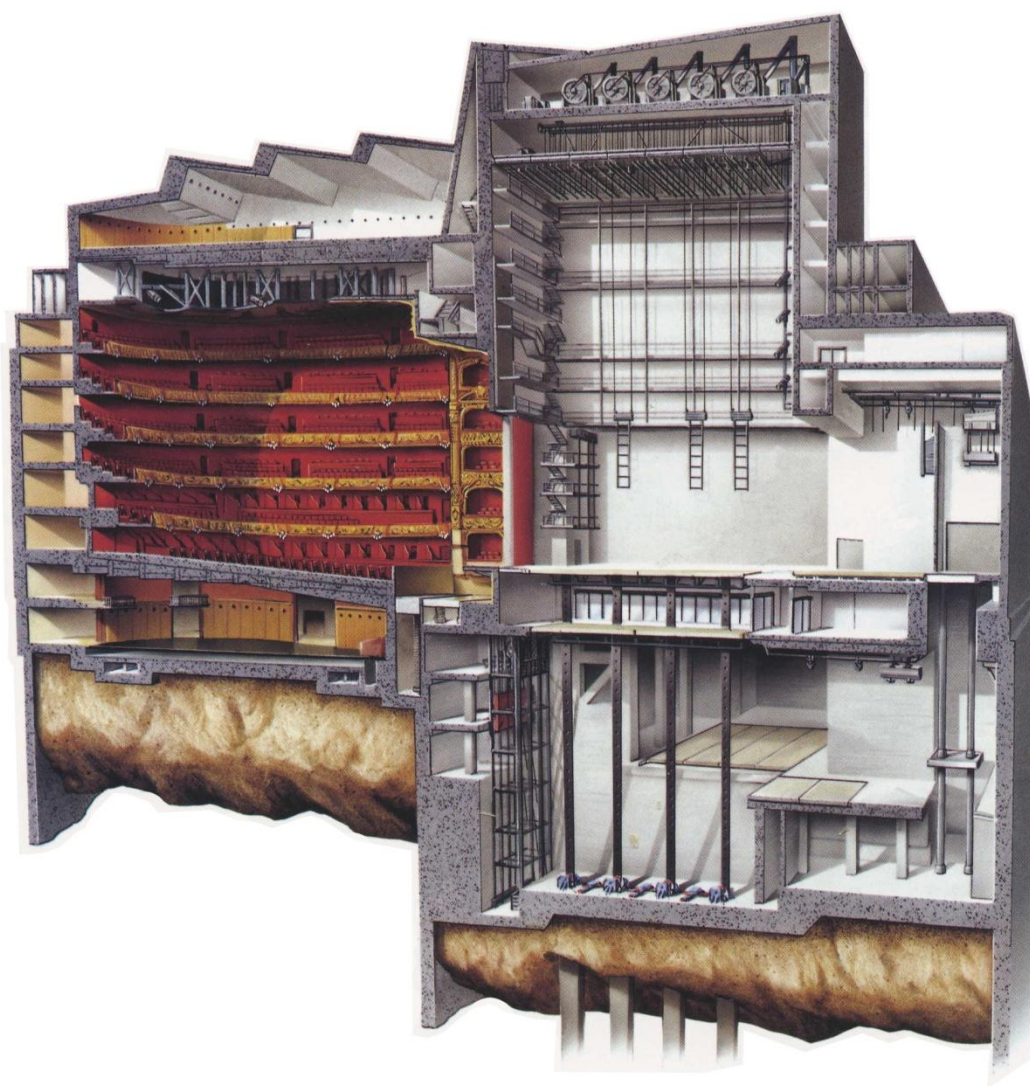
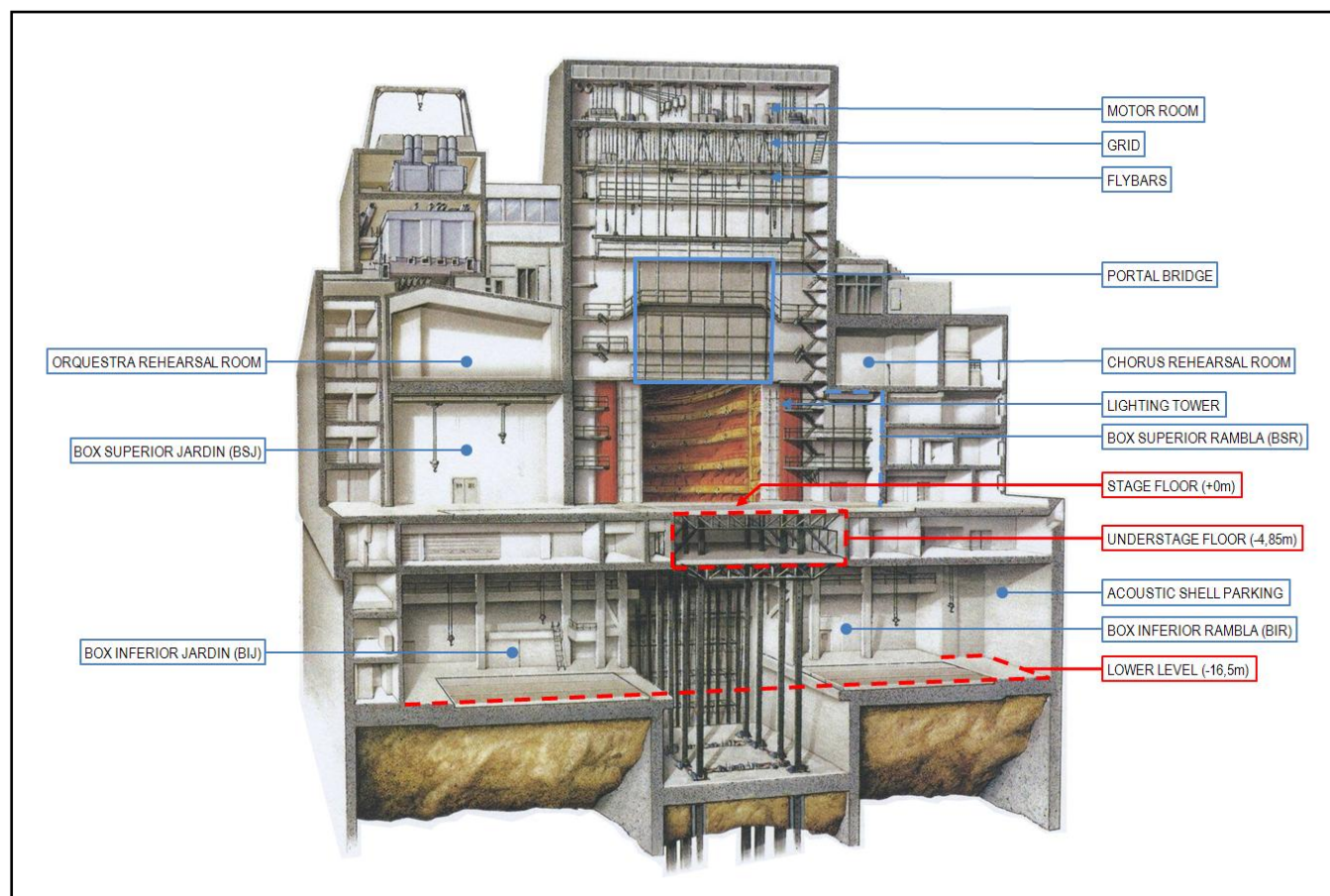
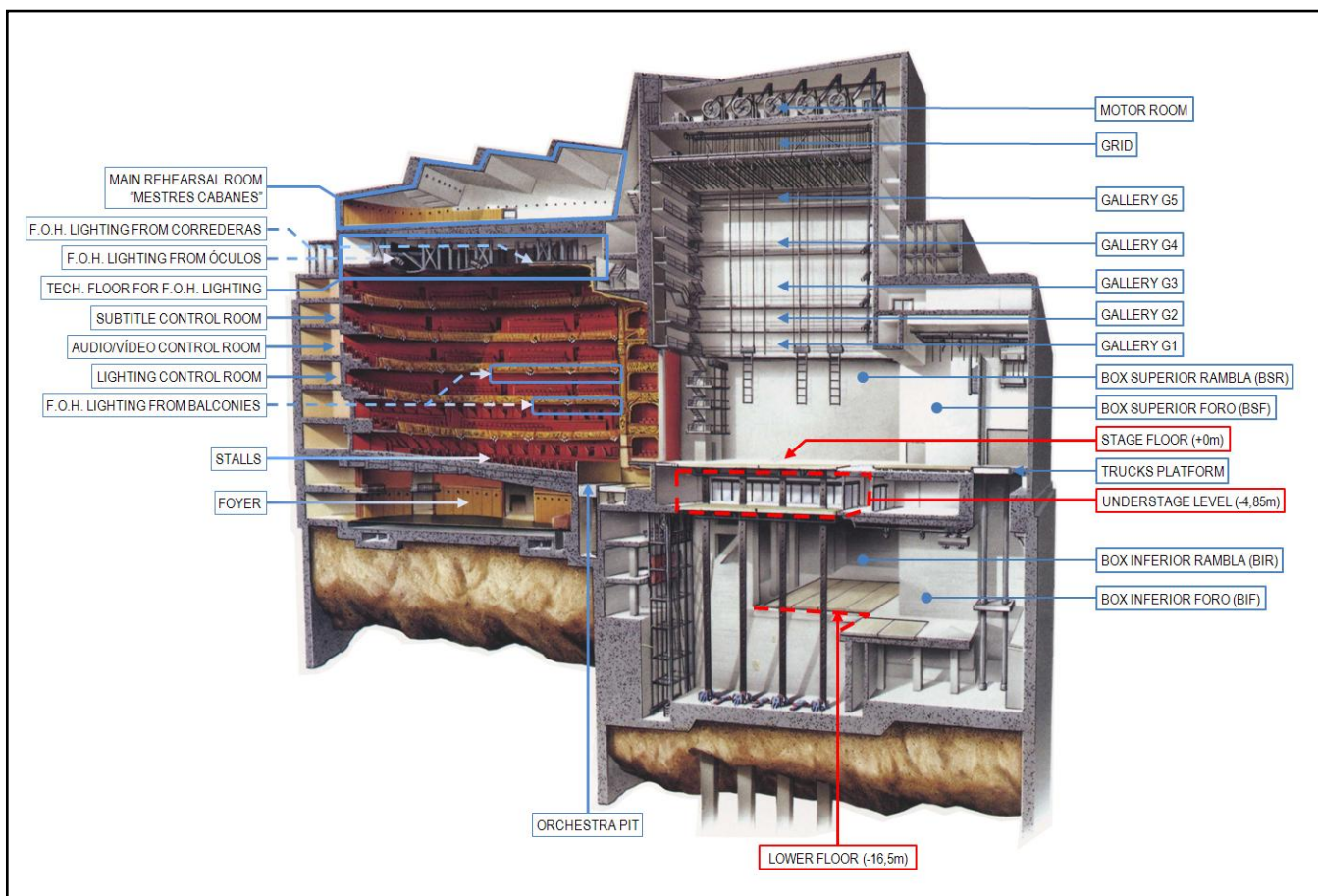


## TECHNICAL RIDER MAIN STAGE



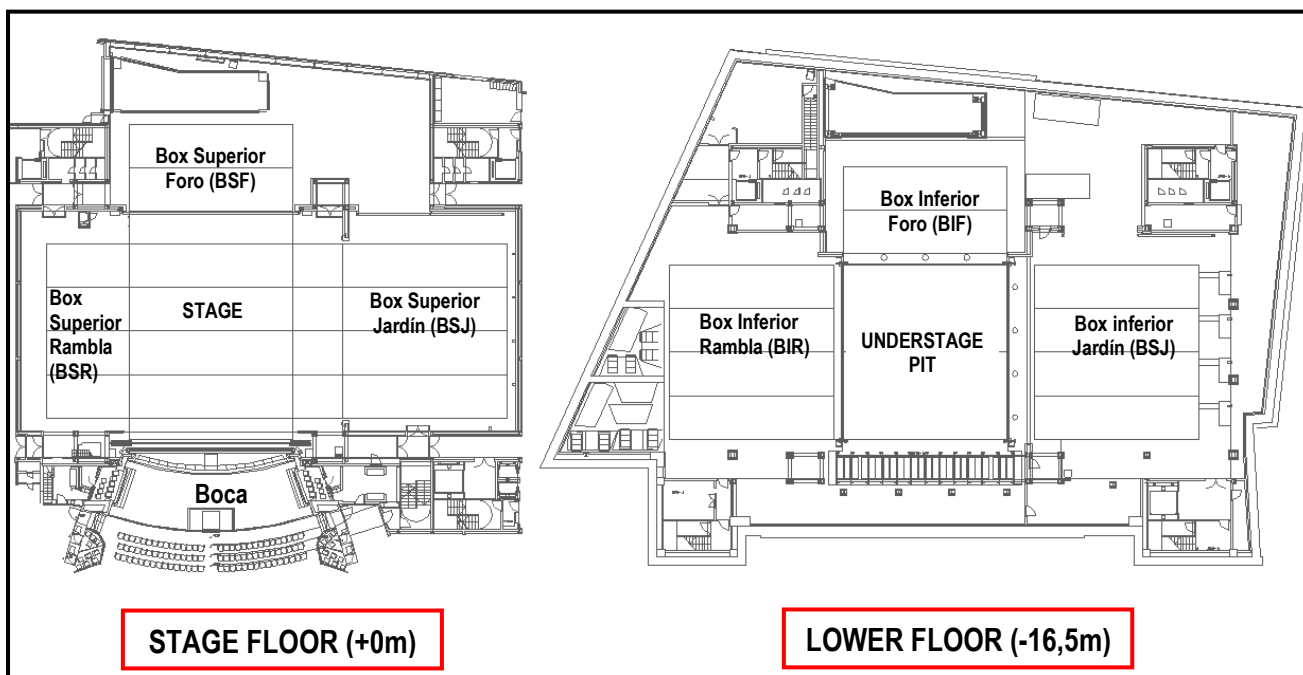
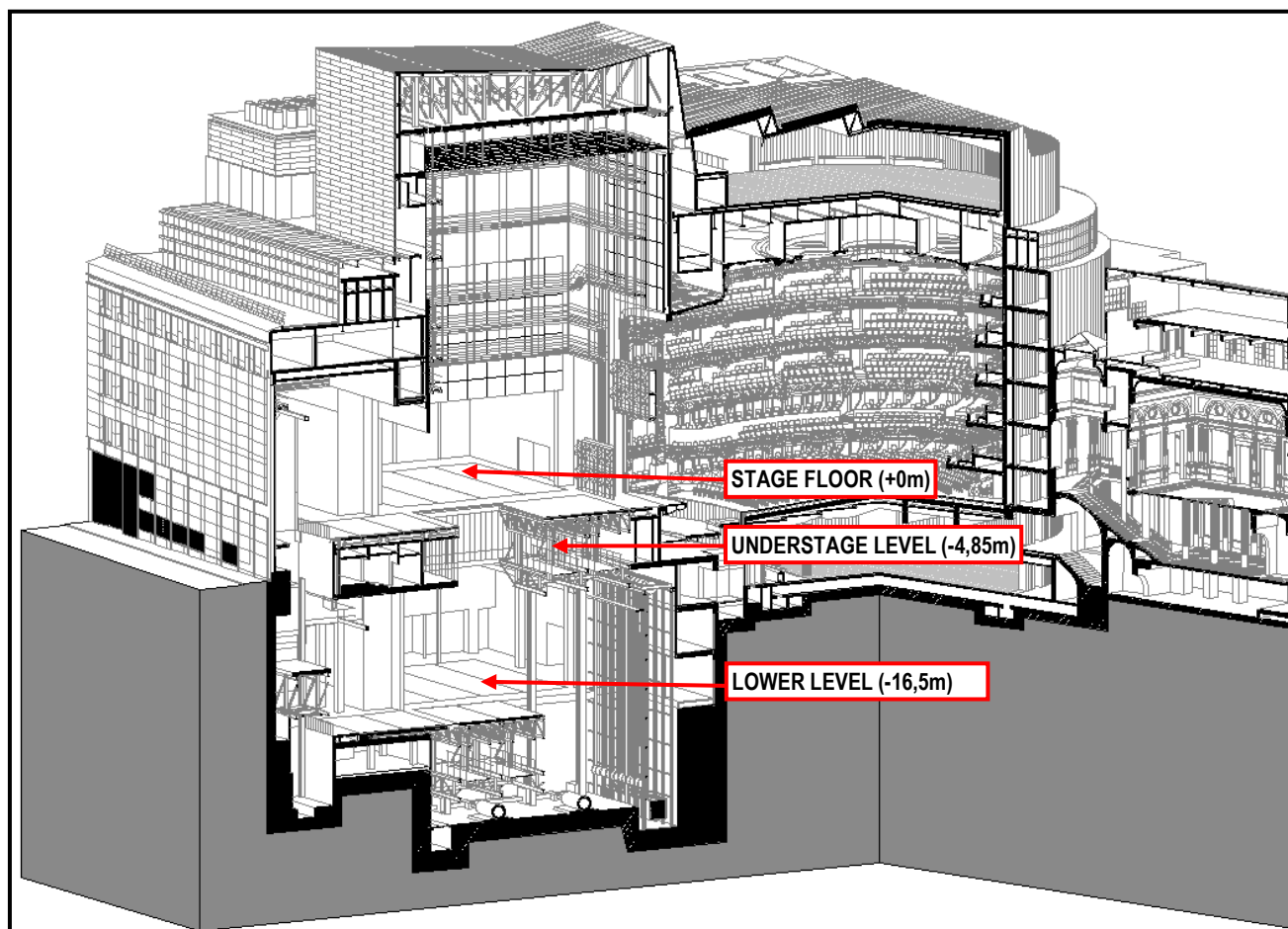




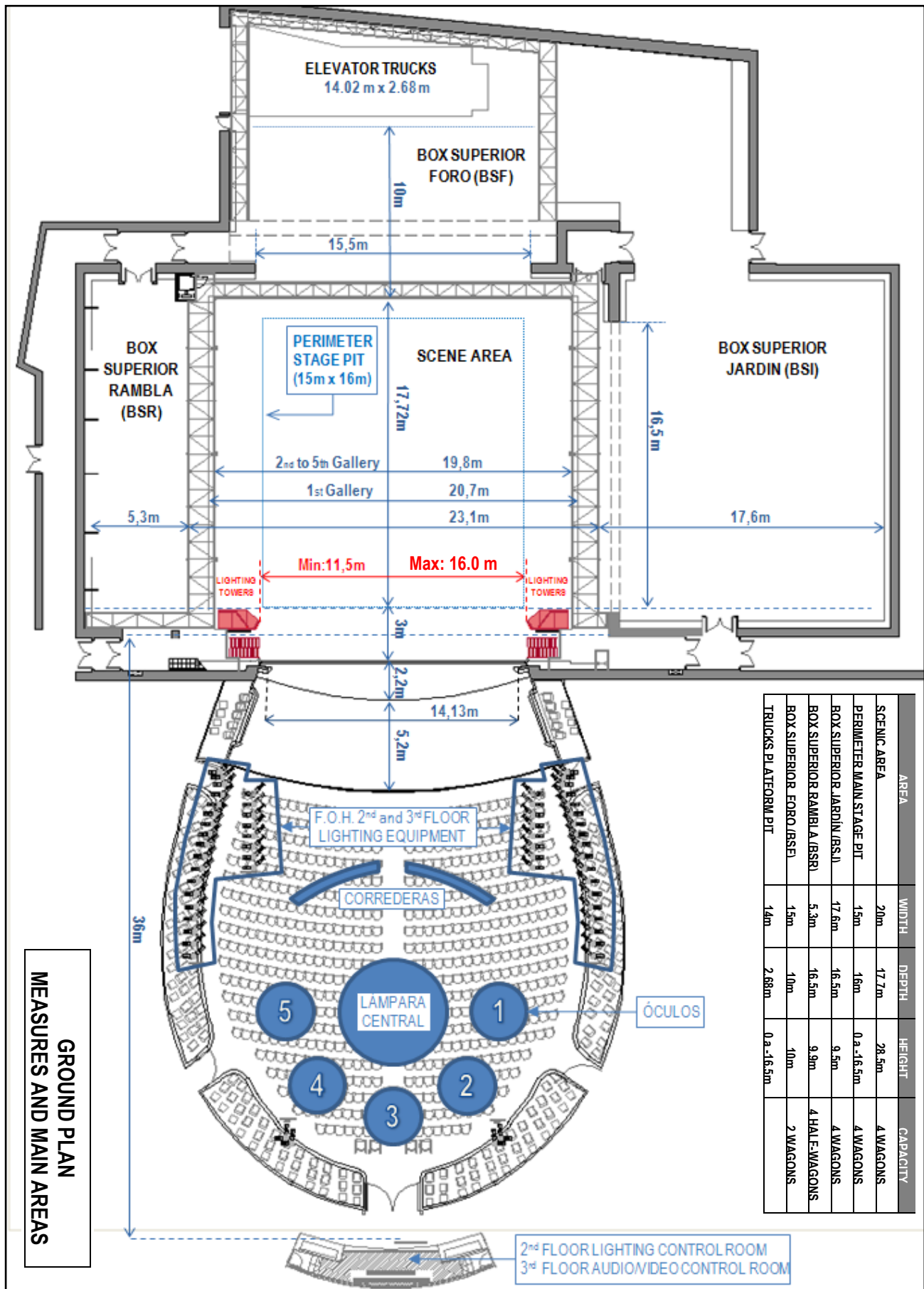
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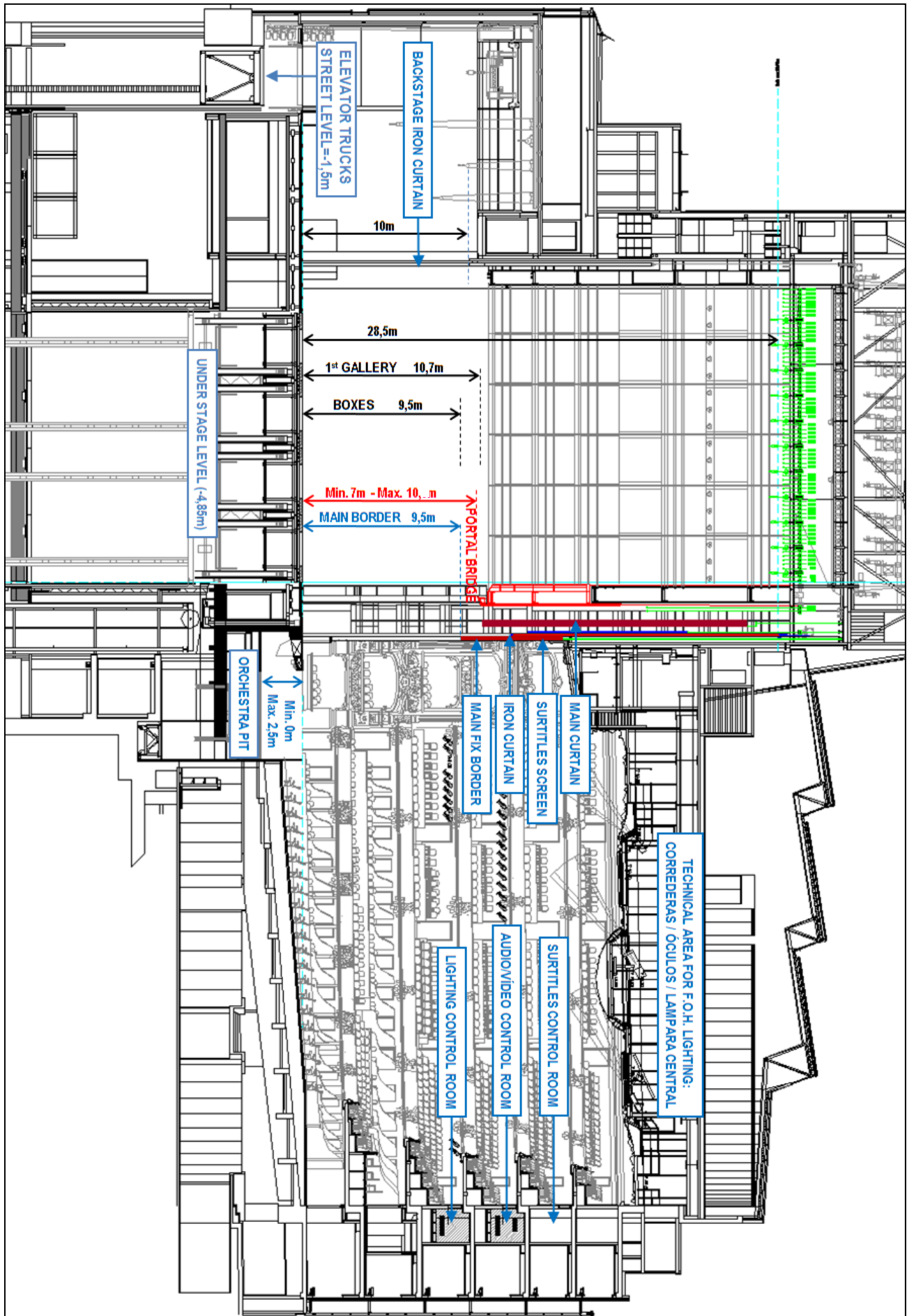


## 1 TECHNICAL AREAS

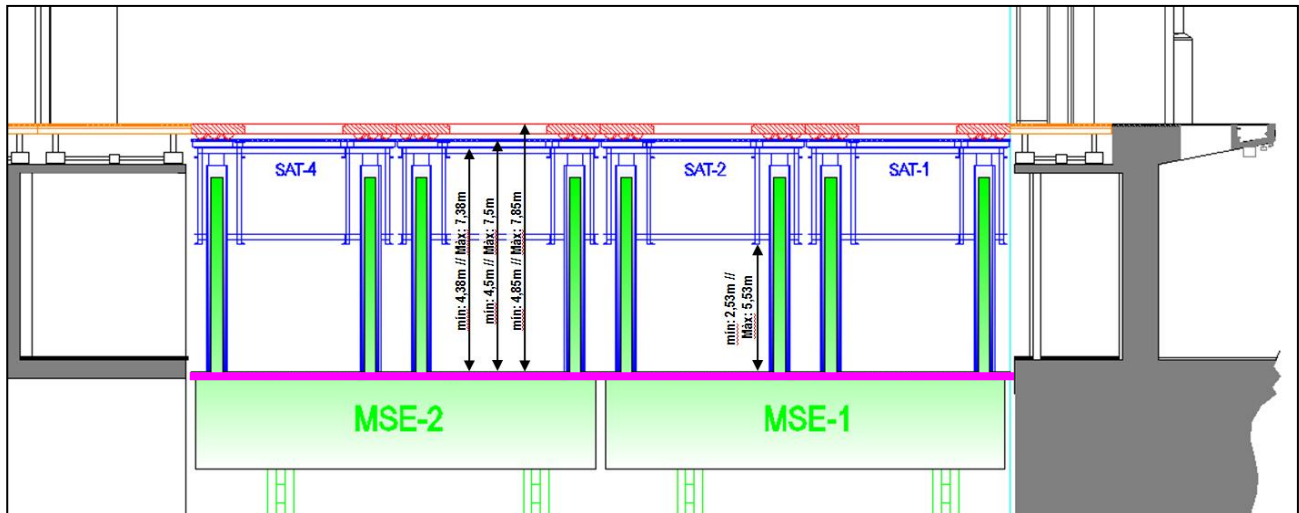


## 1.1 TECHNICAL AREAS AT STAGE FLOOR (+0m) AND AUDITORIUM



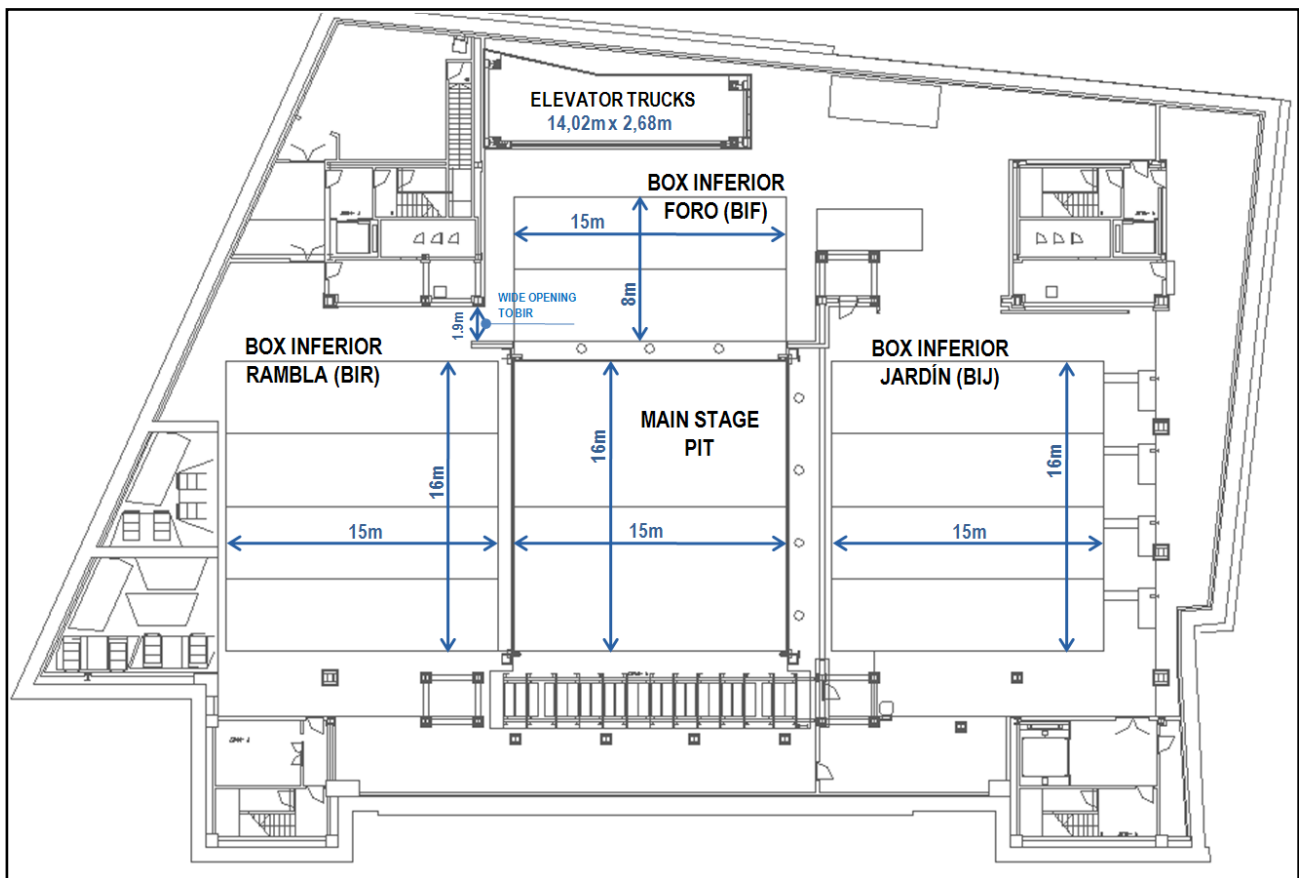


## 1.2 TECHNICAL AREA AT UNDERSTAGE LEVEL (-4,85m)



Placed just under the stage wagons, between the MSE's and the Satellites, is used for having access to the stage through the traps with lift platforms or staircases.

## 1.3 TECHNICAL AREAS AT LOWER LEVEL (-16,5m)

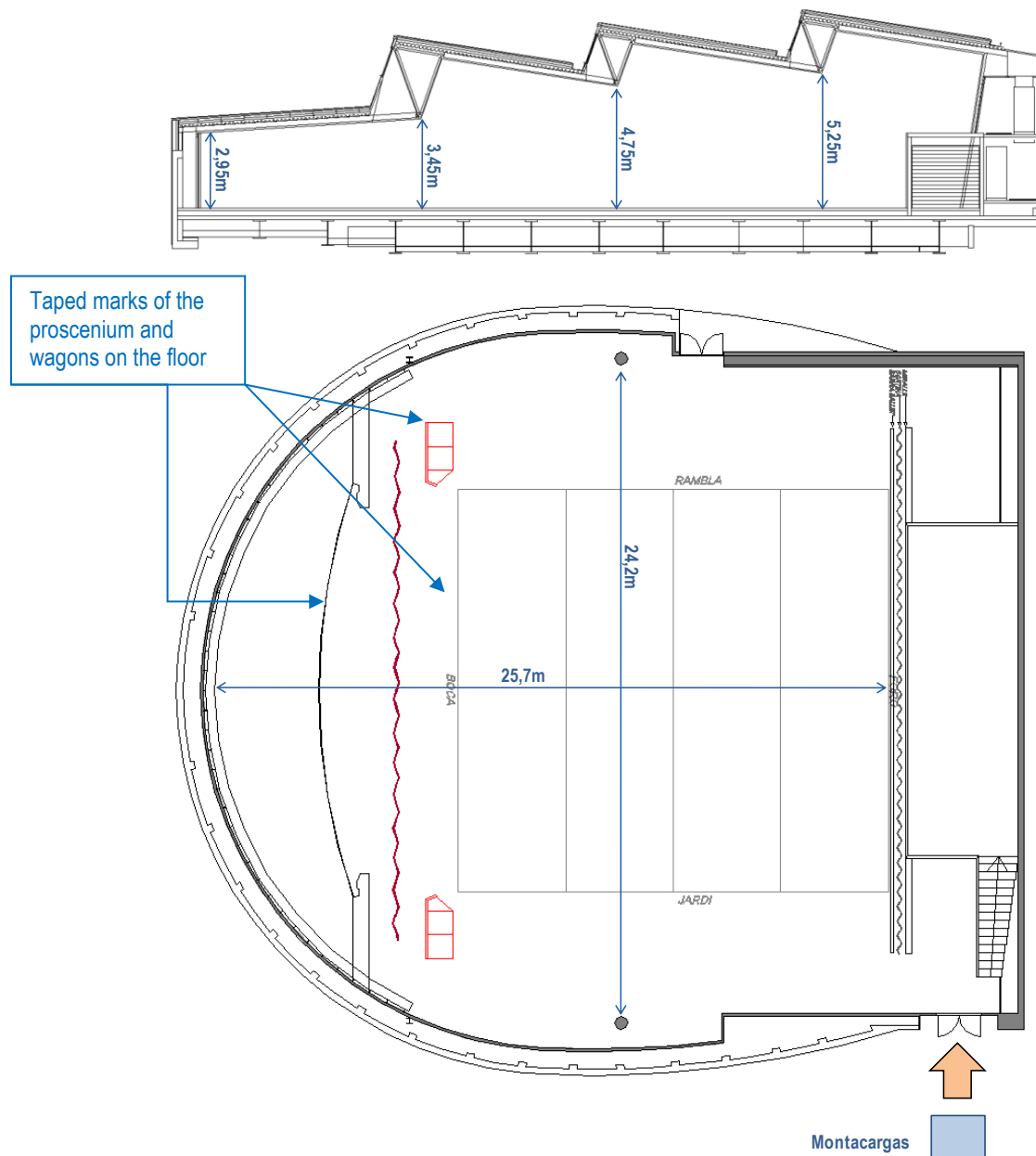


Area	Width	Depth	Max height	Capacity
Box Inferior Jardín (BIJ)	15m	16m	9,50 m	4 wagons
Box Inferior Ramblas (BIR)	15m	16m	9,50 m	4 wagons
Box Inferior Foro (BIF)	15m	8m	9,50 m	2 wagons
Elevators Trucks	14,02m	2,68m	Maximum vertical way: -16,5m to +0m	



#### 1.4 REHEARSAL ROOM “MESTRES CABANES”

The Rehearsal room of the Theatre is on the 6th floor. The main measures are the following:



It has similar dimensions to the stage, so the scene area of the production could be reproduced. However, the room is not technically equipped and has low height. The access of the set elements or props to the rehearsal room is done by a lift which has limited dimensions; so that, the main set elements or big props, cannot be moved to the Rehearsal room. Normally the scene area is taped on the floor and a rehearsal set is built with repertoire material of the Theatre such as 2x1 m platforms, plafond's, etc.

It has natural Light but no spectacular lighting equipment.

There are no hanging points on the ceiling.

The floor is finished on wood planks but no nail or screw elements are permitted on the floor.

Maximum imposed load on the floor: 750 Kg/m<sup>2</sup>

#### 1.4.1 FLOOR CHARACTERISTICS



The system comprises a 22mm solid hardwood board Beech, secretly nailed to a veneered softwood batten featuring unique shock absorption rubber pads.

In addition it has a 15 mm layer of black birch plywood, wich protect the floor, and allow to screw in it.

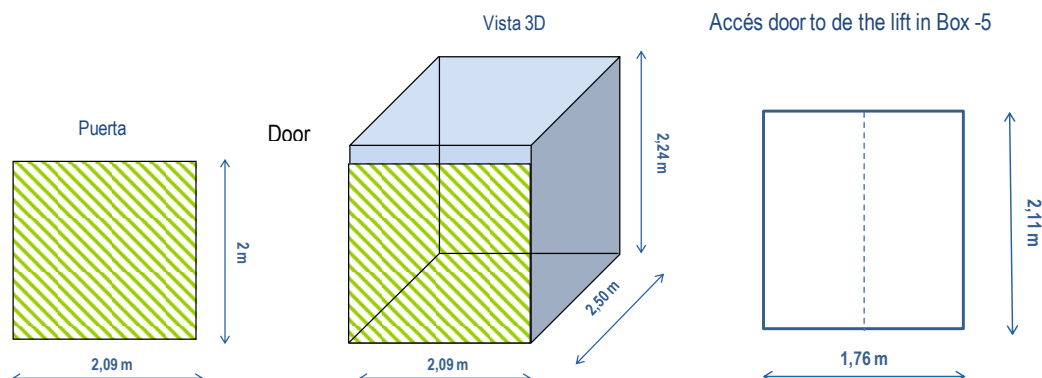
Test following UNE-41958-IN

TEST	VALUE	CRITERIA	RESULT
Force reduction (%)	55.44	HIGH	APT
Uniformity	6	$\leq 10$	
Maximum deformation (mm)	2.13	$\leq 1\text{mm}$	APT
Maximum deformation at 0.5 m (mm)	0.49	$\leq 5\text{mm}$	
Standard Vertical Deformation	1.83	$\leq 2\text{mm}$	
Uniformity	0.63		
Friction CF	0.5	$0.4 \leq CF \leq 0.8$	APT
Uniformity	0.2	$\leq 0.2\text{mm}$	
Ball bounce B (%)	95.58	$\geq 90\%$	APT
Uniformity	2.64	$\leq 5$	
Impact Resistance (Nm)	8		APT
Footprint (mm)	0.15	Footprint $\leq 0.5\text{mm}$	
Rolling load (N)	1500		APT
Footprint (mm)	0.10	Footprint $\leq 0.5\text{mm}$	
Resistance to remnant Footprint (mm)	$< 0.5$	Footprint $\leq 0.5\text{mm}$	APT

These tests certify that this is a resilient and suitable floor for dance.

#### 1.4.2 MEASURES OF THE LIFT PLATFORM

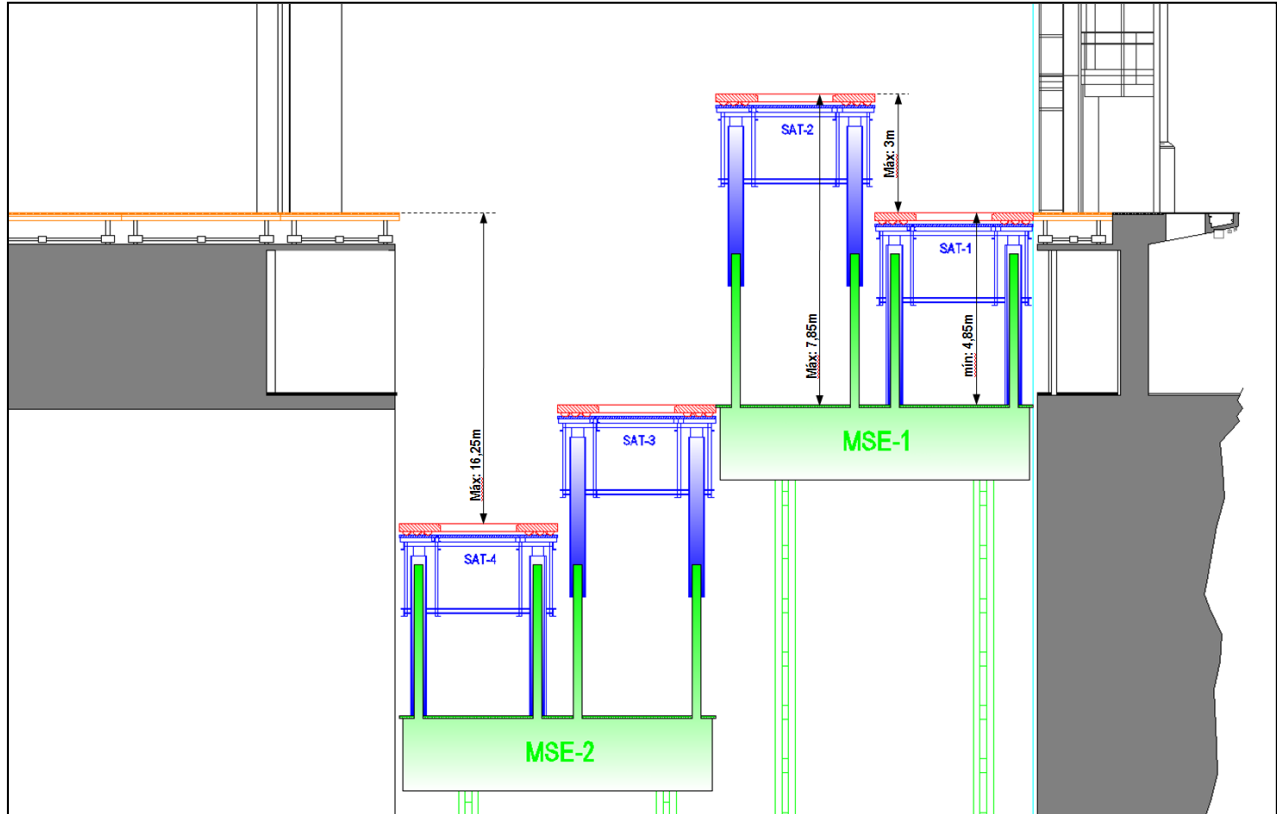
The elements that have to be moved to the rehearsal Room has to fit inside the Lift platform which has the following measures:



## 2 TECHNICAL STAGE EQUIPMENT

### 2.1 PLATFORMS STAGE MACHINERY

#### 2.1.1 STAGE PLATFORMS

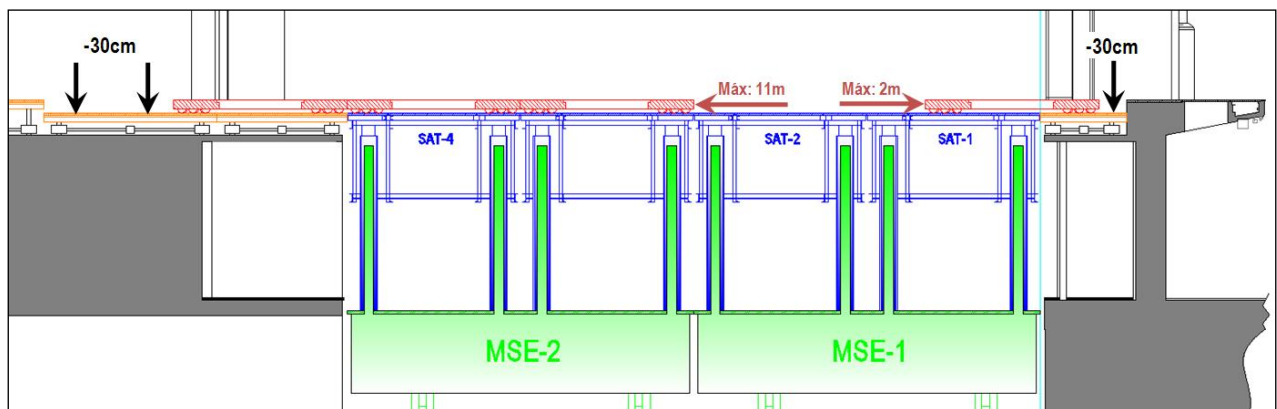


MSE1 and MSE2 Main Stage Elevators: They can move independently one to the other from -16,5m level to the stage level +0m.

SATELLITES 1-4: 4 independent platforms, 2 over each MSE. They can lift up to 3m.

WAGONS: Platforms on wheels, which contain the sets. They are moved on to the Satellites where they are fixed.

COMPENSADORAS: These platforms lift down 30cm to allow the wagons move over the stage area, to the boxes, or downstage, over the “compensadora de boca”.

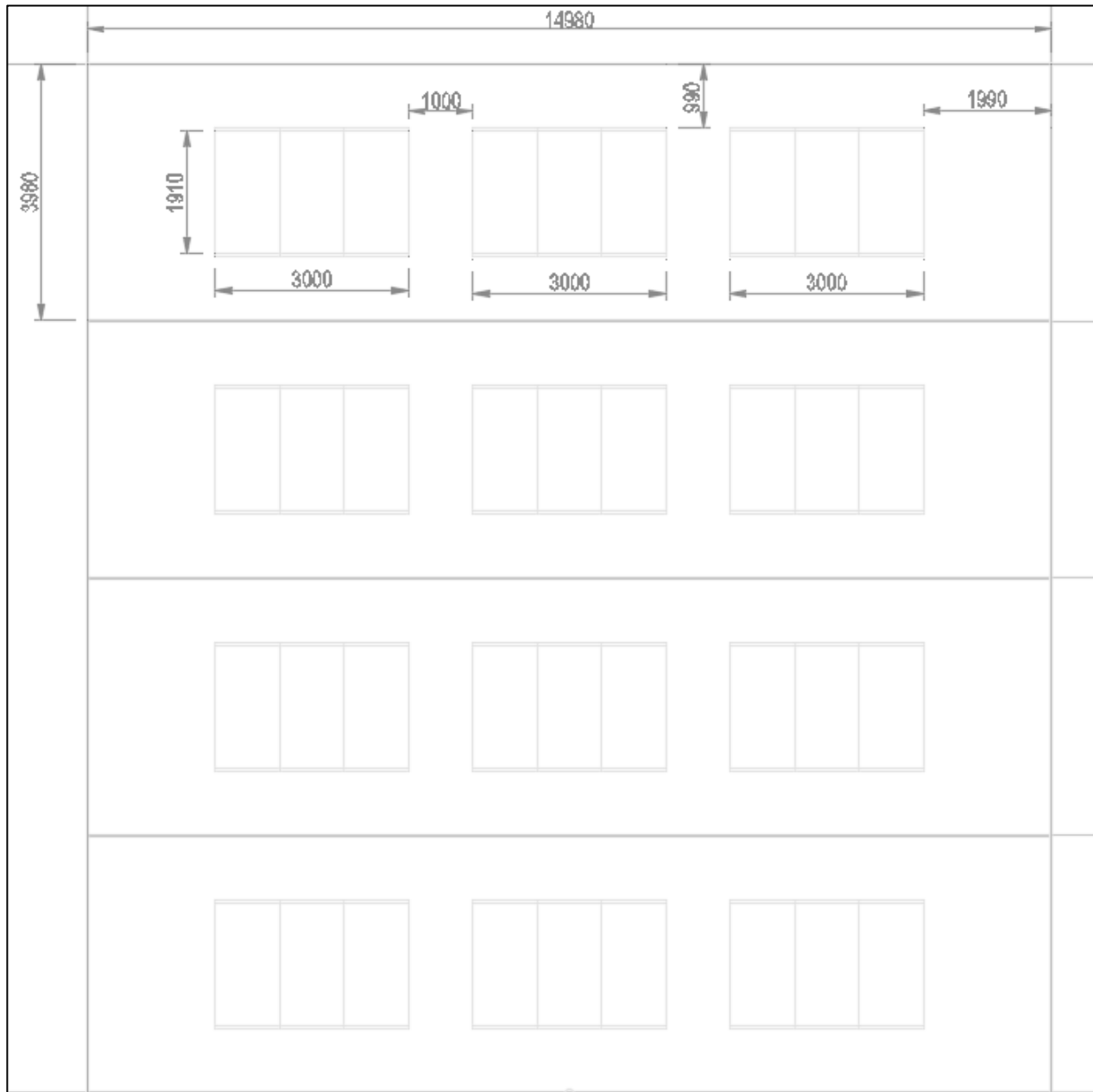


### 2.1.2 WAGONS

There is a set of 12 wagons. 8 of them has the possibility to open traps, and the other 4 are for heavy loadings without the possibility to open traps.

Main Stage Elevators have a maximum size for 4 wagons. The wagons measures are 14,98 x 3,98m. Between the wagons there is a 2cm gap. In between the wagons and the wall perimeter of the stage pit there is a 1cm gap.

#### Wagons with traps:

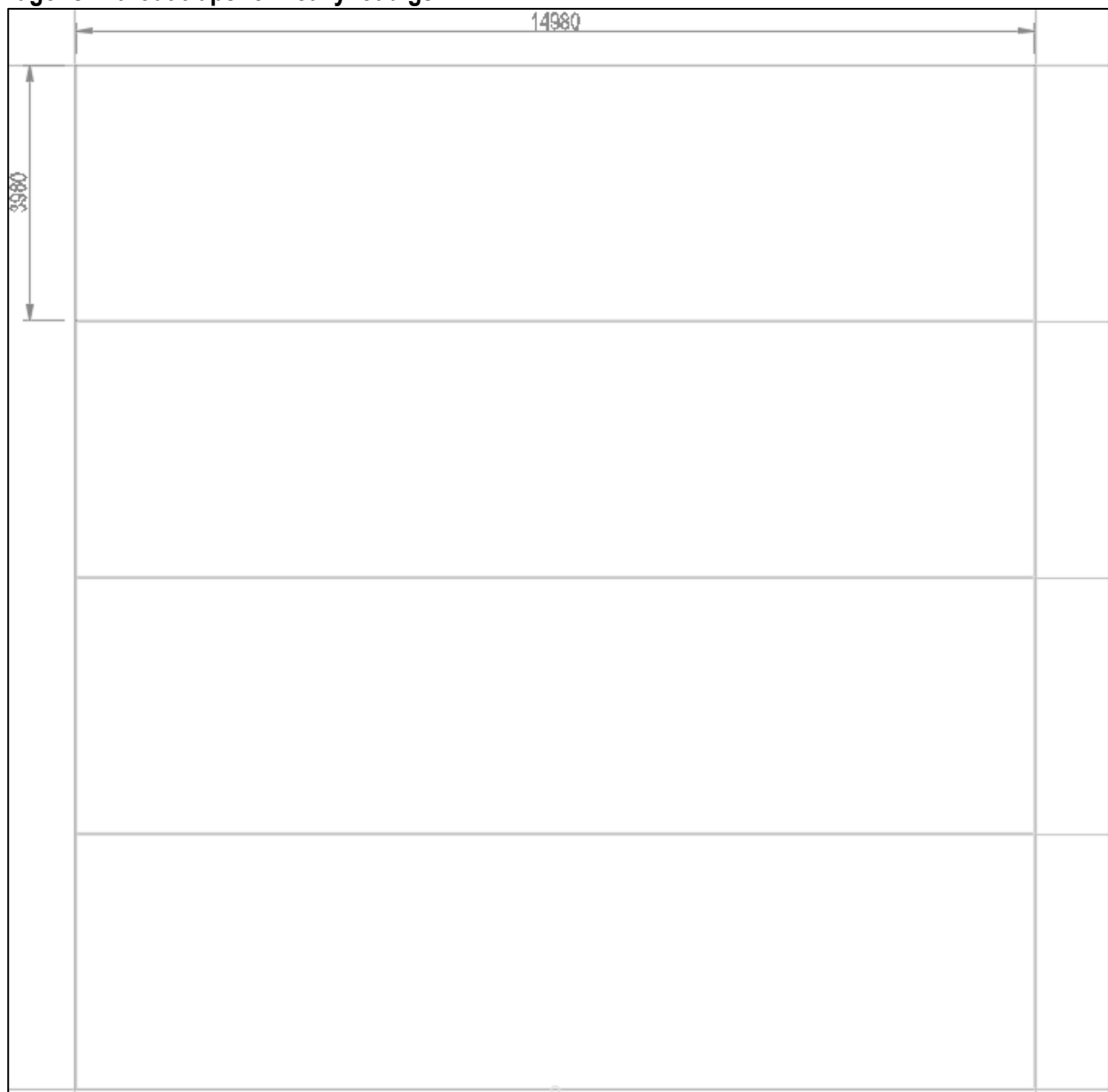


**Traps:** Each wagon has the possibility to open three of up to 3x1.91m traps. The Satellites have can be completely opened up to 11x2m trap.

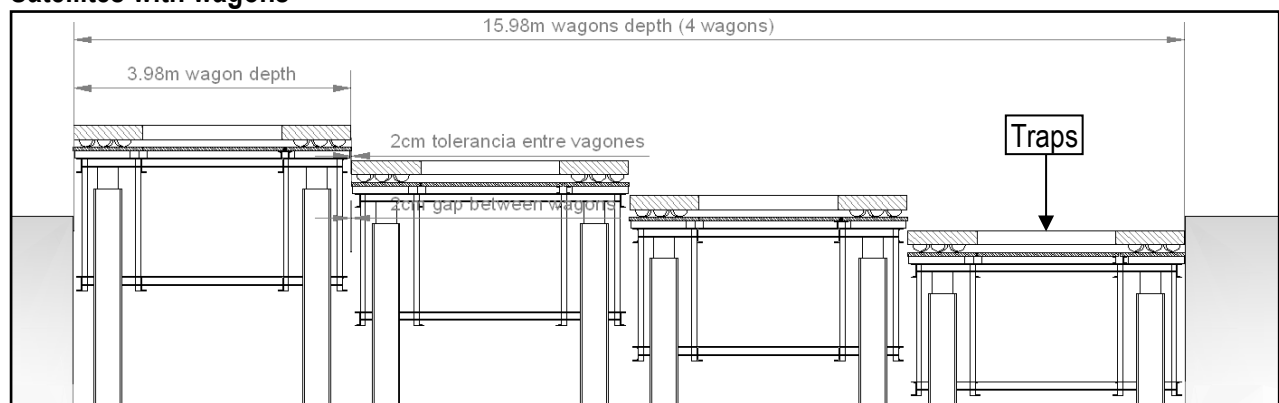
The free spam of the hole of one trap is 1x1.91m.



### Wagons without traps for heavy loadigs



### Satellites with wagons



### 2.1.3 TECHNICAL SPECIFICATIONS OF THE STAGE PLATFORMS AND WAGONS

Element	Dimensions	Area	Quantity	Max Speed	Max. imposed loads static conditions	Max. imposed loads dynamic conditions	Max. Punctual imposed load
<b>No traps Wagon</b>	14,98 x 3,98m	60m <sup>2</sup>	4	0,5m/s	19 Tn <sup>1</sup> / 750Kg/m <sup>2</sup>	12.5Tm <sup>1</sup> / 500Kg/m <sup>2</sup>	500Kg in 20x20cm
<b>Wagon with traps</b>	14,98 x 3,98m	60m <sup>2</sup>	8	0,5m/s	19 Tn <sup>1</sup> / 500Kg/m <sup>2</sup>	12.5Tm <sup>1</sup> / 500Kg/m <sup>2</sup>	500Kg in 20x20cm
<b>Satellites</b>	14,98 x 3,98m	60m <sup>2</sup>	4	0,15m/s	Max way up: 3m		
<b>MSE</b>	14,98 x 7,98m	120m <sup>2</sup>	2	0,3m/s	Max way down: 16,5m		

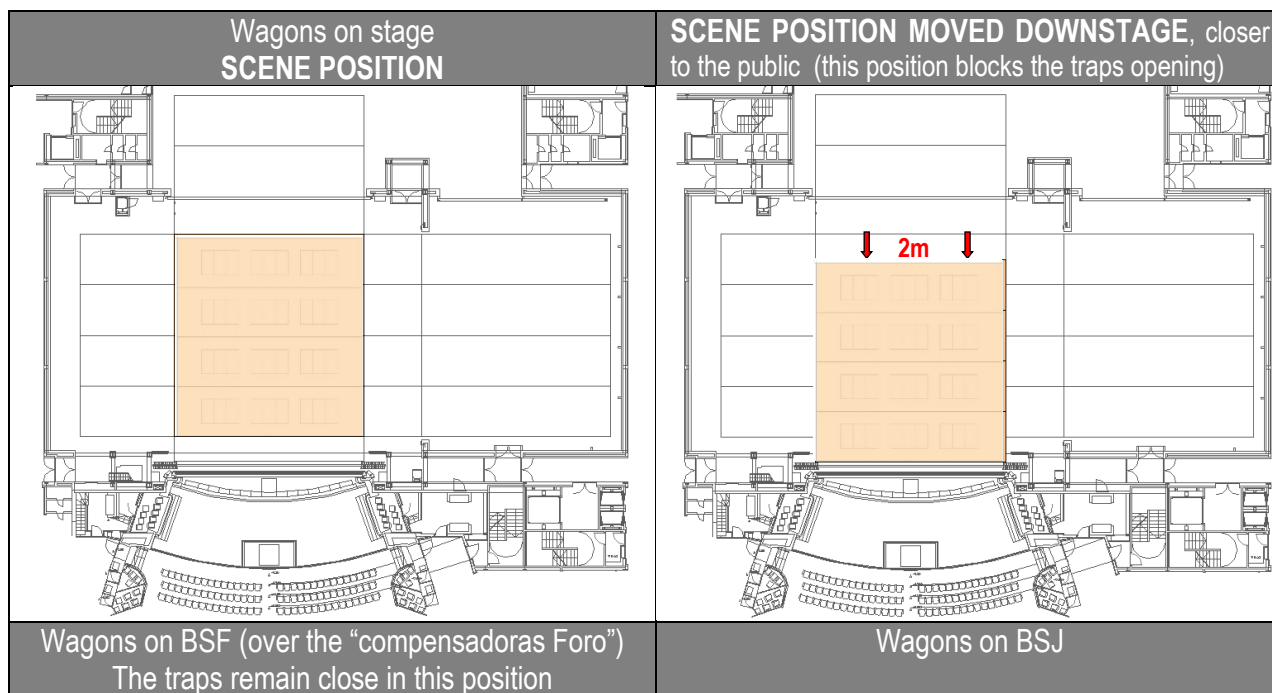
<sup>1</sup> This is the sum of all the loads imposed on to on the wagon.

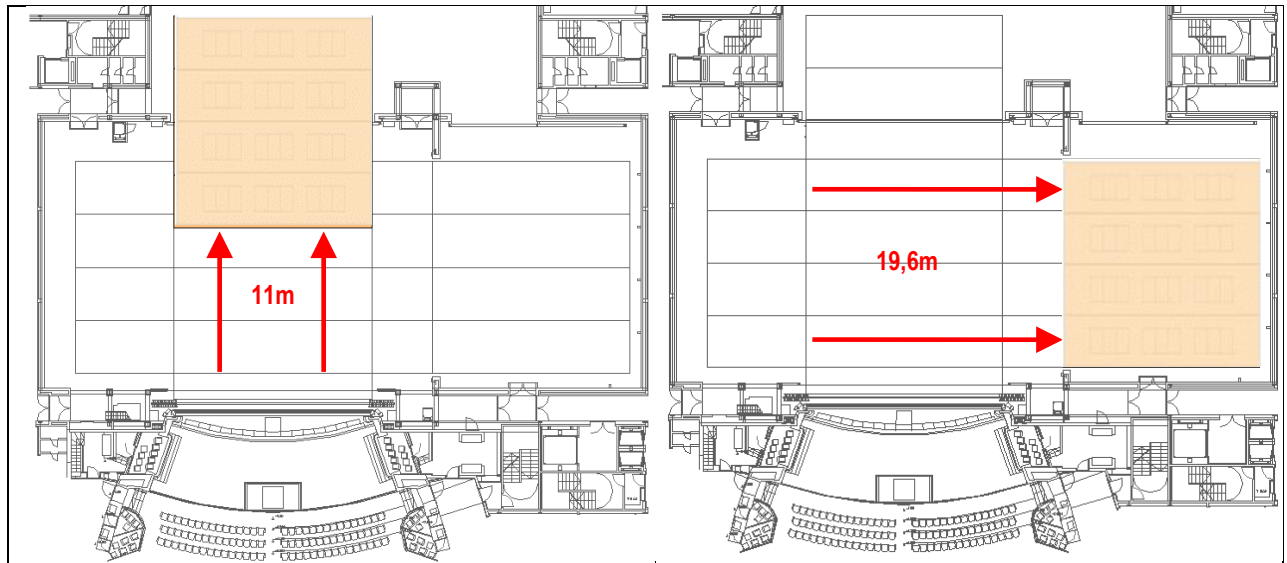
### 2.1.4 MOVEMENTS OF THE WAGONS ON STAGE FLOOR (+0m)

There are 16 wagon positions out of the stage area:

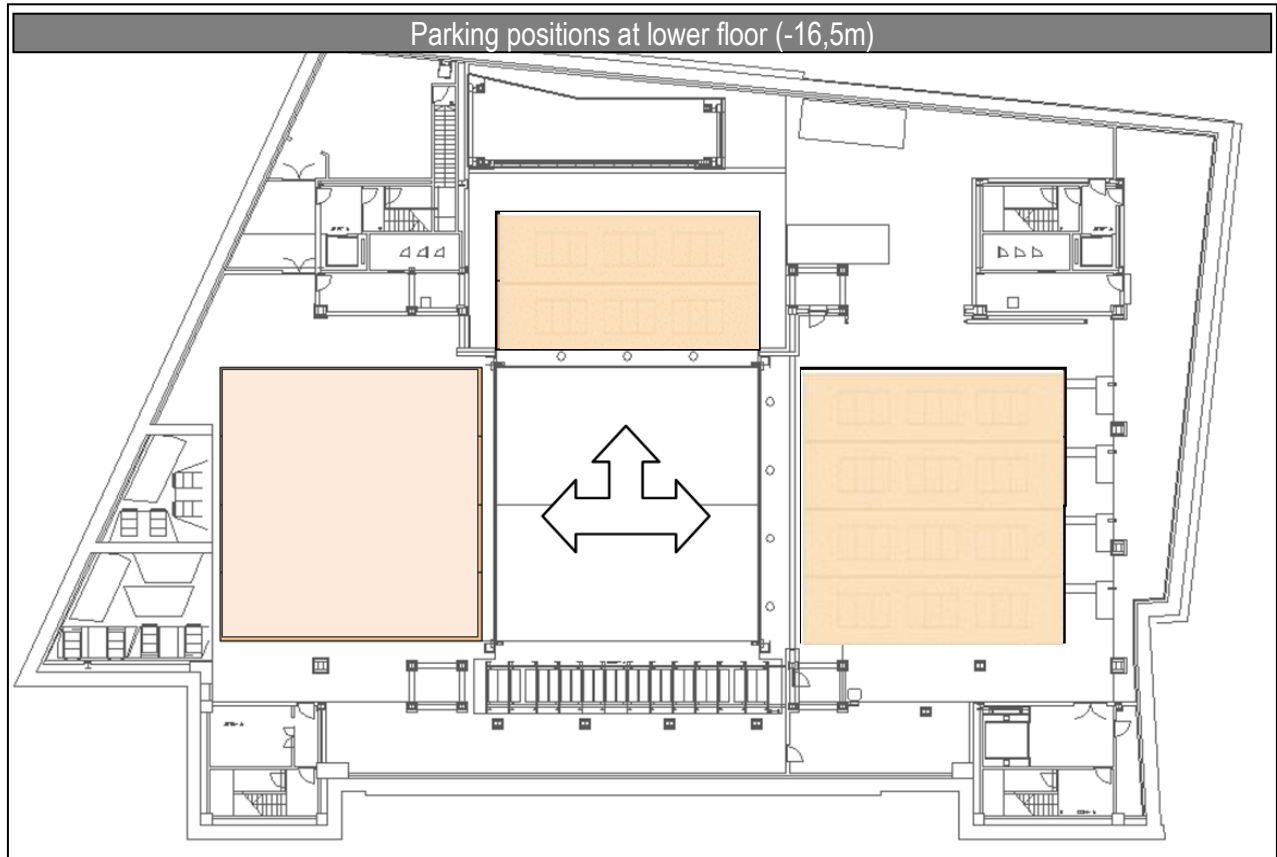
On stage floor (+0m) there are 6 parking positions; 4 on BSJ and 2 on BSF.

On the Lower floor (-16,5m) there are 10 Parking positions; 4 on BIR, 4 on BIJ and 2 on BIF.





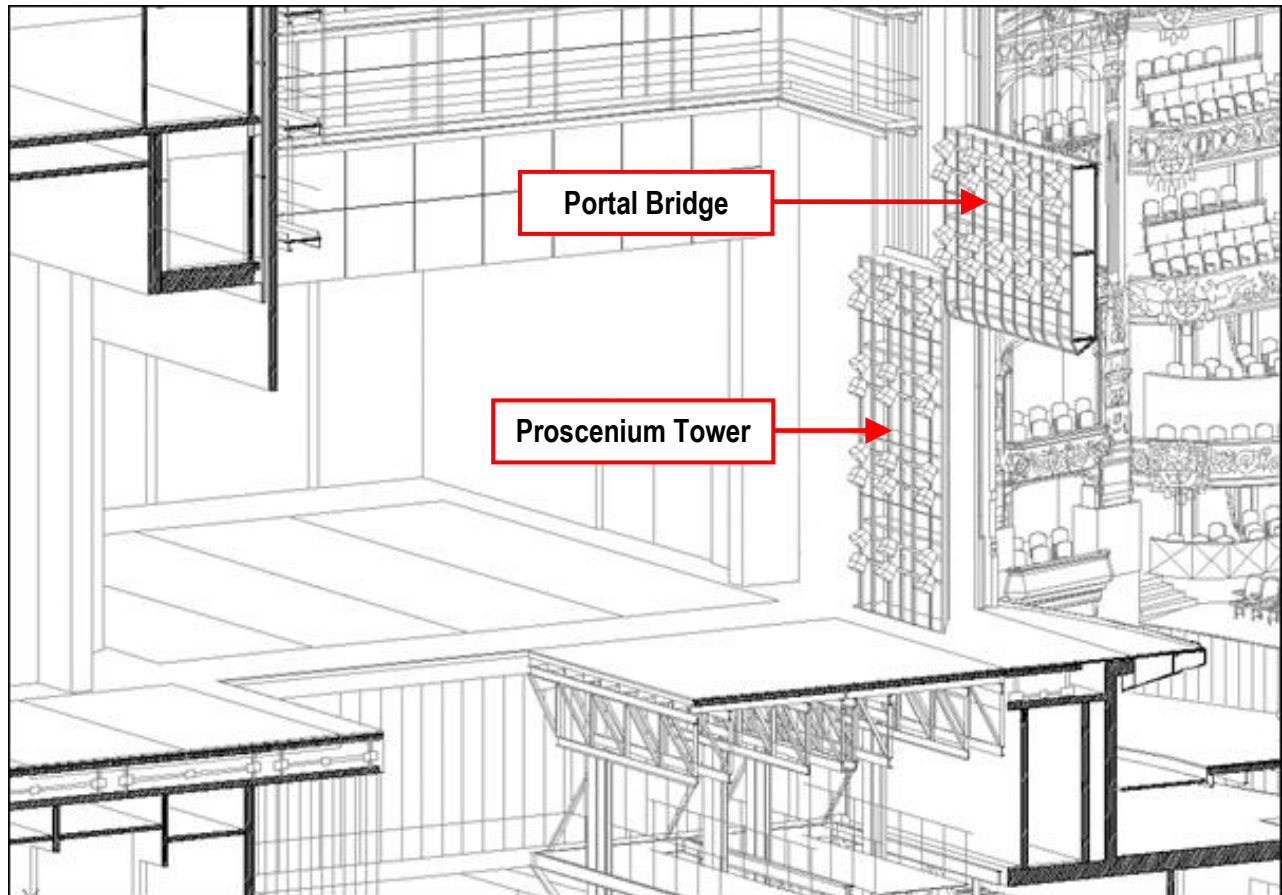
2.1.5 MOVEMENTS OF THE WAGONS AT THE LOWER FLOOR (-16,5m)



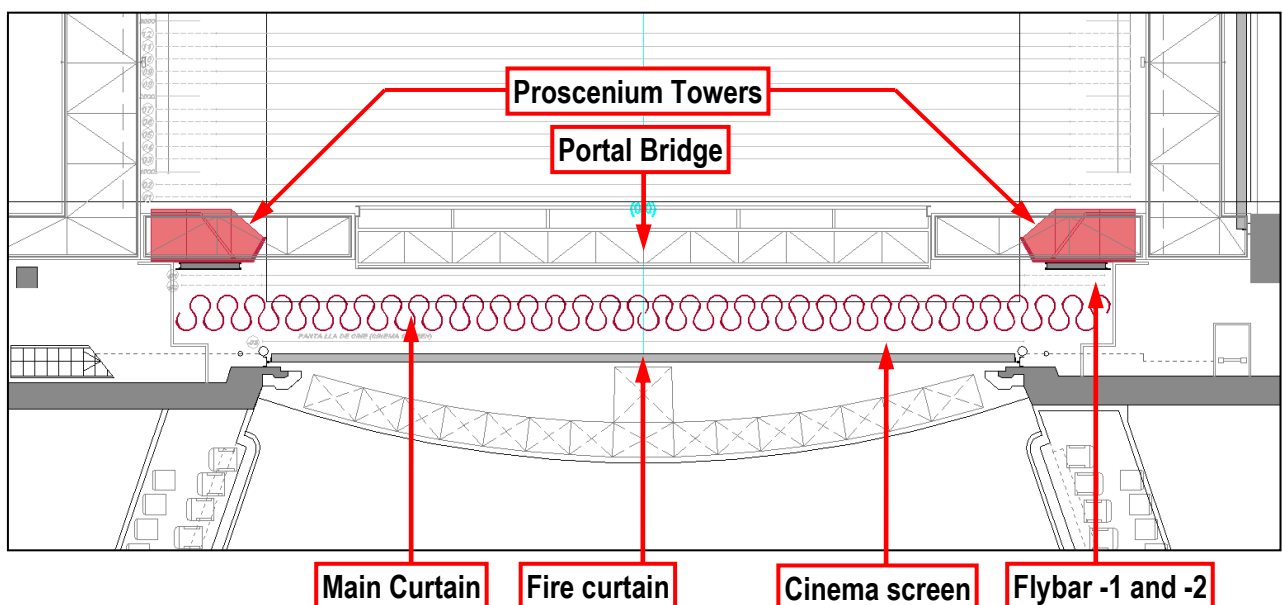


## 2.2 FLYING STAGE MACHINERY

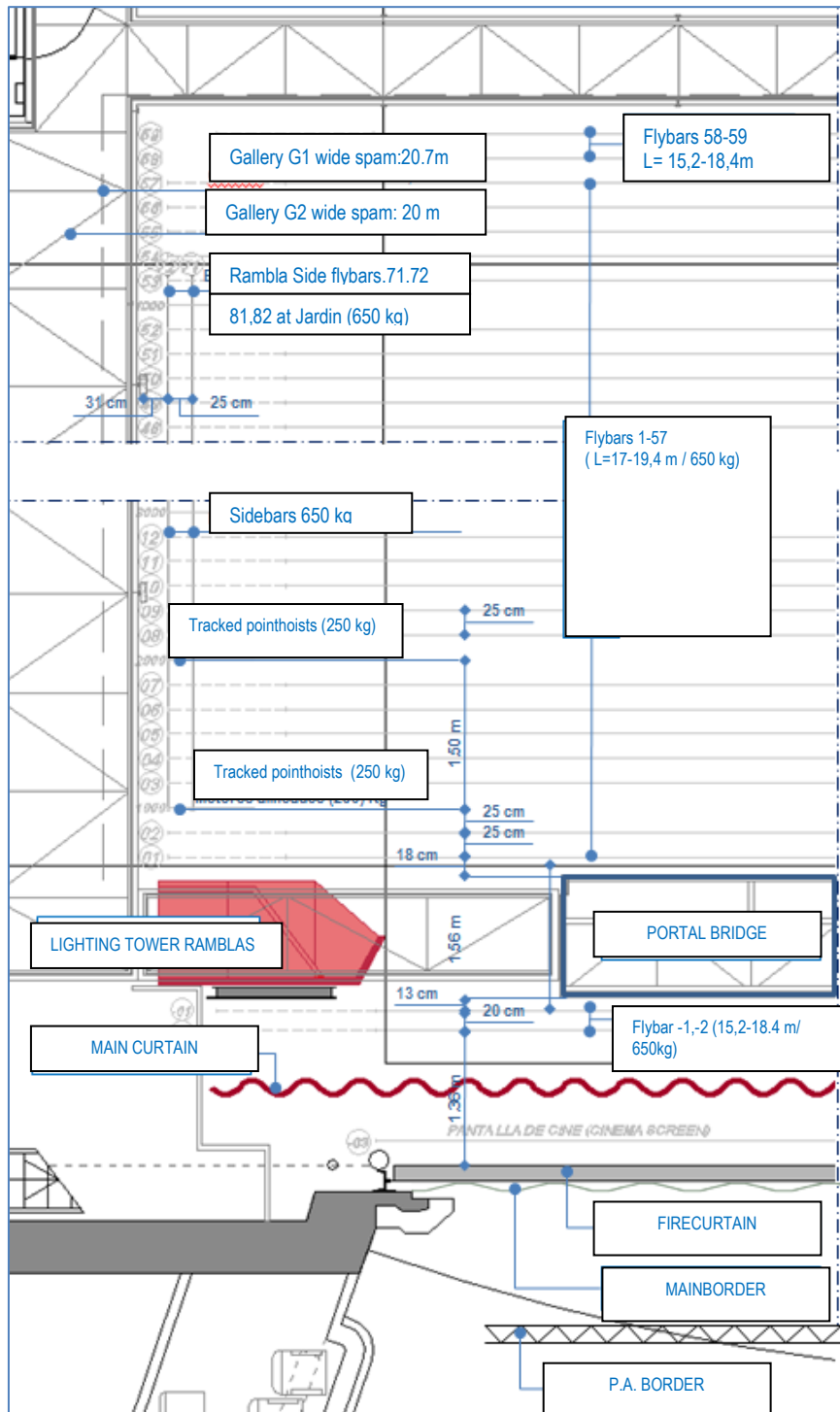
### 2.2.1 PROSCENIUM



Element	Max. Opening	Min. Opening
Proscenium Towers	Max opening: 16,2m	Min opening: 11,5m
Portal Bridge	Max height: 10,0m	Height min: 7m



## 2.2.2 GRID: FLYBARS AND POINTHOISTS



62					
61					
71					
72					
59	+17.340				
58	+1.0330				
57	+1.6290				
56	+1.0580				
55	+1.6290				
54	+1.0330				
53	+1.6290				
Tracked pointhoists	+10000-3				
52	+1.0330				
51	+1.6290				
50	+1.0330				
49	+1.6290				
48	+1.0330				
Tracked pointhoists	+10000-3				
47	+1.0330				
46	+1.6290				
45	+1.0330				
44	+1.6290				
43	+1.0330				
Tracked pointhoists	+9000-3				
42	+1.0330				
41	+1.6290				
40	+1.0330				
39	+1.6290				
38	+1.0330				
Tracked pointhoists	+8000-3				
37	+1.0330				
36	+1.6290				
35	+1.0330				
34	+1.6290				
33	+1.0330				
Tracked pointhoists	+7000-3				
32	+1.0330				
31	+1.6290				
30	+1.0330				
29	+1.6290				
28	+1.0330				
Tracked pointhoists	+6000-3				
27	+1.0330				
26	+1.6290				
25	+1.0330				
24	+1.6290				
23	+1.0330				
Tracked pointhoists	+5000-3				
22	+1.0330				
21	+1.6290				
20	+1.0330				
19	+1.6290				
18	+1.0330				
Tracked pointhoists	+4000-3				
17	+1.0330				
16	+1.6290				
15	+1.0330				
14	+1.6290				
13	+1.0330				
Tracked pointhoists	+3000-3				
12	+1.0330				
11	+1.6290				
10	+1.0330				
09	+1.6290				
08	+1.0330				
Tracked pointhoists	+2000-3				
07	+1.0330				
06	+1.6290				
05	+1.0330				
04	+1.6290				
03	+1.0330				
Tracked pointhoists	+1000-3				
02	+1.0330				
01	+1.6290				
-01	+1.6290				
-02	+1.6290				

In addition to the flybars and the tracked pointhoists, there are a set of **10 spot hoists** that can be placed everywhere on the grid. Their maximum load is 325 Kg.

All the flybars, tracked pointhoists and the spot hoists are controlled by a computerized system that allows make groups with different kinds of motors, presets, cues, etc....

The flybars have an external diameter of 63mm, and can be largened.

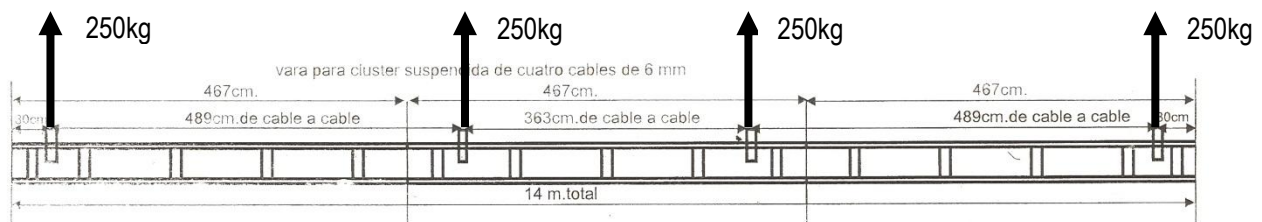
### 2.2.3 TECHNICAL SPECIFICATIONS OF FLYING STAGE MACHINERY

Element	Dimensions	Quantity	Speed	Max Load
Main Curtain - Mov. "Guillotine"	Wide: 18,5m	1	0 – 2,2m/s	-
Main Curtain – Traveller Mov. <sup>1</sup>	Max. Opening: 14,5m Overlapping: 1,0m	1	0 – 0,9m/s	-
Spothoists (P1-10)	-	10	0 – 1,5m/s	325Kg
Proscenium Flybars (-1, -2)	Ø63mm / W=17–18,4m	2	0 – 1,5m/s	650Kg
Flybars (1-57) <sup>2</sup>	Ø63mm / W=17–19,4m	57	0 – 1,5m/s	650Kg
Flybars (58-59) <sup>2</sup>	Ø63mm / W=15,2–18,4m	2	0 – 1,5m/s	650Kg
Side Flybars (71,72,81,82)	Ø63mm / W=15,35m	2+2	0 – 1,5m/s	650Kg
Tracked Point Hoist (1001-10004)	Wide : 18m	44	0 – 1,5m/s	250Kg
Cluster Flybar	Wide : 14m	1		1000Kg

<sup>1</sup> When the curtain is opened, there is no possibility of lighting from the booms. On the other hand, the folded curtain in the sides is permanently seen from the auditorium.

<sup>2</sup> The max pointload of the flybar is 100 kg.

#### CLUSTER FLYBAR

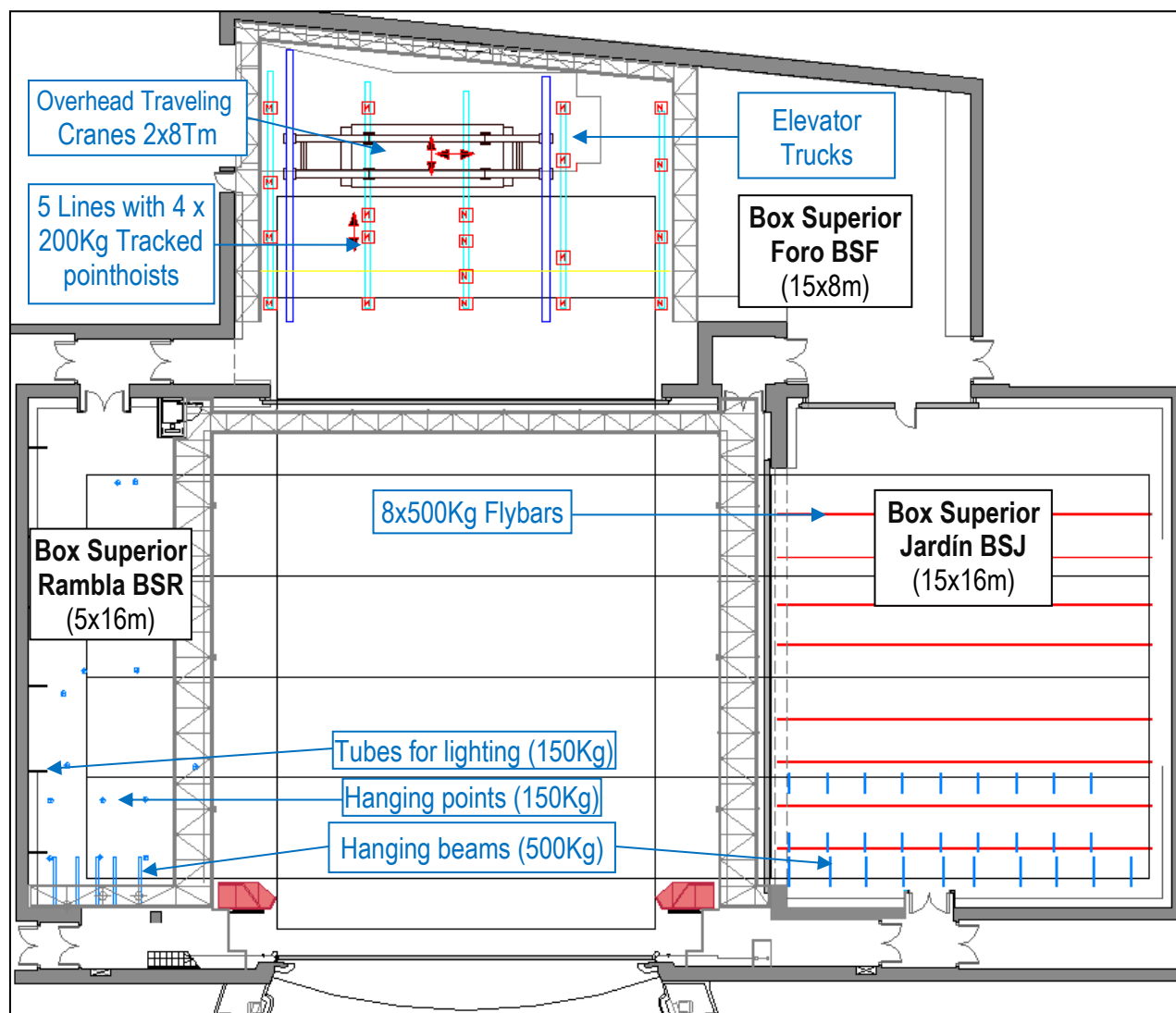


The Load capacity of the Cluster flybar is about 1000kg, but this load is not distributed evenly along all of it, because the 4 pointloads of the flybar are not evenly distributed.

## 2.3 TECHNICAL EQUIPMENT IN BOXES AREA FOR PARKING AND SET UP

### 2.3.1 STAGE FLOOR (+0)

In addition to the stage area, the stage floor has: the side wings, the boxes (BSJ, BSF and BSR), and the trucks platform which is the main entrance of sets and other materials to the Theatre. The Boxes are provided with the following lift up equipment:



- Box Superior Rambla (BSR): Area: 5,3x16m // max height 9,9m

The BSR, is more used as side stage wing than a box for sets parking. This Box is not provided with lift equipment. It can hold small set elements of a production. It only has hanging points on the ceiling and a set of tubes on the Rambla wall to fix lighting trusses.

- Box Superior Jardín (BSJ): Area: 15x16m // max height: 9,5m

The BSJ is equipped with 8 x 500Kg flybars and 500Kg hanging beams. It is used for set up, for parking morning's productions (in two wagons), or for parking set elements of the stage production.

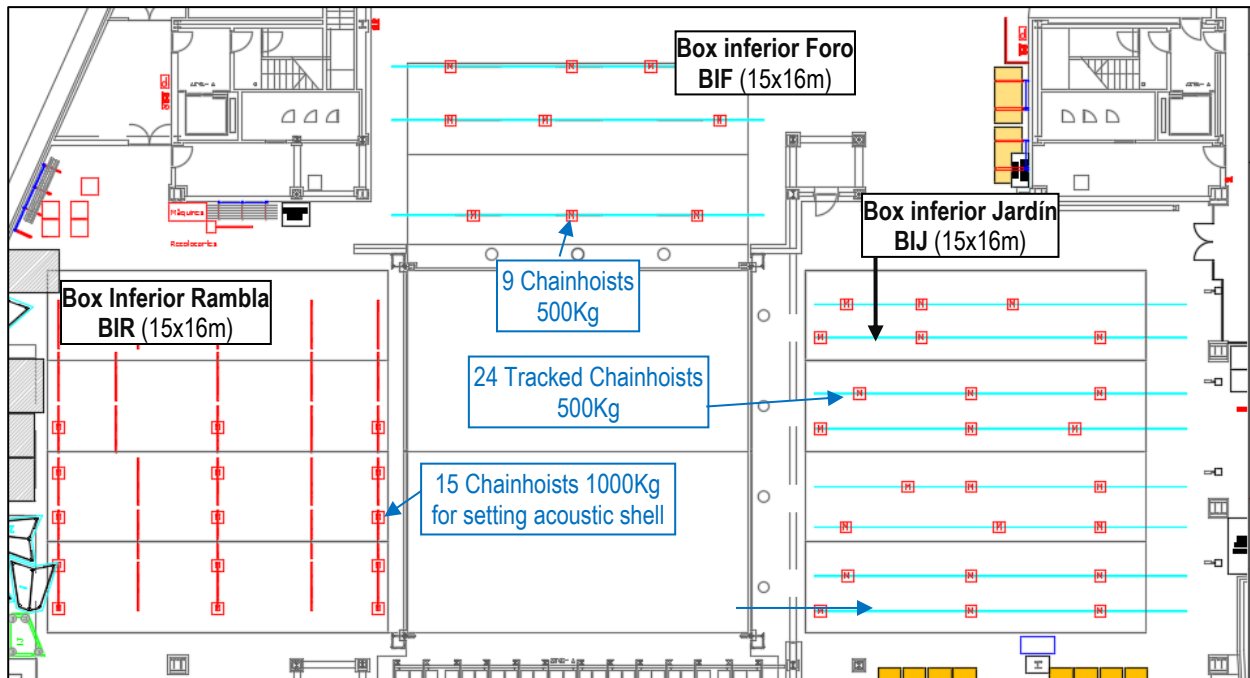
- Box Superior Foro (BSF): Area: 8x15m // max height: 10m

This box is the main Loading/Unloading area of the theatre. Is provided with a double 8Tm Overhead Travelling Crane. The hooks can reach the lower floor (-16.5m). On the other hand, this box is provided with 5 lines of 4 x 200Kg point hoists. The lines of motors move independent but all the motors of a same line move together. These motors have a different control from the grid flying equipment.



### 2.3.2 LOWER FLOOR (-16.5m)

Is in this floor were the sets are unloaded and pre-set up, before being moved to the stage with the platforms and wagons. The boxes are provided with the following equipment:



- Box Inferior Rambla (BIR): Area: 15x16m // max height: 9,5m

The chainhoists equipment of this box is especially conceived for setting up the acoustic shell. However, when there is no acoustical shell, this box can be used for setting up productions. The lack of flexibility of the motors and the narrow entrance of the materials from the trucks platform (1.9m wide), make this box not the most appropriated for setting up productions in some occasions.

- Box Inferior Jardín (BIJ): Area: 15x16m // max height: 9,5m // height to the motor hooks: 10,22m

It is the main pre-set up area. It is provided with a full set of 24 x 500Kg tracked chainhoists. It has a wide entrance from the trucks platform and from the BIF, which can be used as storage box while the BIJ is for setting up.

- Box Inferior Foro (BIF): Area: 15x16m // max height: 9,5m

This box does not have lift equipment, but is used to storage set pieces before their set up in other Boxes.

### 2.3.3 TECHNICAL SPECIFICATIONS OF THE BOXES FLYING EQUIPMENT

Elements	Quantity	Main Features	Speed m/s	Max Load
Flybars Box Superior Jardín (BSJ)	8	Ø63mm L=15m	0,15m/s	500Kg
Pointhoists Box Superior Foro (BSF)	20	5 lines of 4 tracked motors	0–0,5m/s	200Kg
Overhead Travelling Cranes (BSF)	1	Can go to the -16,5m	--	8.000Kg
Chainhoist Box Inferior Foro (BIF)	4	3 tracks with 3 chainhoists each		
Chainhoists Box Inferior Jardín (BIJ)	24	8 tracks with 3 chainhoists each	0,03 / 0,13	500Kg
Chainhoists Box Inferior Rambla (BIR)	15	Fixed position	0,04	1.000Kg

#### 2.3.4 OTHER FACILITIES

- **AIR PRESS SYSTEM:** The Liceu has compressed air circuit up to 6 bar pressure, in the boxes of both levels (Stage floor and Lower floor).
- **WATER SERVICES ON STAGE:** For water needs of the productions, there is cool and hot water available on stage area (BSR, upstage). The drainage system is placed in the under stage level at the same position. The hoses of the drainage system of the sets, has to go to the under stage level's drain through an opened trap.

### 3 LIGHTING

#### 3.1 GENERAL

Lighting equipment:

LIGHTING BOARD	
Quantity	Description
1+1 (master / program)	ETC APEX5
Back up	ETC ION Xe20
Stage	ETC ION Xe
Extra	ETC Nomad

DIMMERS (ADB – EURODIM RACKS)	
There is not Patch panel. Each output all over the stage has its own dimmer channel.	
Nº of Channels	Power
211	Dimmer 3Kw
411	Dimmer 5Kw
111	Switched 5Kw
24	Dimmer fluor 3Kw
9	Non-dim 3Kw

PORTABLE DIMMERS			
Quantity	Nº of Channels	Power	Model
2	6	3Kw	LT Baby Totem
1	12	3Kw	LT Totem
1	6	3Kw Dimmer (fluor)	RJ Digi Tour
2	6	3Kw Dimmer	RJ Digi Tour

DMX and ETHERNET		
In the different areas of the stage, there are several boxes with DMX signal connectors.		
In addition, the following DMX wireless equipment is available:		
Quantity	Description	Model
7	Transmitter	Wireless Solutions
11	Receivers	Wireless Solutions

CONNECTORS
In the Liceu, the electrical supply for lighting is completely separated from the rest of electrical equipments. To avoid the connection of non-lighting equipment, to the Lighting electrical supply, there is a different type of connector in each electrical supply. The connector for Dimmer Lighting system is type <b>CETACT 7h (16A &amp; 32A)</b> , and for the rest of electrical supplies (electrical devices, non-spectacle or working lighting, etc...) is the normal type <b>CETACT 6h (16A)</b> (non-dimmer).
There is a full set of connection boxes for lighting all over the stage and technical areas, and also in the auditorium.

### LIGHTING BRIDGES ON STAGE

In the Liceu there are no fix lighting bridges. They can be placed almost where are needed (see exceptions below). The flying lighting bridges are set with two consecutive flybars and a trilite truss in between. The projectors are hung to the lower tube, while the flying connection box with all the connectors and the system for folding the electrical wiring coming from the grid, are fixed over the two upper trilite tubes (see drawing).

There are a maximum of 18 connection boxes available for all the shows running on stage at the same time.

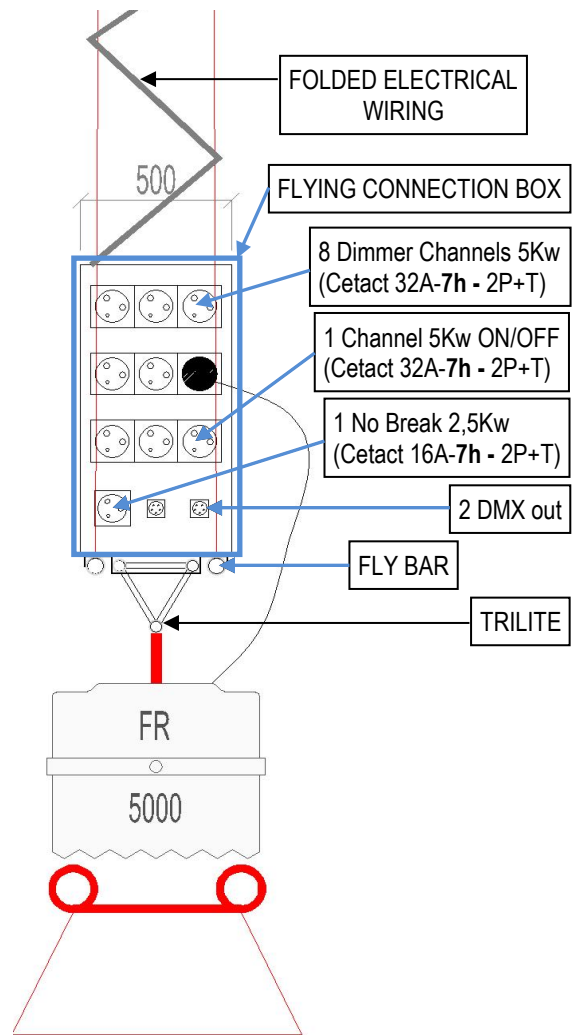
Each lighting bridge can contain a maximum of 3 flying connection boxes with the following equipment each one:

- 8 Dimmer channels 5Kw (CETACT 32A-7h - 2P+T)
- 1 Channel 5Kw On/Off (switched) (CETACT 32A-7h - 2P+T)
- 1 No break 2,5Kw (CETACT 16A-7h - 2P+T)
- 2 DMX out

So that, each lighting bridge can be provided with a maximum of 24 dimmer channels 5 Kw + 3 On/Off 5 Kw + 3 x 16A no break + 6 DMX out

The adjacent bars, in front and behind the lighting bridge cannot be used because they can interfere with the projectors of the Lighting bridge.

**Exceptions:** The bars N°-2, N°-1, N°1, N°2, N°43 and the tracked motors cannot be set with Flying Connection Boxes.

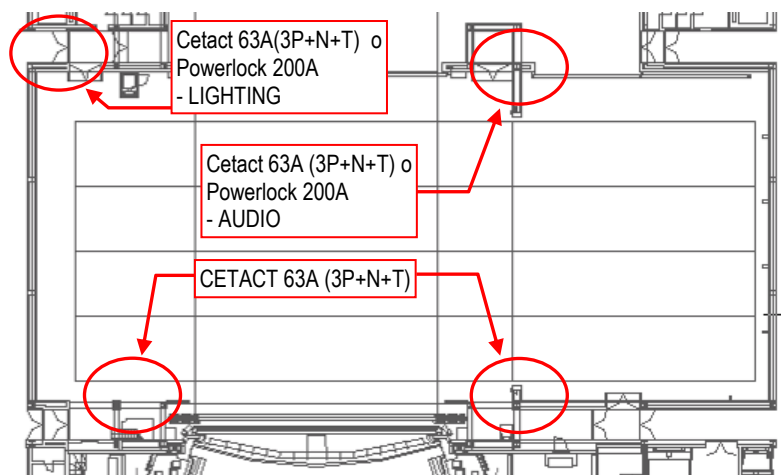


### POWER SUPPLY OF OTHER EQUIPMENT

The no-lighting power has its own power boxes provided with CETACT 6h connectors. Each box has a 16A 2p+T 6h female connexion and a 32A 3p+N+T 6h. All the electric equipments coming with the sets have to be plugged in these boxes. A 63A 3P+N+T connexion is available on the grid floor too.

### POWER FOR EXTERNAL COMPANIES

The stage area is provided with power supplies for foreign equipment, separated for lighting and sound as is marked in the drawing.

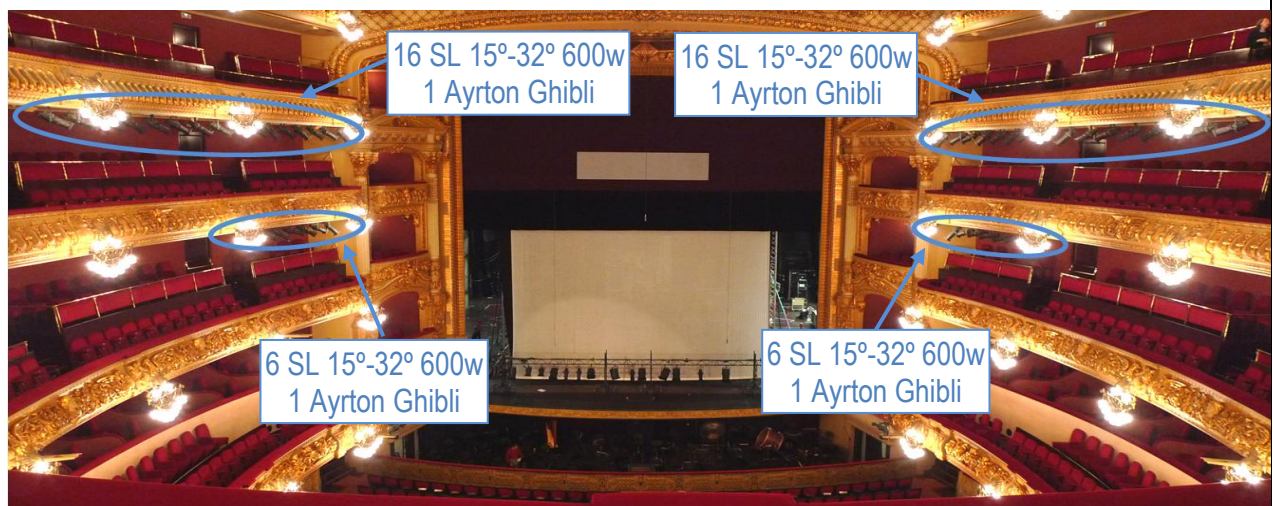




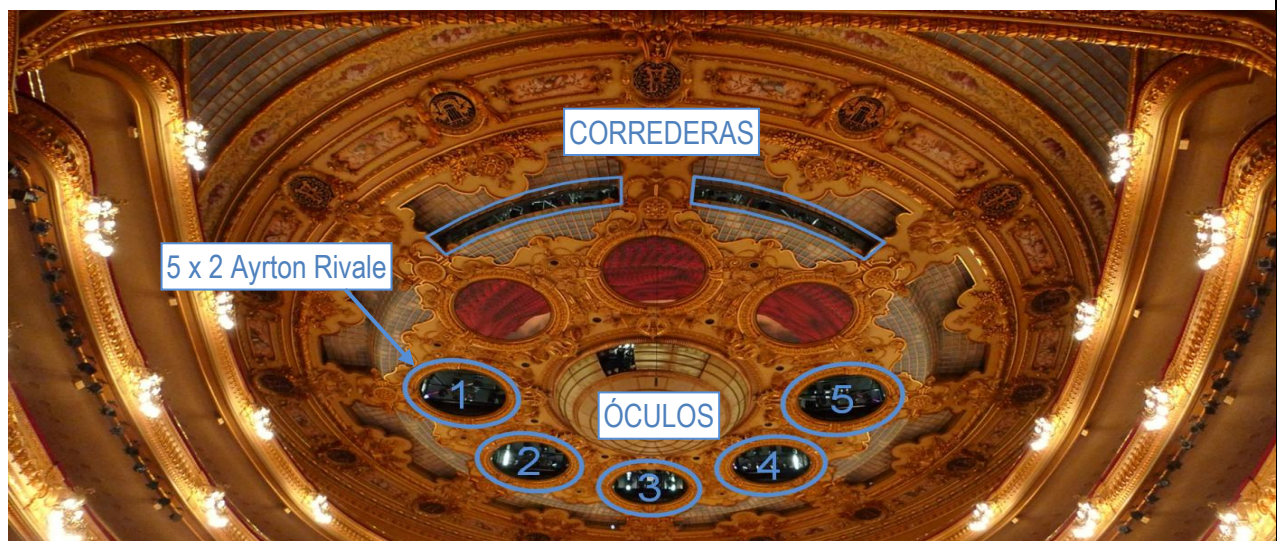
### 3.2 FRONT OF HOUSE LIGHTING (FOH)

The auditorium of the Liceu has a set of fix lighting projectors (SL profiles) + 4 moving lights Ayrton Ghibli on the 2<sup>nd</sup> and 3<sup>rd</sup> balcony, and a technical area over the ceiling which has the “**Oculos**” and “**Correderas**” opening traps for FOH lighting. On the other hand, on the end of the auditorium, there are the Sound/Video, Lighting and Subtitles control rooms at the different floors:

#### SIDE PROFILES 2nd and 3rd BALCONY



#### OCULOS & CORREDERAS



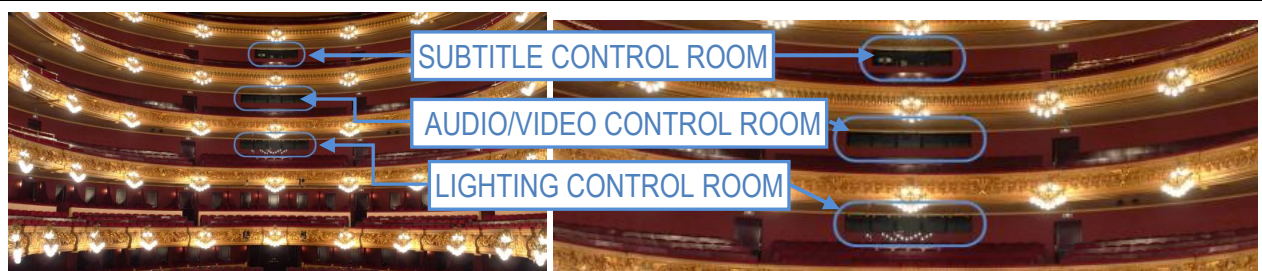
#### Lighting capacity of each óculo:

1 FOLLOWSPOT ARTHUR + 2 AYRTON RIVALE + 4 R.J. 710 (9°-26) 2500w

#### Lighting capacity of correderas:

- 10 S.L. 10° o 19° 600w or RJ 714

#### CONTROL ROOMS



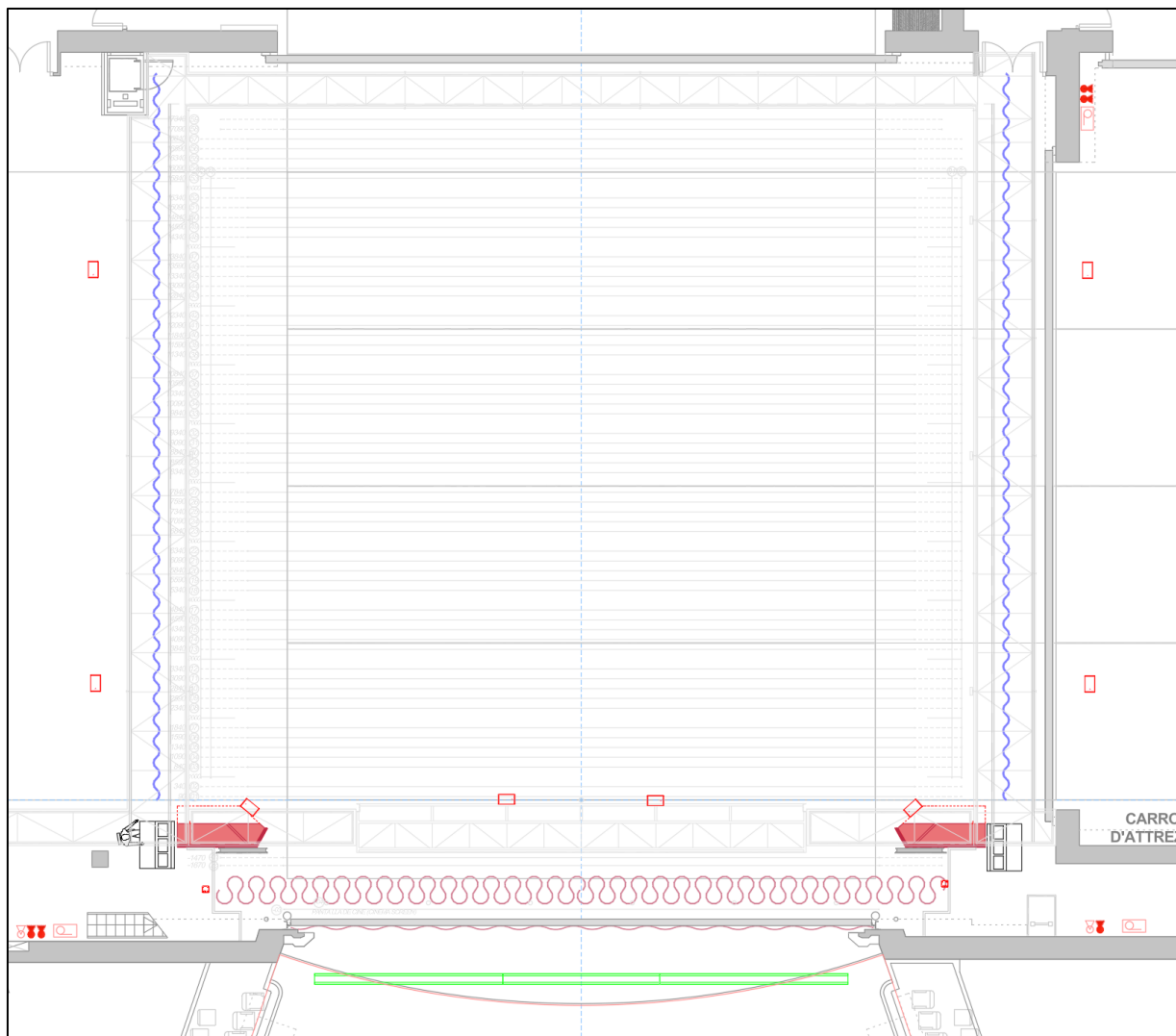
## 4 AUDIO

The Gran Teatre del Liceu is equipped with different types of audio equipment for different needs: stage monitoring, PA, broadcast and recording. The different control stations have signal lines for the transmission and sharing of resources.

### STAGE MONITORING:

The audio mixing tasks for stage monitoring are carried out from the K3 control room and have the following equipment:

- Audio surface: Lawo mc2 36 xp
- Control room speakers: 2x Neumann KH80 DSP
- Reverb: Live Professor Seventh Heaven Pro plugin
- Stage monitoring: L-Acoustics 5XT, 108, X8, X12, SB15, Nexo PS10, Nexo PS15, QSC K8.2
- Mic Preamps for Audience microphones: Merging technologies HAPI
- Fixed Microphone for Audience caption: CALDRIA FER UN MAPA, 2x Sennheiser 416, 2x DPA 4006C i 2x Neumann KM130



Stage monitoring

**FOH AND PA:**

The FOH and PA adjustment tasks do not have a specific position, adaptable to the needs of each show, and have the following equipment:

- Audio surface: Lawo mc2 36 xp, Soundcraft Vi400
- PA: Bose Acoustic System\*
- PA Audio Processor: Directout Prodigy.MP
- Mic Preamps for Show Caption: Lawo A\_Line Stage64, Merging Technologies HORUS, Merging Technologies HAPI, Merging Technologies ANUBIS
- Computer: Macbook Pro 15". Dual Core i7 (End 2015), Macbook Pro 16". M3 Max 16-core (Mid 2024), Mac mini M4 10-core (Mid 2024)
- Sampling Software: Kontakt 5, MainStage
- Cue software: Qlab, Disguise

\* Liceu does not have its own Line Array system for PA and it is requested according to needs.

**BROADCAST AND RECORDING:**

Broadcast and recording tasks are carried out from the audio control room 501 and the following equipment is available:

- Audio surface: Lawo mc2 36 xp
- Control room speakers: 5.1.4 monitoring system, Merging Technologies ANUBIS, Neumann KH120 DSP, KH80 DSP, KH750 DSP
- Stereo Reverb: Bricasti M7
- Surround Reverb: TC Electronics TC6000
- Audio Metering: TC Electronics Clarity M
- DAW: Merging Technologies PYRAMIX, REAPER
- Signal converters: Directout Ebox Dante, Montone.42, Directout Prodigy.MP

**MICROPHONES**

10 ATM 450  
4 ATM 4050  
2 DPA 4006  
6 NEUMANN KM 140/150  
2 AKG C 414 B-TL II.  
2 CROWN PZM-30 D.  
2 SHURE SM-98 A with accessories  
4 SHURE SM7.  
6 SHURE MX-412C  
2 SHURE MX 184 MICROFLEX LAVALIER MICROPHONE  
4 SHURE AXIENT DIGITAL QUAD RECEICER  
WYSICOM MULTIROOM RF DISTRIBUTION  
16 SHURE AXIENT Body-Pack Transmitter ADX1M Lemo3 connector  
4 SHURE AXIENT Hand-held Transmitter AD2/B58A  
2 SHURE AXIENT Plug-on Transmitter AD3  
DPA 4060, 4061, 6060 and 6061 micro-lavalier capsule en diferentes colores.  
4 DPA 6066 Beige Headset microphone

**INTERCOM SYSTEM**

RIEDEL BOLERO WIRELESS SYSTEM (only dedicated on the Stage, units upon request)  
Clearcom 24V 2 Wires Partyline



## 5 VIDEO

### VIDEO BEAMERS:

Liceu has the following video beamers:

1 Video beamer Laser 30.000 ANSI Lumen PANASONIC 1-PT-RQ35K-RZ34K



#### PT-RQ35K Series

	PT-RQ35K	PT-RZ34K
Light Output	30,500 lm <sup>3</sup> / 32,000 lm (Center) <sup>4</sup>	
Resolution	4K (3840 x 2400 pixels <sup>5</sup> )	WUXGA (1920 x 1200 pixels)

2 Video beamer 20.000 ANSI Lumen PANASONIC PT-DZ21K with the following features:

3 chip DLP  
**WUXGA (1920x1200)**  
 Widescreen Panoramic 16:10  
 20.000 ANSI lumens  
 10.000:1 Contrast  
 Multilamp System (4x465W UHM)



Available lens:

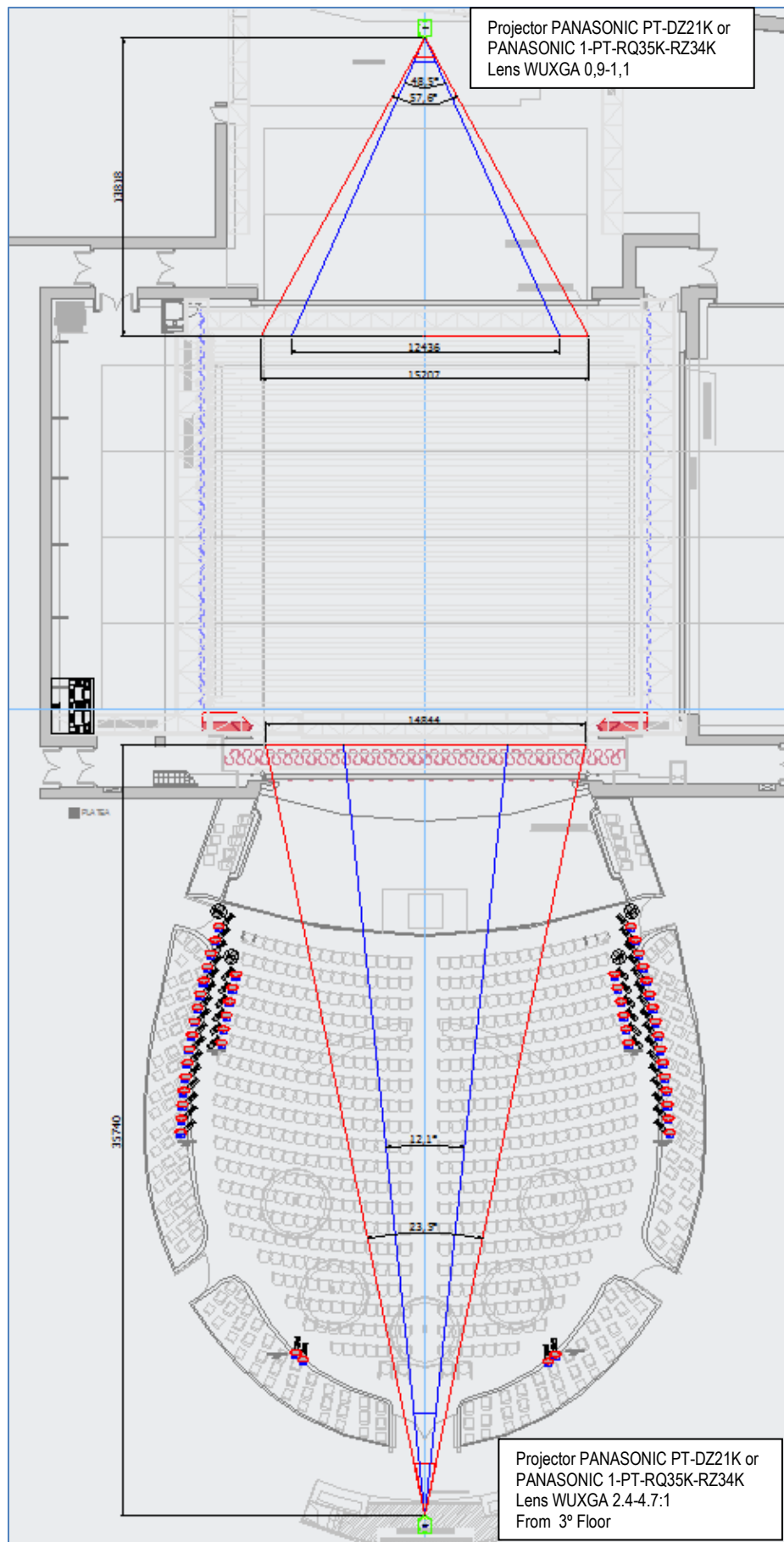
- 2 Optical Zoom (WUXGA 2.4-4.7:1) (SXGA+ 2,6-5,1) (WXGA 2,7-5,2)
- 1 Optical zoom (WUXGA 0,9-1,1) (SXGA+ 1,0-1,2) (WXGA 1,0-1,2)

Liceu has the following video servers:

- 2x Disguise D3 2x2plus: 2 outputs 2K resolution
- 1x SMODE: 2 outputs 4K resolution
- 2x Qlab 4: 2 outputs FullHD resolution with MadMapper licence
- 1x Qlab 5: 2 outputs FullHD resolution

The building has an OM4 multimode fiber patch with SC connection, and OS2 single-mode fiber with LC connection, to transport the signal from the Video Servers to the projectors.

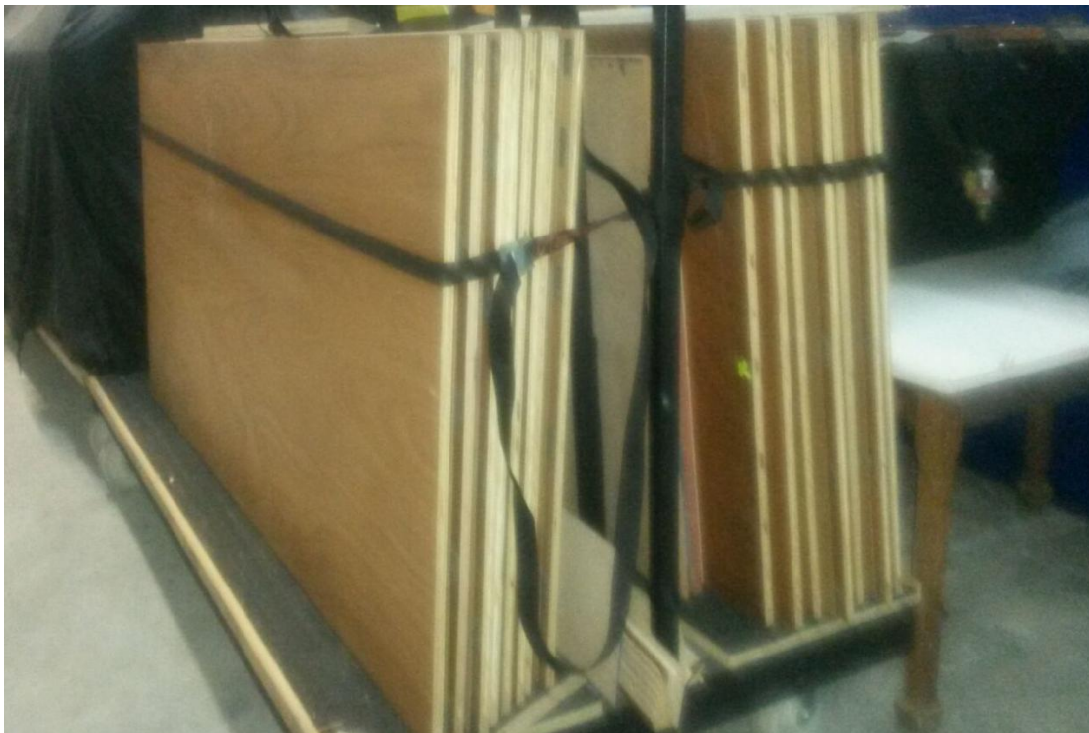
PROJECTION DISTANCES:



## 6 EXTRA SCENERY EQUIPMENTS

### 6.1 SPRUNG FLOOR

For ballet companies there is available a sprung floor that covers the whole stage area, it's made of 18 mm plywood connected to another 6 mm plywood by foam sleepers. The total width of the floor is 34 mm. It takes 3 hours to set it. It can be set onto the wagons in a Box area.



### 6.2 REVOLVING PLATFORM (Ø10,95m / Ø14,84m / 17,34m)

The Liceu has a revolving platform that can be configured with 3 different diameters: Ø10,95m, Ø14,84m and Ø17,34m.

The revolving platforms with Ø10,95m and Ø14,84m can be set up at the stage level (+0m).

In any configuration, if the platform must be positioned 2m downstage to the public (on the 'Compensadora'), then, the platform will be +40cm over the stage level.

The stage traps cannot be opened in any configuration of the revolving platform.



The revolving platform with Ø17,34m is always +40cm over the stage level. As the diameter of this revolving platform is bigger than the perimeter stage pit (15m x 16m), the wagons and the platforms are blocked and that makes impossible any movement with them as well as the changeover with other productions and the Acoustic Concert Shell. That's why the revolving platform with diameter 17,34m **cannot be used in new productions or coproductions**.

When the revolving platform, in any diameter configuration, is +40 cm over the stage level, the Liceu has a frontal stair for its access to the platform.

## TECHNICAL FEATURES

<b>Diameter:</b>	Ø10,95m – Ø14,84m – Ø17,34m
<b>Platform height:</b>	40cm
<b>Moving direction:</b>	Clockwise and Counter clockwise
<b>Turning limits:</b>	No limits
<b>Turning units:</b>	Degree tenth's
<b>Maximum load capacity:</b>	10Tm (Ø10,95m) - 25Tm (Ø17,34m)
<b>Load per m<sup>2</sup>:</b>	300Kg/m <sup>2</sup>
<b>Maximum turning speed:<sup>2</sup></b>	1,2 r.p.m. (Ø10,95m) – 0'8 r.p.m (Ø14,84m, Ø17,34m)
<b>Electric channels:</b>	7 circuits de 30A
<b>Motor power:</b>	
<b>Height from 0 level:</b>	+0 – (Ø10,95m, Ø14,84m) - +40cm (Ø17,34m)

<sup>1</sup> This configuration doesn't allow changeover between productions.

<sup>2</sup> The final speed depends on the load on the platform.

### REVOLVING PLATFORM AT+40cm

The steps to access to the platform are used when the revolving platform is +40cm over the stage level (configurations with Ø10,95m – Ø14,84m advanced over the 'Compensadora', o the one with Ø17,34m)



## REVOLVING PLATFORM IMPLANTATION PLANS

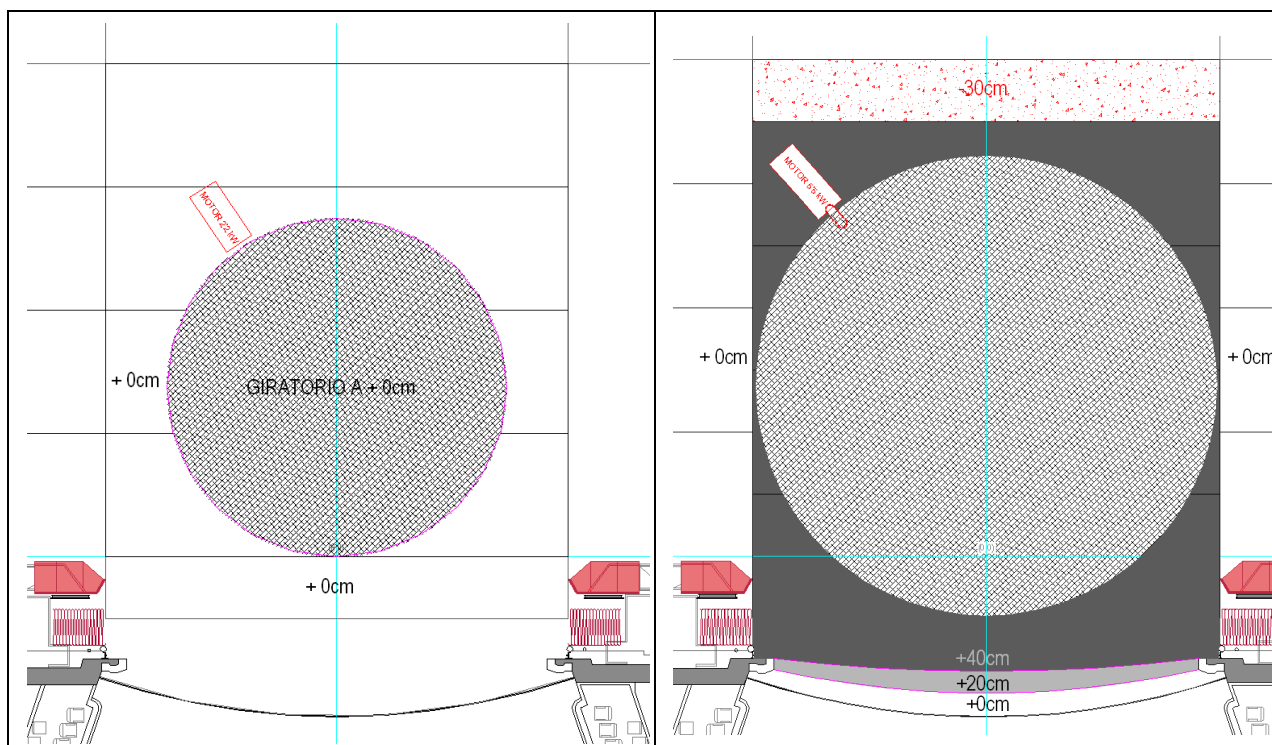
### REVOLVING PLATFORM Ø10,95m and Ø14,84m

They can have 2 positions: centered or advanced.

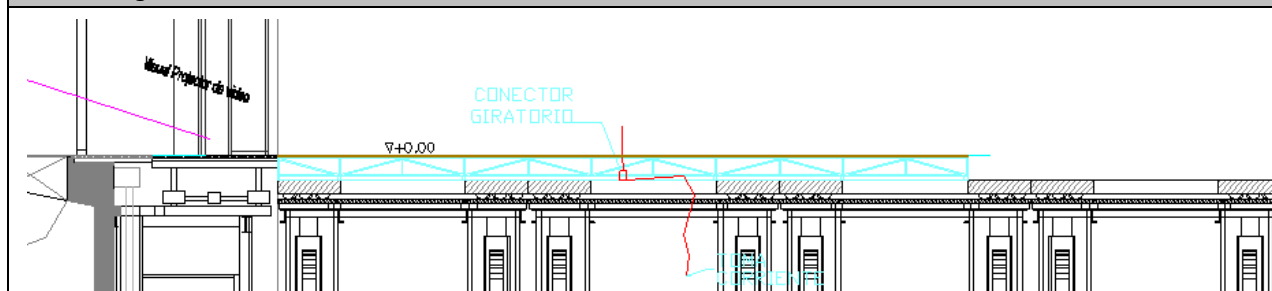
When It's advanced, the revolving platform is +40cm over the stage level; Some steps positioned downstage can make a downstage access to the revolving platform.

**Revolving Platform Ø10,95m – Centred Position**

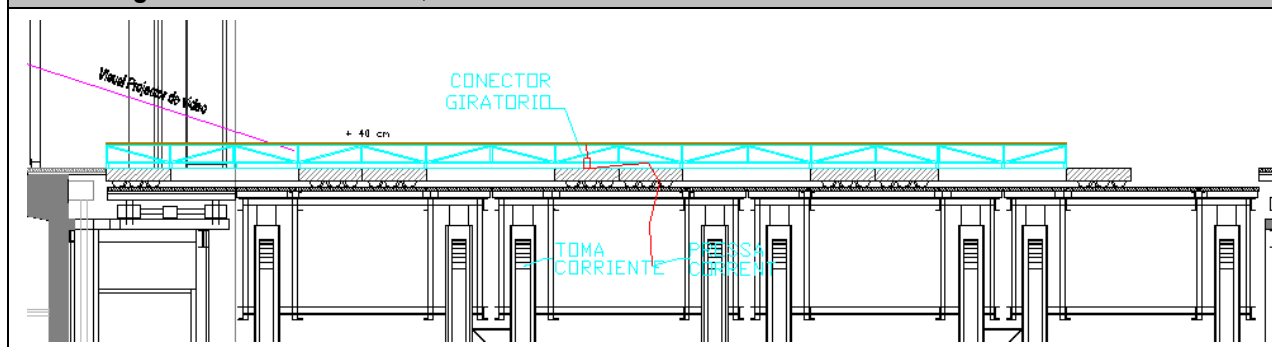
**Revolving Platform 14,84m – Advanced Position**



Revolving Platform Section Ø10,95m – Centred Position



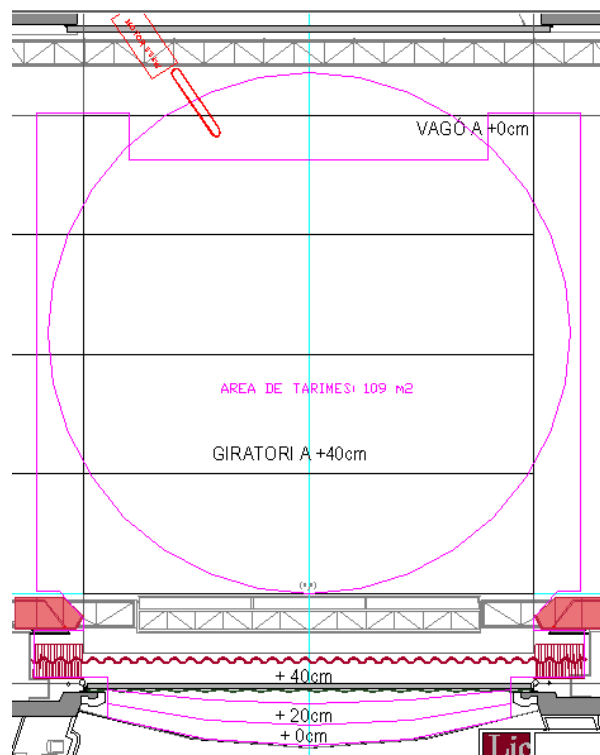
Revolving Platform Section Ø14,84m – Advanced Position 2m



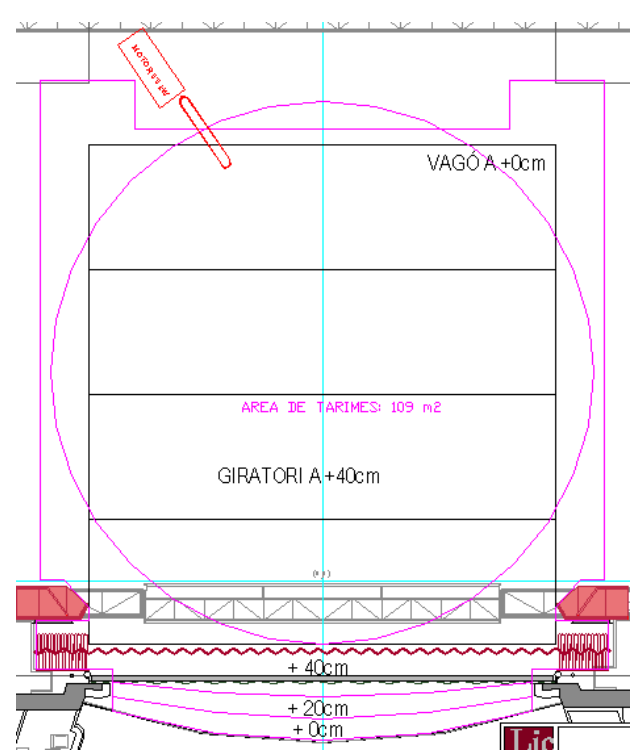
### REVOLVING PLATFORM Ø17,34m

The revolving platform with Ø17,34m can be set at 2 positions: **centred** or **advanced**. In both positions, the revolving platform is +40cm over the stage level; again some steps positioned downstage can make an access to the revolving platform.

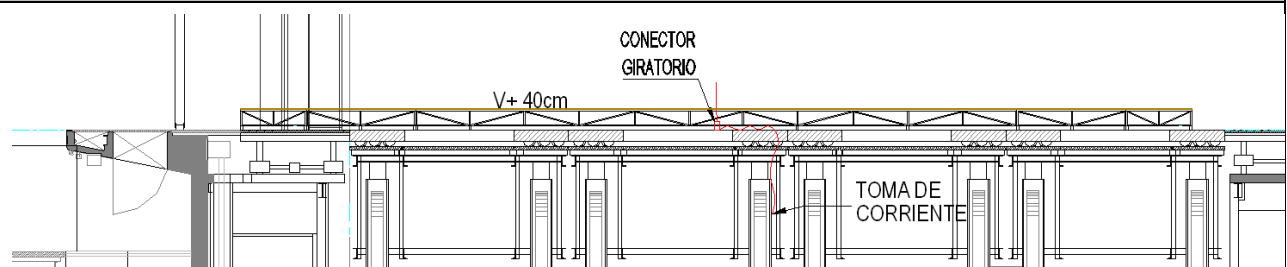
#### Revolving Platform Ø17,34m – Centred Position



#### Revolving Platform 17,34m – Advanced Position

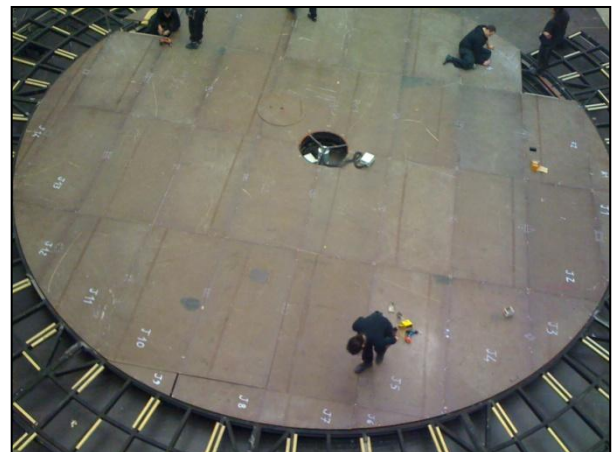
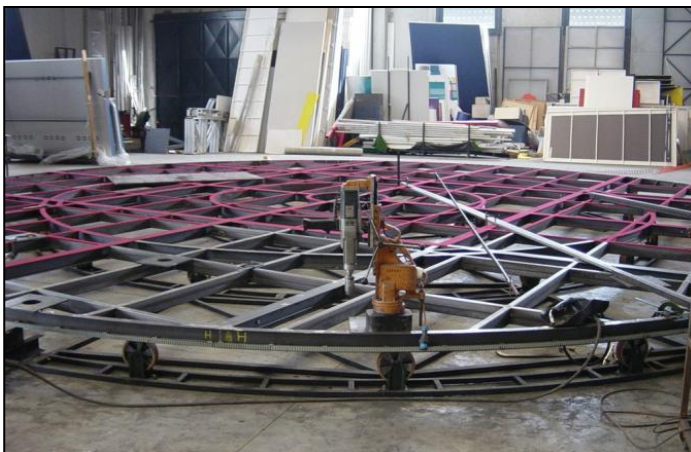


#### Revolving Platform Section Ø17,34m – Advanced Position 2m



The revolving platform with Ø17,34m doesn't allow changeover between productions

### PICTURES



### 6.3 ELEVATOR PLATAFORMS UNDER THE STAGE LEVEL

The Liceu has, under the stage level (-4,85m), a system of elevator platforms that can have different configurations.

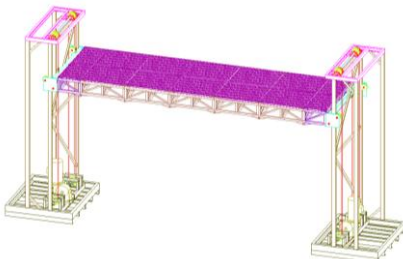

There are 3 units of double elevators, that allow us to set 3 independent surfaces of 6x1,78m, always matching the traps of the wagons and satellites, with a maximum load of 1000Kg each one.

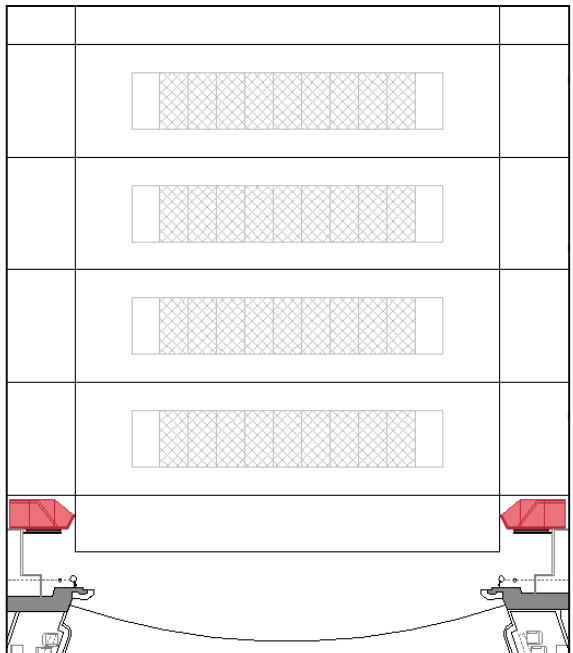
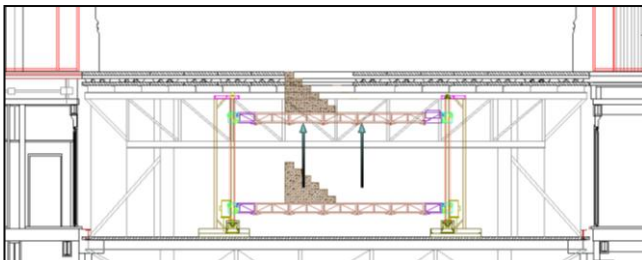
Moreover, there are 2 individual 1x1m lift platforms available

All the lift movements are controlled by a computerized system. Groups with different lifts can be done using cues, presets, etc..

The lifts configuration of the Production has to be done before the set-up on stage.

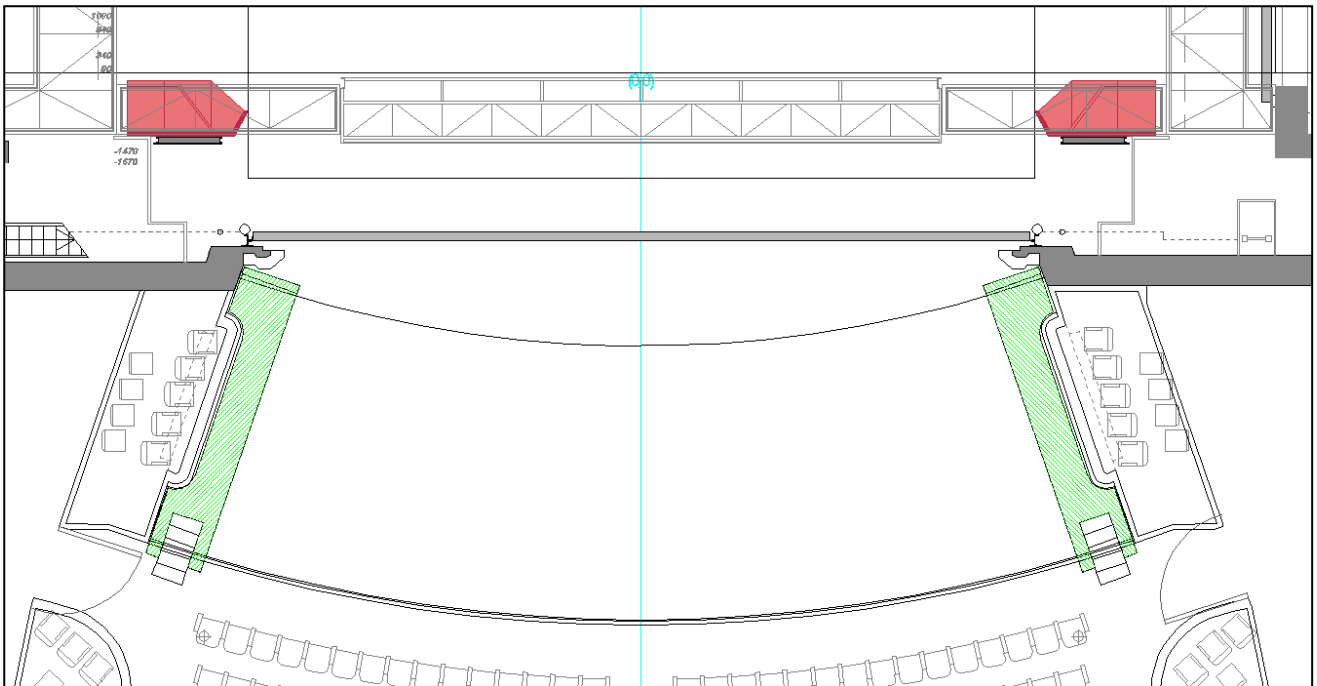
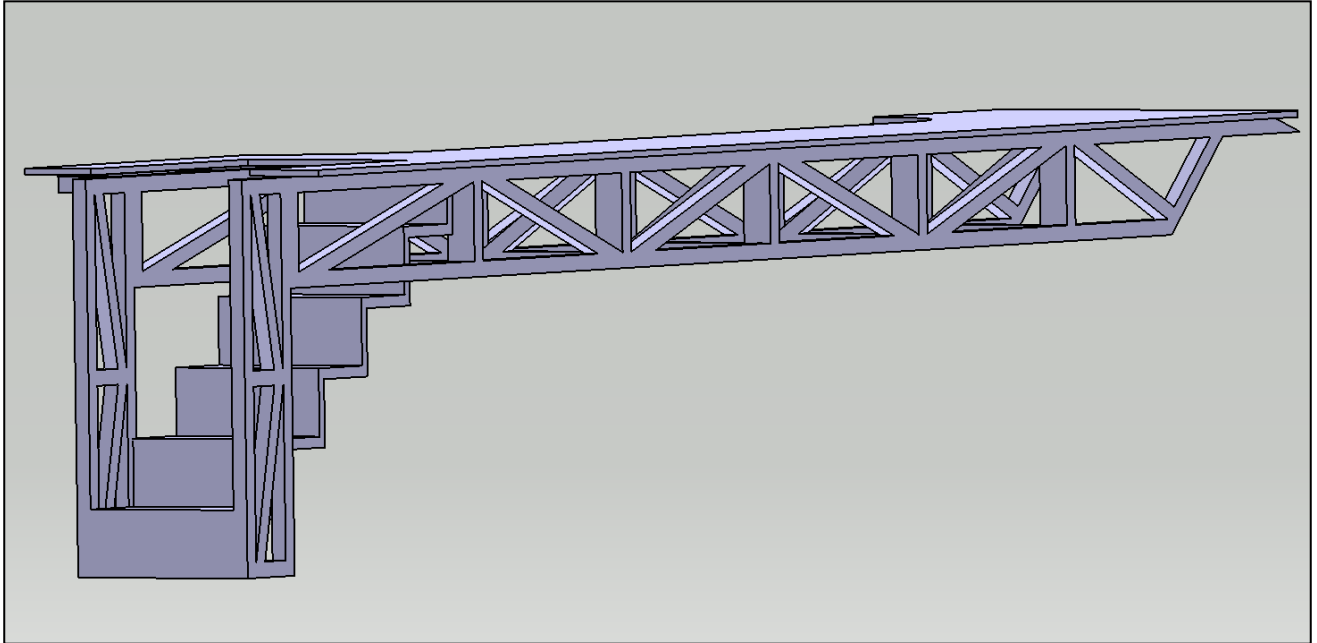
#### TECHNICAL FEATURES:

DOUBLE ELEVATORS		
Minimum width useful:	195cm	
Maximum width useful:	595cm	
Depth:	178cm	
Minimum height:	99cm	
Maximum height:	374cm	
Net spam distance:	275cm	
Speed:	0.05-0.19 m/s	
Max imposed load capacity:	1000Kgs	
SINGLE ELEVATORS		
Minimum width useful:	195cm	
Maximum width useful:	595cm	
Depth:	178cm	
Minimum height:	99cm	
Maximum height:	374cm	
Net stroke distance	275cm	
Speed:	0.05-0.19 m/s	
Max imposed load capacity:	500 Kgs	

Traps where elevators can be placed	Transversal section of the under stage level
	

#### 6.4 CATWALKS OVER THE GROUND PIT

The Liceu has 2 catwalks to connect the Auditorium room with the stage, over the orchestra pit. During the rehearsals on stage, is usually set up the Ramblas catwalk side to allow the technicians and the creative team to cross the orchestra pit. Those catwalks eventually can also be used as a part of the production. The use of the catwalk must be done always with two lateral handrails. The maximum load capacity is 6 persons in each catwalk.

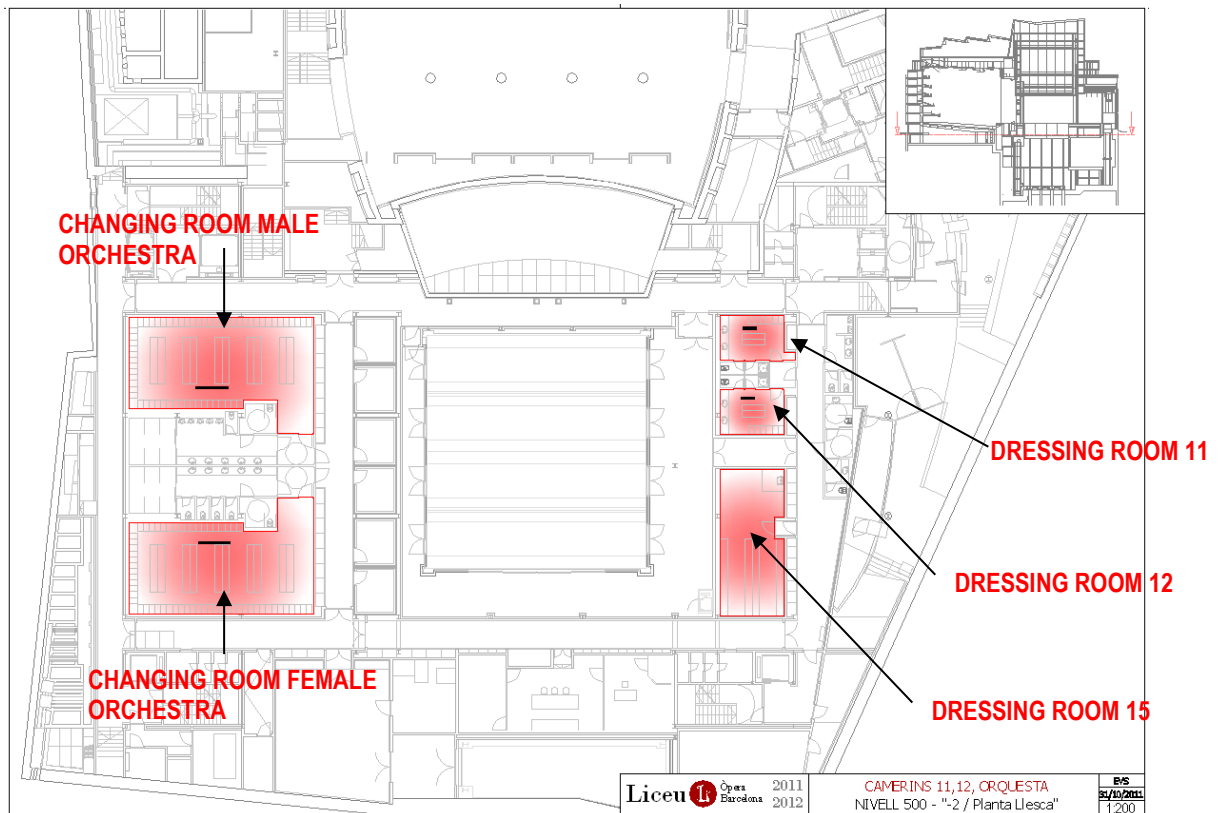




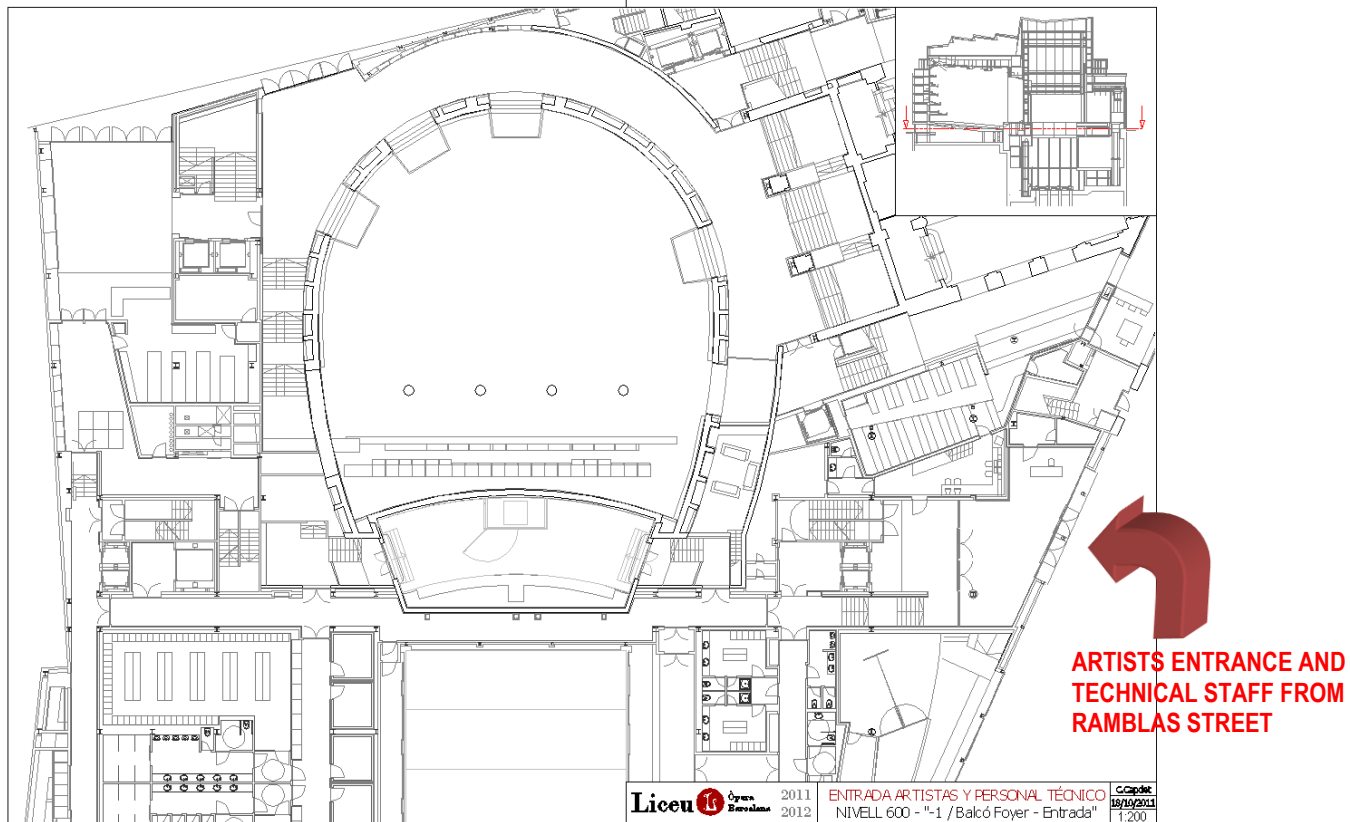


## 7 DISTRIBUTION OF THE DRESSING ROOMS

## 7.1 LOCATION OF THE DRESSING ROOMS IN THE THEATER

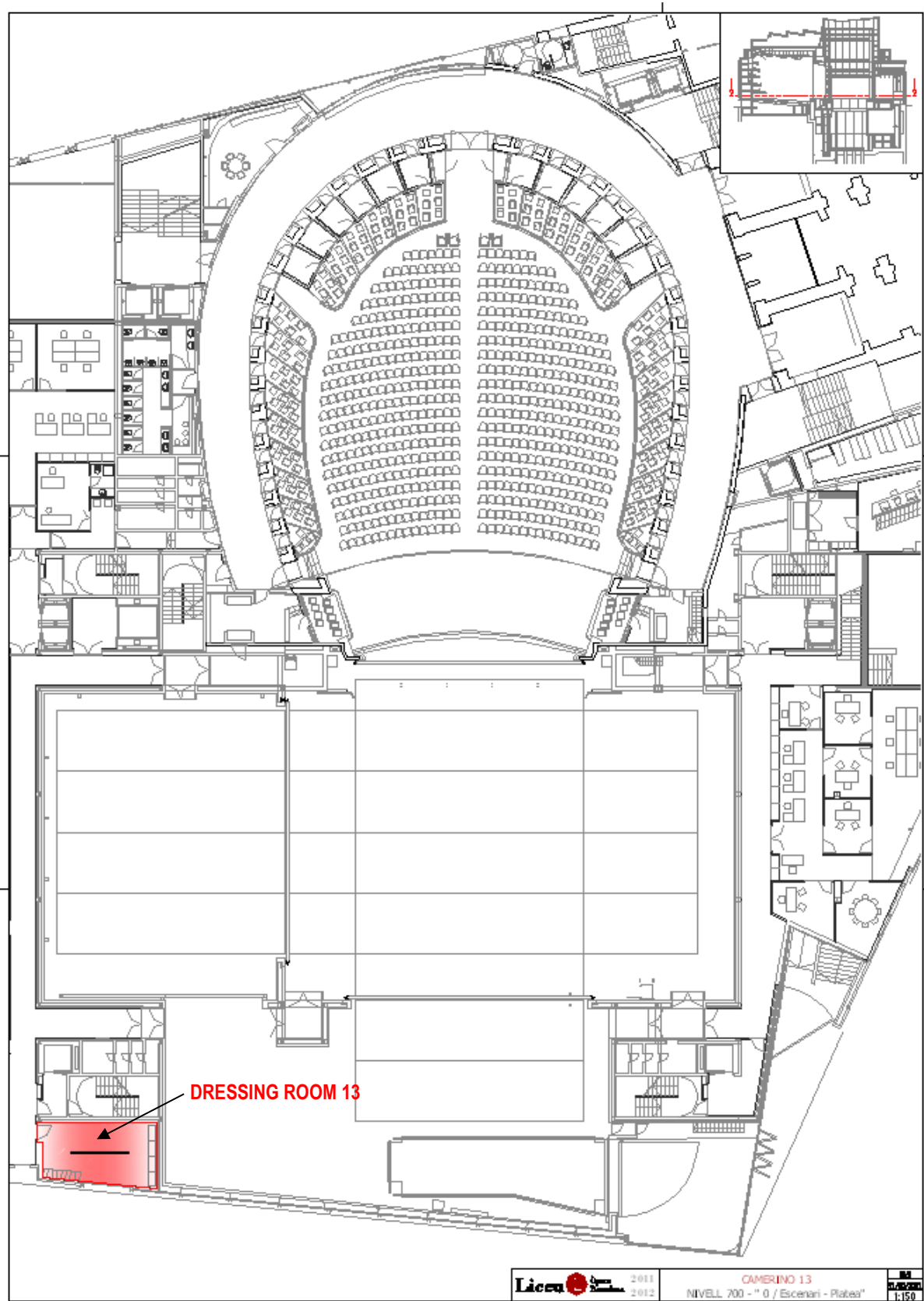


**FLOOR -2 RAMBLA SIDE; ORCHESTRA CHANGING ROOMS; DRESSING ROOM 15 FOR BALLET EXTRAS AND DRESSING ROOMS 11 AND 12**

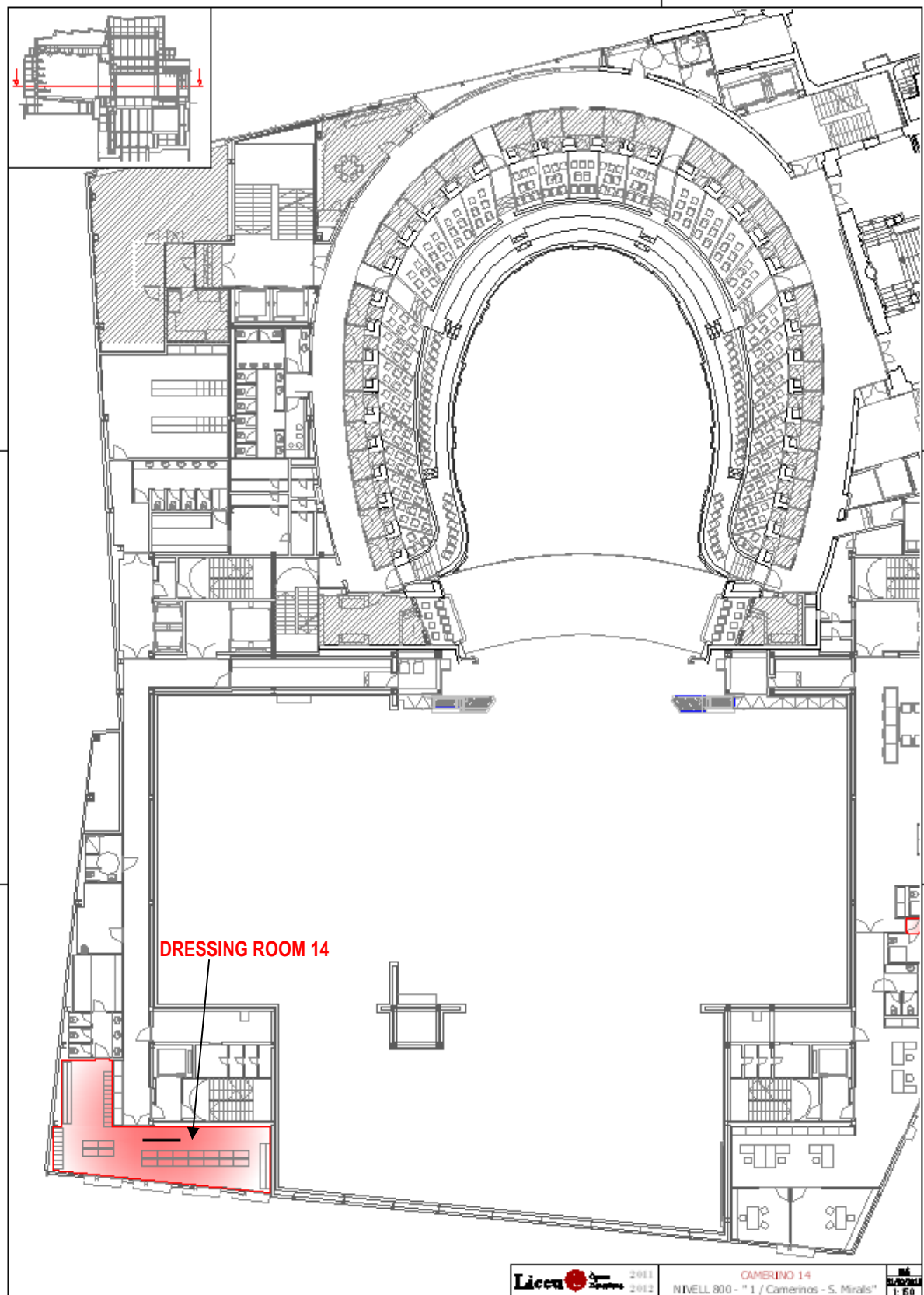


**FLOOR -1 RAMBLA SIDE; ENTRANCE OF THE ARTISTS AND TECHNICAL STAFF**

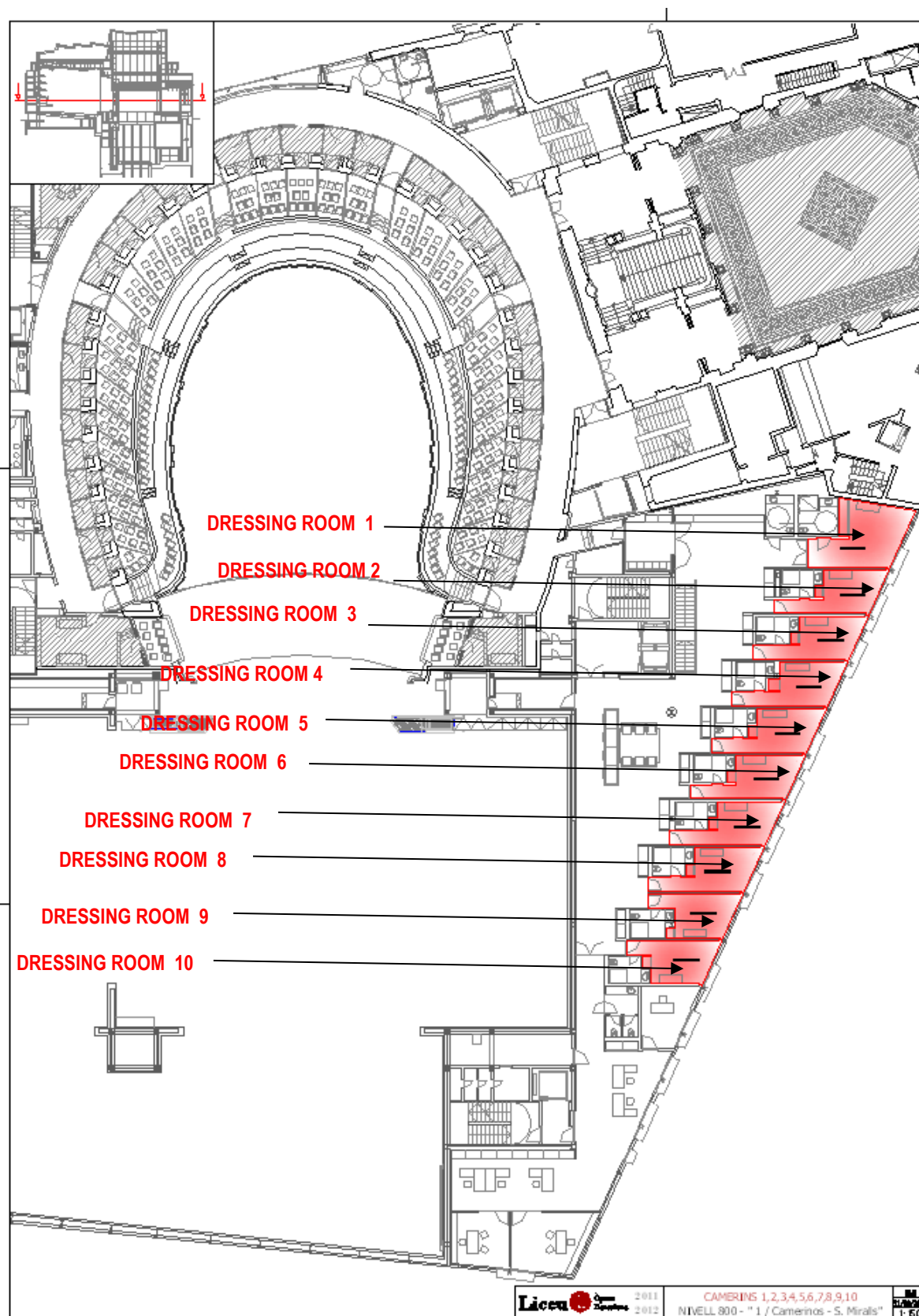




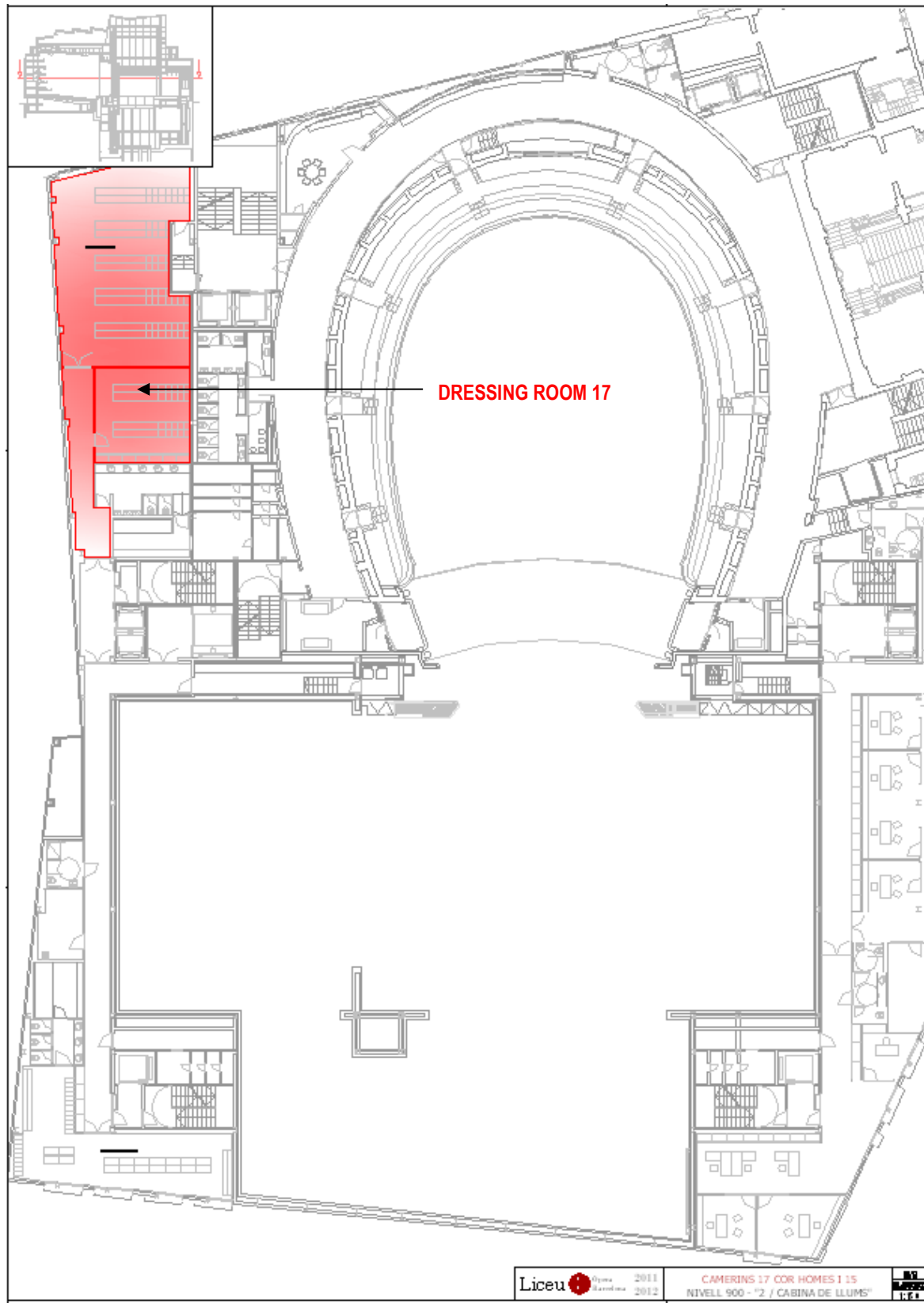
**FLOOR 0 - STAGE FLOOR, JARDIN SIDE: DRESSING ROOM 13 FOR FOREIGN COMPANIES OR DIFFERENT USES.**



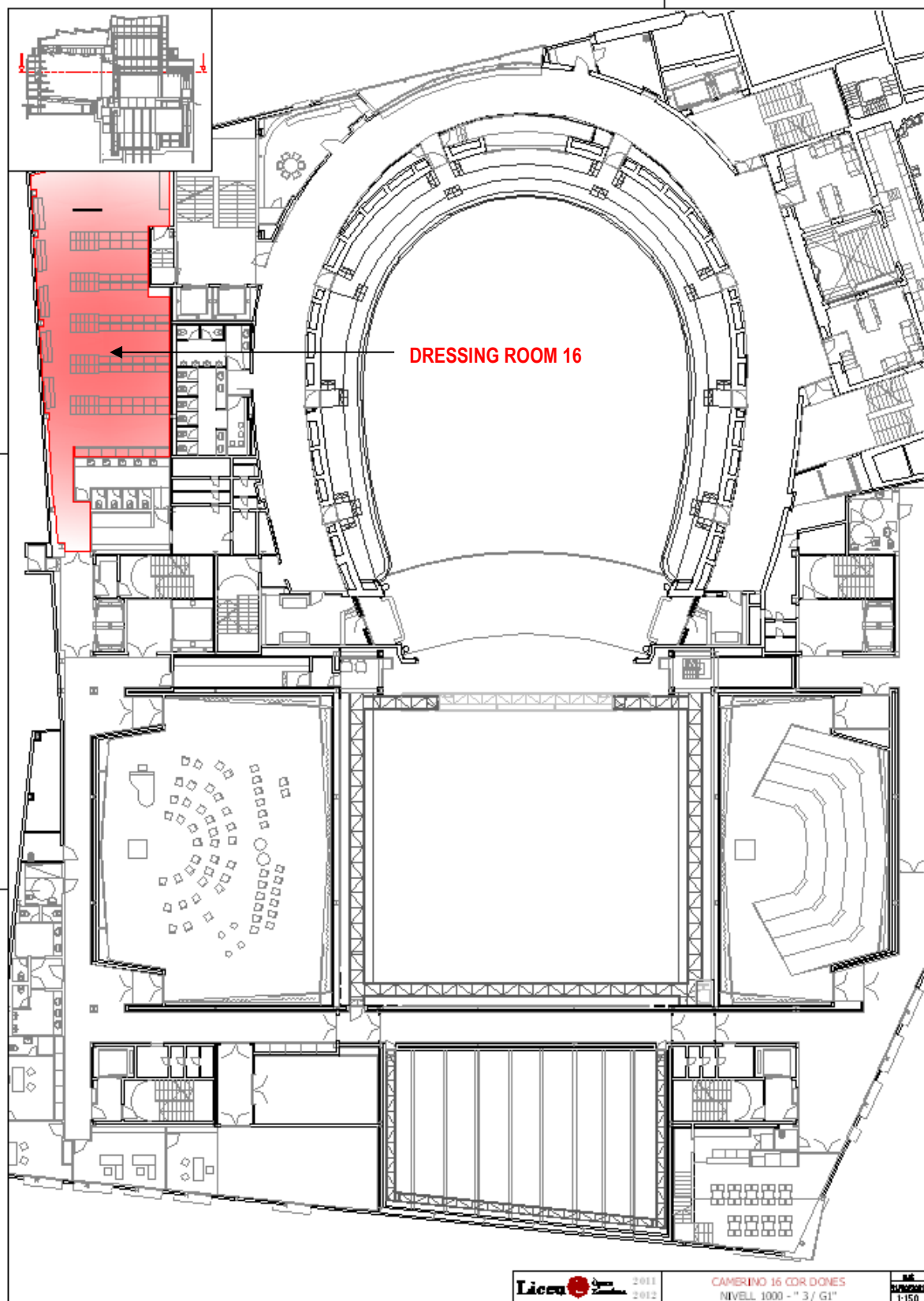
1st FLOOR JARDIN SIDE; DRESSING ROOM 14 FOR EXTRA BALLETs



**1st FLOOR RAMBLA SIDE; DRESSING ROOMS 1,2,3,4,5,6,7,8 Y 9 FOR SOLOISTS;  
DRESSING ROOM 10 FOR THE CONDUCTOR**



**2nd FLOOR JARDIN SIDE; DRESSING ROOM 17 FOR MALE CHORUS**



**3rd FLOOR JARDIN SIDE; DRESSING ROOM 16 FOR FEMALE CHORUS**

## 7.2 OCCUPATION OF THE DRESSING ROOMS

The availability of the dressing rooms depends on the different activities that take place at the same time in the different Theater spaces. Having in mind this determinant, the following areas are available:

FLOORS	DRESSING ROOM	USE	CAPACITY
-2	Changing room male orchestra	Male orchestra	55 people aprox.
	Changing room female orchestra	Female orchestra	55 people aprox.
	Dressing room 11	Auxiliar	1 person*
	Dressing room 12	Auxiliar	1 person*
	Dressing room 15	Extras, ballet team	12 people
0 (Stage Level)	Dressing room 13	foreign companies: technicians and production, chorus and children extras.	Between 8 and 10 people
1	Dressing room 14	Extras, ballet members	18 people
	Dressing rooms 1,2,3,4,5,6,7,8,9	Soloists	1 person*
	Dressing room 10	Conductor or soloists	1 person*
2	Dressing room 17	Chorus male	40 people aprox.
3	Dressing room 16	Chorus female	40 people aprox.

- In some cases, the number can be increased up to two persons, if there is no other space.



## 8 TECHNICAL STAFF

The technical staff available is limited. The amount of technical staff for each day is planned depending on the activity of each department according to the planning and the total amount of theatre's requirements.

Depending on the demand for labor to serve the different activities, it may become necessary to hire extra staff, according to budget. This is especially important related to costumes and make up.

Working shifts:

- The theater has two daily work shifts, one in morning and the other one in the afternoon.
- These work shifts have different schedules day by day to adapt to the needs of the theater.
- People in the morning shift is different from people working in the afternoon shift.
- The afternoon shift staff is not always the same in all rehearsals and performances, so technically complicated proposals may require technical rehearsals with different teams.

However, the standard staff for stage productions per shift is as follows:

Service	Carpenters	Lighting	Audiovisuals	Props	Costumes	Make up
Technicians	8	4	2	3	5	2

New productions should try to adapt the requirements to this staff.

This crew can be working in other theatre's activities, while they are not required on the stage.

Additional to the standard staff, for each production, a responsible team is defined as follow:

Service	Head of stage	Stage Manager	Carpenters	Lighting	Audiovisuals	Props	Costumes	Make up
Project Responsible	1	1	1	1	1	1	1	1
Project assistant		n	2	2		2		

This entire team of project responsible is the same throughout the entire period of rehearsals and production performances. They are planned with flexible schedules to attend production activities throughout the day.

All project assistants are scheduled with daily shifts, just like the staff, but on the days dedicated to production, so they are the same throughout the entire period of rehearsals and production performances, as well.

Head of Stage manages the activities on stage, detailed daily schedule, the staff resources and the spaces of all the technical areas. In addition, he is the main speaker related to technical issues, between the Creative Team and the Technical Direction during the rehearsals and performances of the production. He works together with the Stage Manager, in charge of the artistic issues.

**Oficina Tècnica \ *Technical Office***

 **Gran Teatre del Liceu**