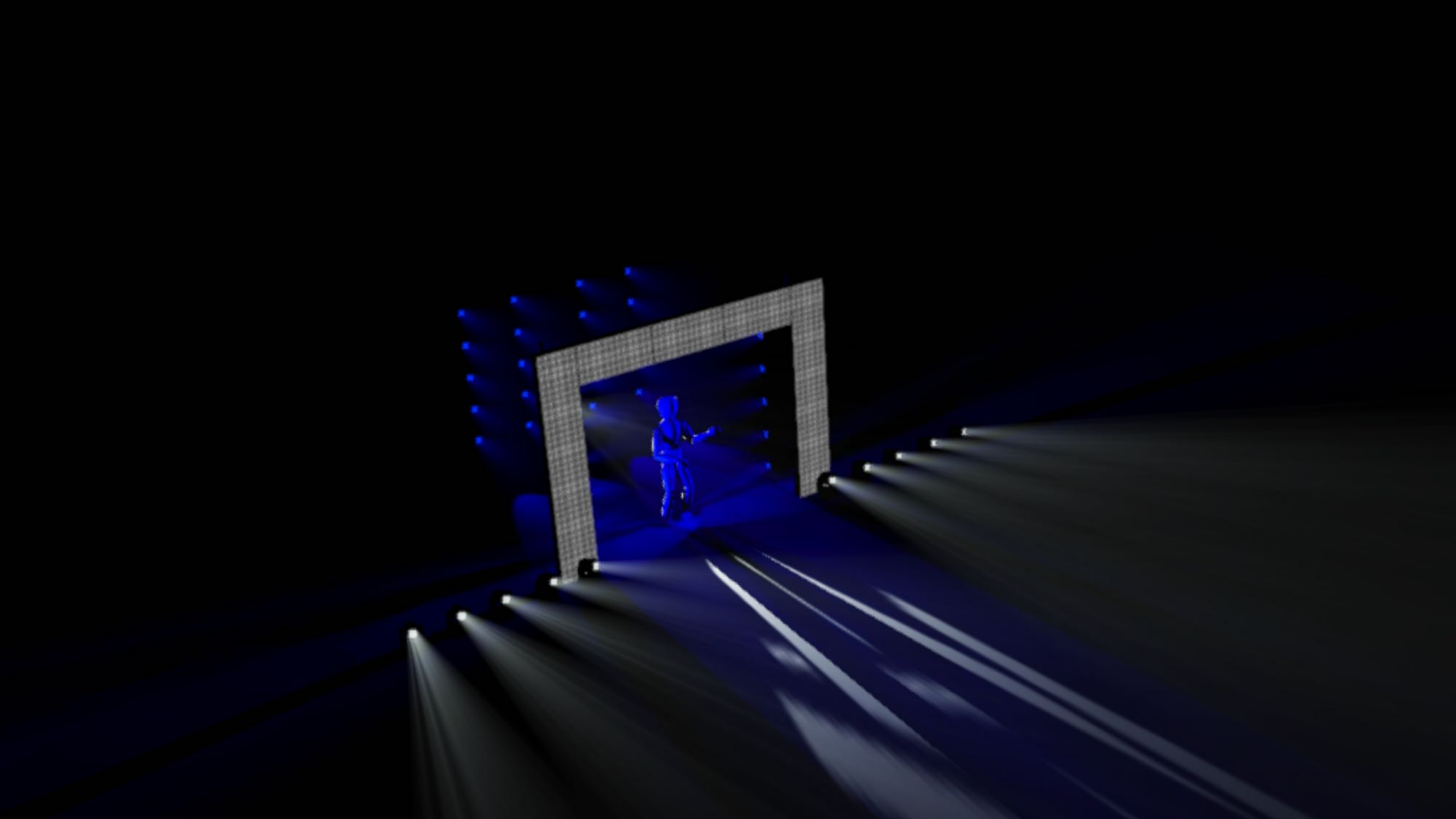
SCHEME

Front view

Legend								
Symbole	Nom	Compte	Spares	Puissance	Lampe	Lentille	Mode	# Channels
	BMFL Blade	1		1700	1500W/60/P50 Lok-it!		2	42
	Spikie	40		200	LED		2	21







5. SPECIFIC AREAS

D. Awarding ceremony



Similarly to playing area, the ceremony area needs to have its own lighting setup to avoid shadows and/or darkness.

If the ceremony is broadcasted, you need the same level of illuminance as the playground.

On the following pages, you will find a standard setup to ensure a good level for this key moment.

SCHEME





Top view

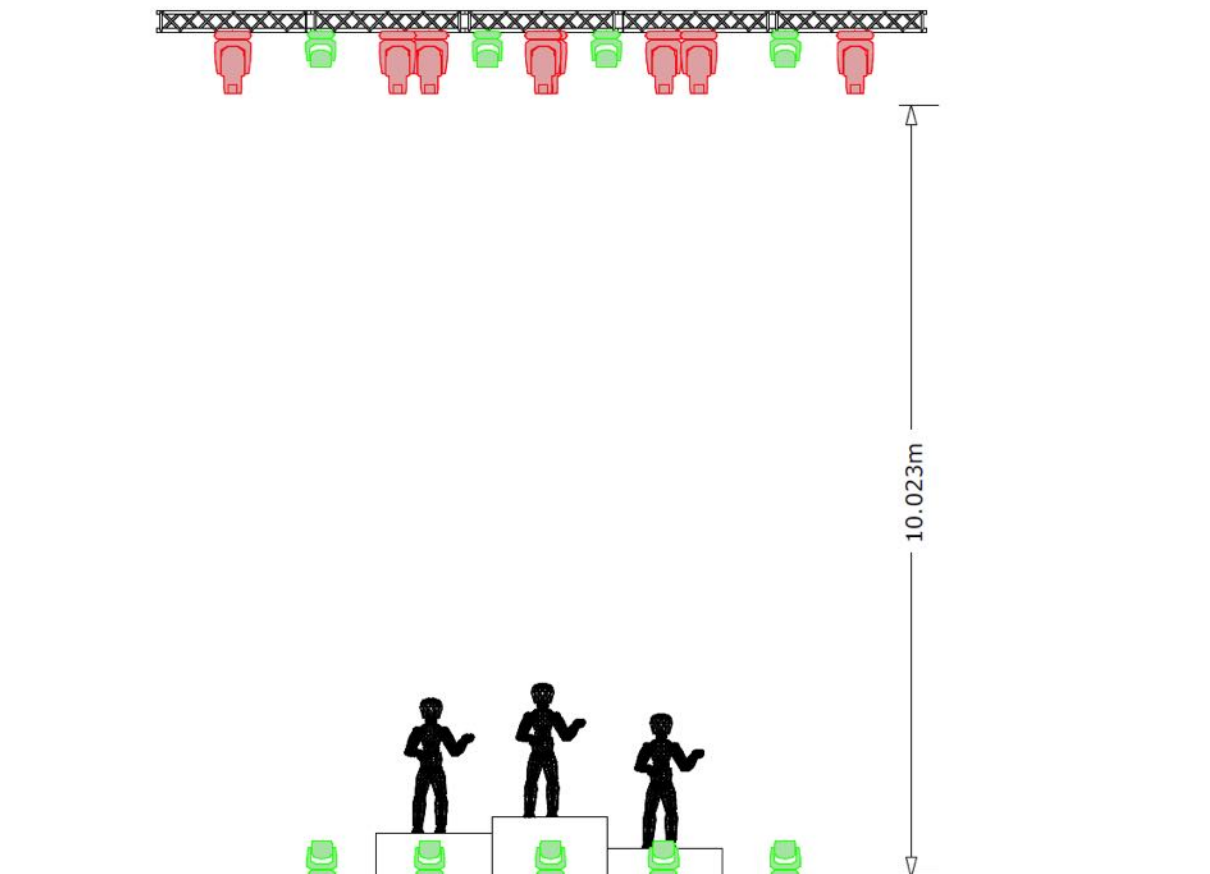
Legend								
Symbole	Nom	Compte	Spare	Puissance	Lampe	Lentille	Mode	# Channels
	BMFL Blade	8		1700	1500W/60/P50 Lok-it!		2	42
	Spider	9		600	LED		3	33

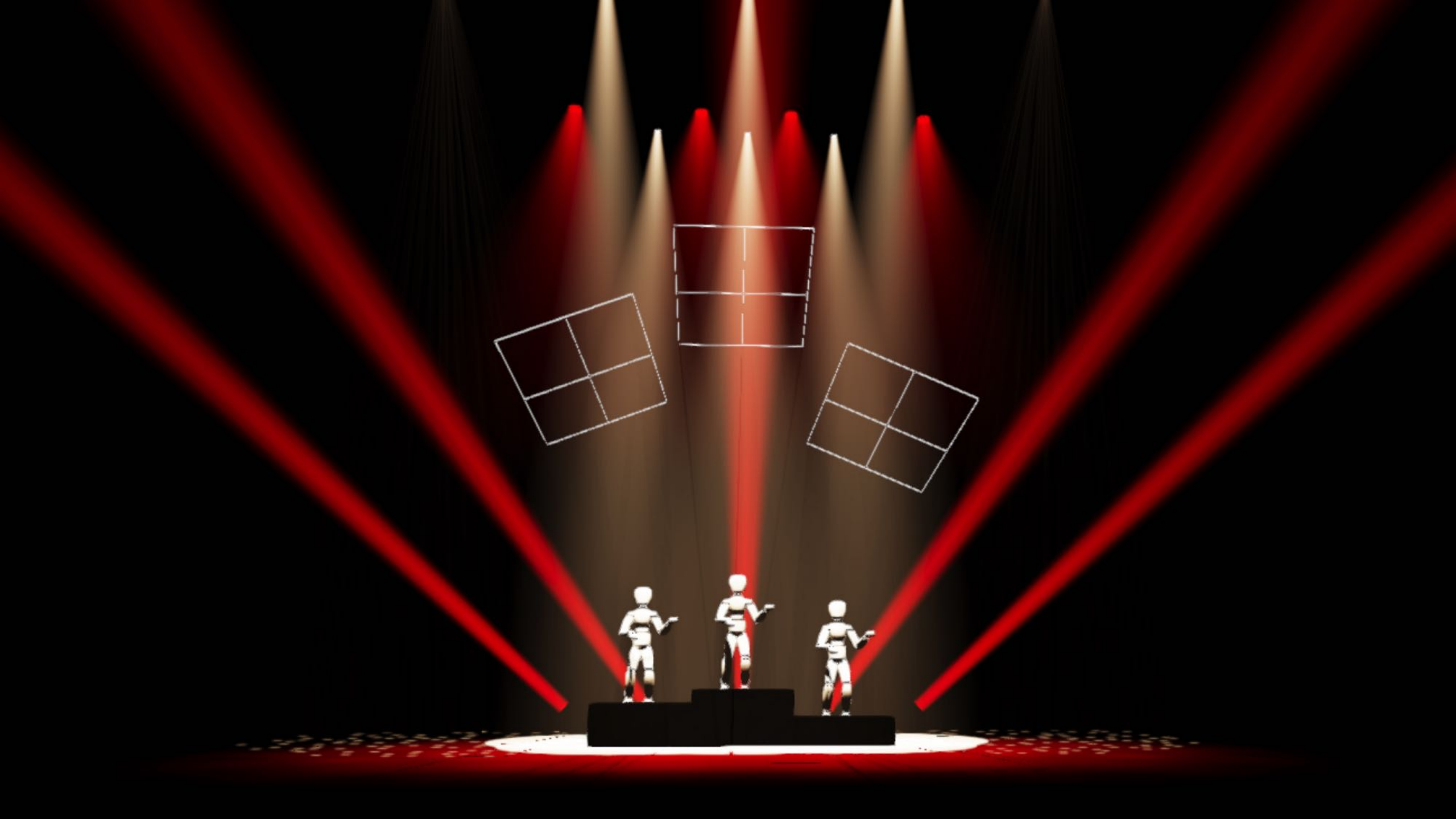


SCHEME

Front view

Legend								
Symbole	Nom	Compte	Spare	Puissance	Lampe	Lentille	Mode	# Channels
 	BMFL Blade	8		1700	1500W/60/P50 Lok-it!		2	42
 	Spider	9		600	LED		3	33







6. TECHNICAL BOOK

In this section you will find the different recommended products in this study. Note that some similar products can exist elsewhere. We recommend following those guidelines in terms of numbers, type of products (wash, spot, beam) and how powerful they are to ensure a good level of lighting.

WASH LIGHT

Spiider 600w (Robe)



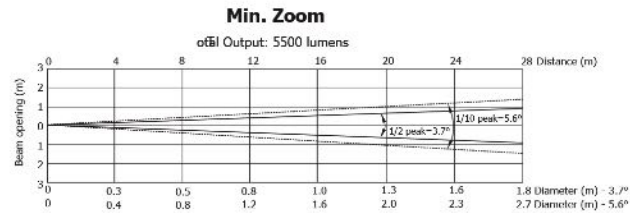
Click on the picture to open product sheet

PRIORITY USE FOR: SPORT LIGHTING (+ audience areas)
TECHNOLOGY: LED (1x 60W RGBW and 18 x 30W RGBW)

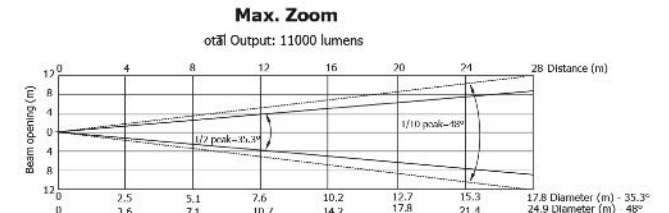
ALTERNATIVE PRODUCTS :

- A.leda Wash K20 (CLAY PAKY)
- MAC Quantum Wash (MARTIN)
- And more...

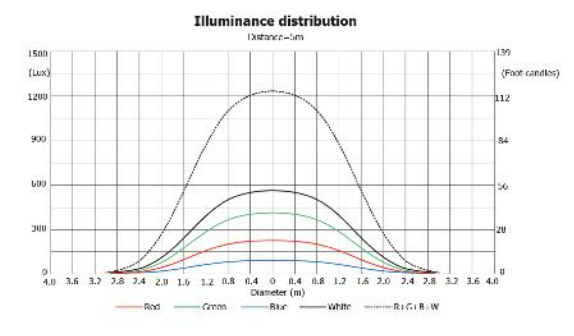
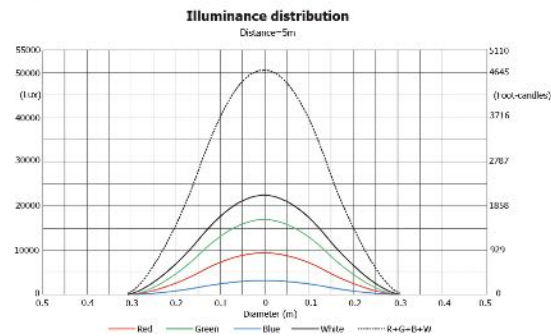
PHOTOMETRICS DIAGRAM



Distance (m)	4	5	8	12	16	20	24	28	
Red	14464/333	9320/866	3640/338	1618/150	910/85	502/54	405/38	297/28	
Green	23508/2369	15330/1516	6375/592	2833/263	1594/148	1020/95	708/66	520/48	
Blue	4822/457	3150/293	1230/114	547/51	308/29	197/18	137/13	100/9	Intensity (Lux) / Foot-candle
White	3503/329	2240/207	875/814	389/362	219/203	140/130	97/90	71/44	
R+G+B+W	28298/2721	18030/1464	7060/648	3098/282	1803/165	1130/281	717/200	598/148	



Distance (m)	4	5	8	12	16	20	24	28	
Red	367/34	255/22	99/9	40/4	23/2	15/1.4	10/0.9	8/0.7	
Green	656/61	420/39	164/15	73/7	41/3.8	26/2.4	18/1.7	13/1.2	
Blue	133/12	85/8	33/3	15/1.4	8/0.8	5/0.5	4/0.3	2.7/0.3	Intensity (Lux) / Foot-candle
White	890/83	570/53	222/21	99/9	56/5	36/3.3	25/2.3	18/1.7	
R+G+B+W	1953/182	1250/116	488/45	217/20	122/11	78/7	54/5	40/3.7	



SPOT LIGHT

Bmfl blade 1700w
(Robe)



Click on the picture to open product sheet

PRIORITY USE FOR: SPORT LIGHTING (+ Entertainment / walk in...)

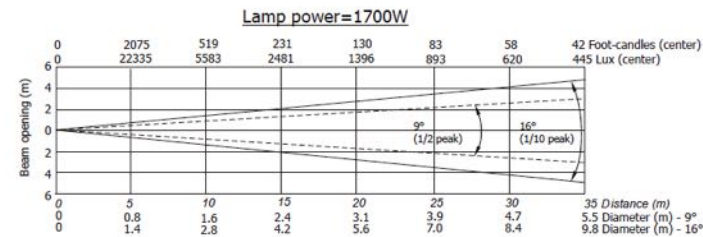
TECHNOLOGY: DISCHARGE LAMP (1700 W OSRAM)

ALTERNATIVE PRODUCTS :

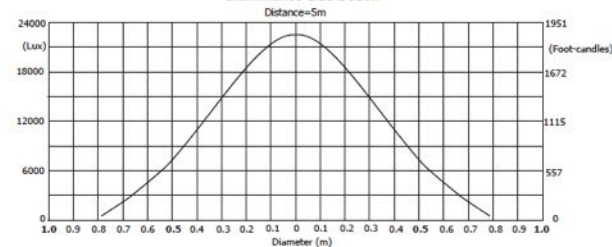
- Alpha spot 1500 (CLAY PAKY)
- MAC viper Profile (MARTIN)
- and more...

PHOTOMETRICS DIAGRAM

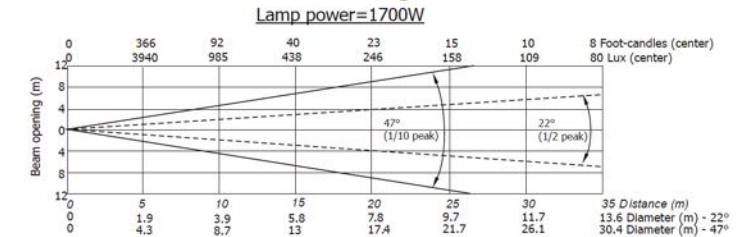
Min. Zoom with Light Frost



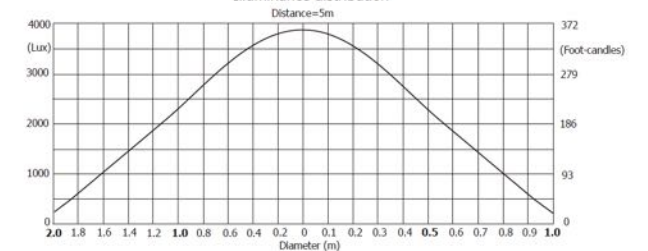
Illuminance distribution



Max. Zoom with Light Frost



Illuminance distribution



BEAM LIGHT

Megapointe 470w
(Robe)



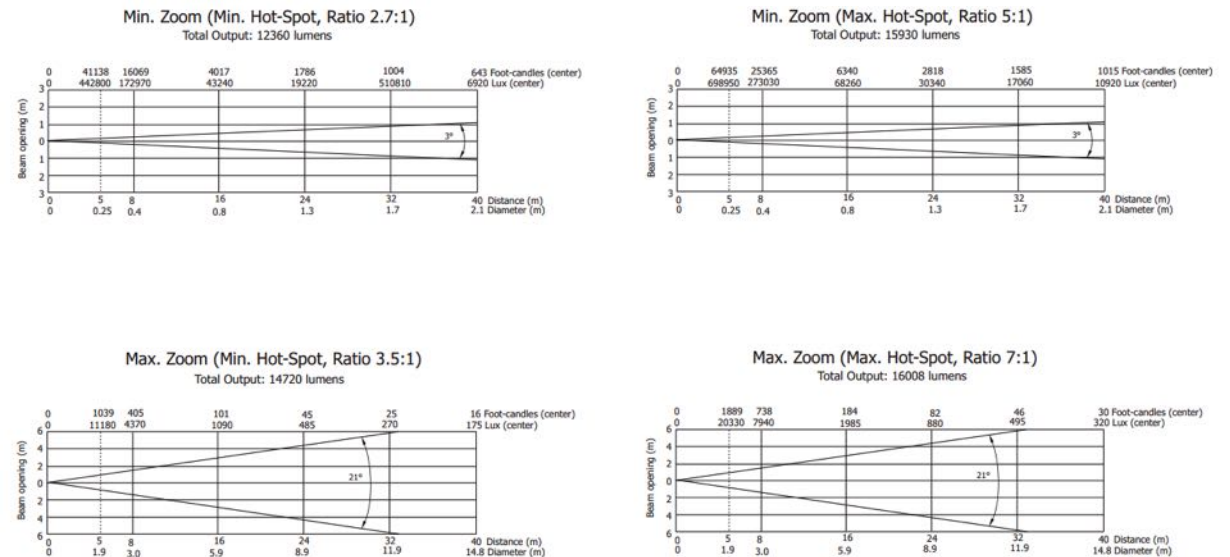
Click on the picture
to open product sheet

PRIORITY USE FOR: ENTERTAINMENT (+ coach benches)
TECHNOLOGY: DISCHARGE LAMP (470 W OSRAM)

ALTERNATIVE PRODUCTS :

- Sharpy (CLAY PAKY) or Mythos hybrid (Beam + spot)
- Rush MH11 Beam (MARTIN) or RUSH MH7 Hybrid
- And more...

PHOTOMETRICS DIAGRAM (Beam mode)



Note: This product is call hybrid as it can be use as well on spot mode (42°max. angle)

FOLLOW SPOT #1

Aramis 2500W
HMI (Robert Juliat)



Click on the picture
to open product sheet

PRIORITY USE FOR: WALK-IN / TOSS / AWARDING CEREMONY
TECHNOLOGY: HMI LAMP



This kind of product is still the best solution to follow player during walk-in as much as is very powerful lamp.

ALTERNATIVE SOLUTION

Unfortunalty, it's not always possible to use traditionnal followspot like ROBERT-JULIAT Product (space, power, etc.)

With the **RoboSpot™ Follow Spot system** , we can now use **BMFL blade (or others products)** like a **follow spot** by using the Robe RoboSpot MDC remote and is pre-wired for the Digital Camera.

See more details [here](#)

