



**FIRA DE BARCELONA
MWC 2024**

**General rules for hanging elements and
structures in halls / Rigging**

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FIRA DE BARCELONA MWC 2024

Regulations

1. PURPOSE

Its unique purpose is to establish rules for the suspension of exhibitor's elements and improve the safety of people and facilities, during both the assembly and disassembly stages, as well as during any event.

2. HANGING ELEMENTS FROM EXHIBITION HALL CEILINGS -RIGGING

Rigging and security cables hung up from the hall's structure correspond only to the appointed official supplier by Fira Barcelona. No third parties are allowed to hang anything directly to the halls ceilings and facilities.

Exhibitor / Stand builder shall hire the rigging points **according to the load distribution carried out by his competent technician.**

Please note it is not always possible to locate hanging points in all areas of the exhibition hall and therefore restrictions may exist which vary depending on the hall and the points already taken up as well as the ceiling's load capacity. This might lead to the need for pre-rigging. Please see the rigging restrictions floorplan of the venue at **appendix 1** of this manual.

Rigging is not permitted above shell scheme stands, hospitality suite packages or above public gangways. If this last situation cannot be avoided Fira and GSMA will need to approve it.

3. GENERAL INSTALLATION REQUIREMENTS

The structures must be designed to withstand both the static and dynamic loads associated with assembly.

Complex Suspended Structures

All suspended structures are considered complex structures and require load distribution calculations and structural certification through the official stand plan inspection agencies, except:

- Lighting trusses (without cladding) that use less than 10 rigging points.
- Aluminum and fabric light banners with a maximum weight of 100 Kg per rigging point (including weight of the lifting elements)

* The number of rigging points are considered the total rigging points of the booth.

Only in these two cases, a structural certification is not required.

IMPORTANT - Before lifting any rigged elements you must advise **Graó Tècnic**, on **+34 670965795** or contact the hall manager and get your hanging connections inspected, otherwise additional costs for inspecting connections at height will be charged to the exhibitor.

The main requirements for any hanging structure / elements are as follows:

- **The minimum distance permitted between rigging points for hanging elements is 1 meters.**
- **The allowed maximum hanging weight of rigging elements is 15 Kg/m² calculated by the ratio between the total weight of the suspended elements and the contracted stand surface.**
- **It is not allowed to lift up one truss grid with more than 6 manual chain hoists.**
- **The maximum load of one rigging point is 1,50Kn (150kg).**
- The safety factors of hanging elements shall be higher than those laid down in prevailing regulations. This applies to all elements hanging from the points installed by Fira's rigging appointed supplier, whether structural, rigging or merely decorative.

General rules for hanging elements and structures in halls / Rigging

- Loads transferred to the structure during stand assembly due to hoisting of elements or any other assembly or dismantling may not subject the halls to lower safety factors than those set out in prevailing regulations.
- Materials used must be of good quality and in good condition.
- Exhibitors own truss structures and material used are only permitted if it bears the CE mark (European conformity) and it is in perfect working condition.
- Any rigid coverings or wood structures must be attached to a certificated CE (European conformity) truss structure for hanging.
- Roof trusses in each hall have different load bearing characteristics.
- Exhibitors are not permitted to suspend from the existing venue hall's trusses themselves.
- The suspended elements from the rigging must maintain the verticality of the cable.
- The maximum distance recommended between points for hanging elements using a truss is 9 meters for general lighting.
- It is strictly forbidden to tamper with any equipment installed by the rigging company including trusses, cables, shackles or slings.
- Note that you are not allowed to hang up any element/banner above the height limit as specified on the technical floorplans.
- Refer to the build height restrictions of the Event Manual to find out more about special exceptions on technical trusses.

IMPORTANT - If the rigging plan cannot fulfill the above mentioned requirement all the plans and documentation regarding the rigging and the hanging objects must be send to Fira and Grao Tecnic 2 months before the official start date of assembly

4. LIFTING EQUIPMENT

The use of lifting equipment must be stated in the order process and coordinate with the responsible rigging company of Fira de Barcelona.

4.1 Manual chain hoists:

- Load movements with manual chain hoists above persons are strictly prohibited.
- Due to the high asynchronism only point loads with a maximum weight of 150 kg may be moved manually.
- At most **six** (6) manual chain hoists may be used simultaneously with distributed loads and surface loads.
- The nominal load-bearing capacity stated by the manufacturer must not be exceeded at any time during application.
- All manual chain hoists must be staffed simultaneously when lifting loads; the load must be moved as synchronously as possible.
- A chain box/bag that is approved for the chain hoist must be available.
- The load chain may not be used for rigging loads, it's mandatory to use the hook.

4.2 Electrical chain hoists:

- The nominal load-bearing capacity stated by the manufacturer must not be exceeded at any time during application.
- Electric chain hoists may only be used in tested state and marked with a corresponding test label.
- Electric chain hoists must be suspended so that the chain does not come into contact with anything and cannot retract diagonally.
- With climbing hoists, the chain must be able to safely retract into the chain box. Make sure that the chain can also safely extend and retract without attached load. Only qualified persons may operate electric chain hoists. The operator has to monitor the movement procedure of the electric chain hoists and the load.

General rules for hanging elements and structures in halls / Rigging

- The electric chain hoist D8 is not approved for suspending and moving loads above persons. A D8 chain hoist may only be used in event and production technology for assembly and disassembly and for lifting loads. After terminating the load movement, a secondary safety cable must be installed and the power supply to the chain hoist must be cut off. The applied secondary safeguards may not allow any drop.
- The **electric chain hoist D8 Plus** is not approved for moving loads above persons. Stationary loads may be suspended above persons without secondary safety cable. The power supply to the electric chain hoist must be cut off. The chain hoist D8 Plus must be visibly labelled as such.

For using electrical chain hoist D8 plus must to be submitted the following documentation to the rigging provider. Address TBC.

- EC Declaration of Conformity
- Certificate of hoisting equipment
- Last maintenance certificate (less than 1 year)

All the documentation must to be submitted 10 working days before starting the buildup period. In case of not submitting all required documentation or detecting any deficiency, Fira de Barcelona can stop the assembly until the required documentation is presented or may force the installation a secondary safety cable.

4.3 Safety Cables

Safety cables must be installed in all assemblies in order to prevent the hanging structure from collapsing, whether any element breaks down.

The following conditions must be satisfied:

- A. Safety cables must connect the structures rigged by the exhibitor to the O-ring, by-passing the electrical motor or manual chain hoist.
- B. Once the two ends of the safety cables are fixed, they must be stress free.
- C. The diameter of these cables must be at least 6 mm and equal to or greater than the diameter of the main cables.
- D. Their section must support the associated cable load plus 25% to factor in any sudden

General rules for hanging elements and structures in halls / Rigging stress.

- E. Safety cables must be positioned so that they are stress free in their final situation.

All **suspended fittings and equipment** (e.g. lights, sound clusters and speakers, display rigs, etc.) shall be fitted with secondary safety wires/chains and brackets.

The following conditions must be satisfied:

- A. The fixture of each fitting must act independently from the secondary one and steel cables used must have a diameter of at least 4 mm.
- B. Safety cables may be of synthetic fiber in cases where the main union system is made of steel cable, but it will not be used when placed near lightning systems.
- C. Nylon elements must have a minimum tensile strength of 7 kN (700 kg).
- D. Cables and slings made of steel, nylon or a combination of the two may be used to hang elements.

5. RIGGING ORDER & APPROVAL

Rigging points may be installed by the Fira's appointed supplier. Rigging points are not always available and every request will be dealt with individually.

There are local restrictions that change according to the hall structure, points already taken up and the ceiling's load capacity. These restrictions may entail the installation of pre-rigging structures and/or extra costs. Please see the rigging restrictions floorplan of the venue at **appendix 1** of this manual.

Fira Barcelona will only provide fixed points when requests meet the allowed parameters foreseen for your space.

To **request rigging** service it is necessary to fill in the form available on ServiFira online ordering system website.

Halls 1, 2 and 3: Neumann&Muller rigging.granviasouth@firabarcelona.com
Halls 4, 5, 6, 7, 8.0 and 8.1: Top Fort rigging.granvianorth@firabarcelona.com

Please submit the following basic documentation / report with your rigging order form:

- Drawing (in AutoCAD Version 2010) indicating height, weight supported per rigging point and orientation of the booth within the hall.
- Fira's order form indicating company details and rigging requirements.
- Type of point desired (with or without safety steel, manual chain hoist or electrical motor).
- Extra documentation needs to be sent depending on complexity of the rigging (A, B, C):

A. SIGNS & TARPAULINS (Weight < 0,05kN/m²):

- | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">- Certificates of all materials that will be used- Safety fixture elements to be used- Contact information and signature of the person in charge of the installation |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

General rules for hanging elements and structures in halls / Rigging

B. TRUSS STRUCTURES WITH ATTACHED EQUIPMENT & TARPAULIN -

Up to 10 rigging points (unsheathed truss):

REPORT with:

- List with all elements weight (trusses and all elements attached / hung from them)
- Drawing indicating height, weight supported per rigging point and orientation of the booth within the hall
- Structural materials to be used
- Certificates of all materials that will be used
- Safety fixture elements to be used
- Contact information and signature of the person in charge of the installation

C. TRUSS WITH SHEATING & COMPLEX STRUCTURES - More than 10

rigging points:

STRUCTURAL PROJECT with:

- Report with previous requirements (left column)
- Structural calculations with weights of materials, trusses and other hanged elements
- Drawing indicating height, weight supported per rigging point and orientation of the booth within the hall
- Structural materials to be used
- Certificates of all materials that will be used
- Safety fixture elements to be used
- Contact information and signature of the technician in charge of the calculations
- Contact information and signature of the person in charge of the installation

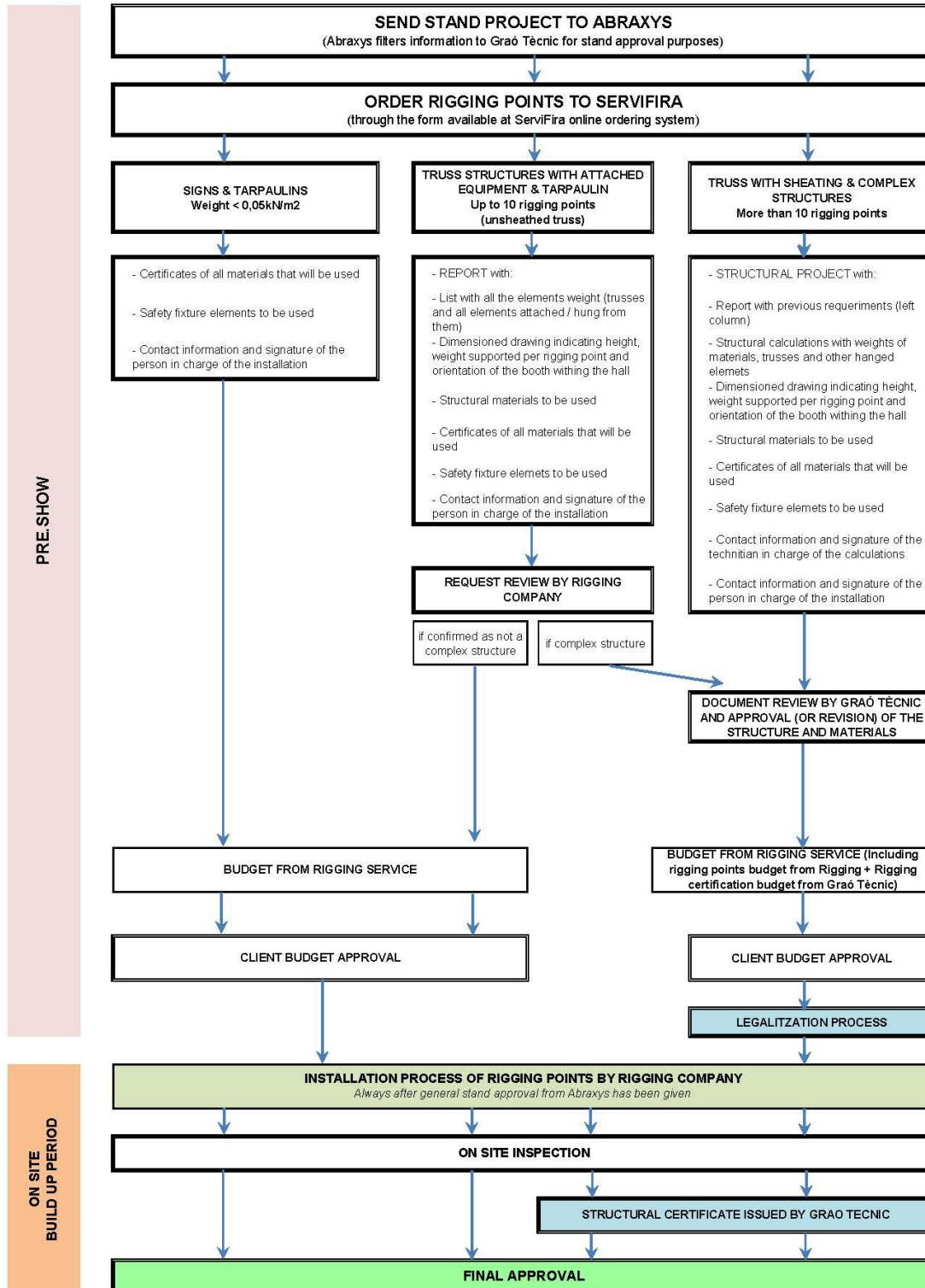
Rigging deadlines:

- Soft deadline: Complex Suspended Structures must be sent before **December 15th (15/12/2023)**.
- Hard deadline (Rate 1): quotes must be **confirmed** before **January 13th (13/01/2024)**, to be **in Rate 1**.

Approval of complex structures after this date will still be mandatory. Any required rigging and certification will be subject to sufficient time being available to carry out such operations.

To ensure the safety and compliance of structure to current regulations, consider that certain structures hung from rigging points will be subject to undergo a certification process. This process may require from further documentation from the exhibitor, it may have a cost on top of the rigging cost, and will be carried out by official structural technicians, Graó Tècnic. In the below diagram you will find a breakdown of how rigging and trusses structures will be processed under each category and what documents will be required. At any point Graó Tècnic may require further documentation beside the one here under to complete their review and approval process.

**CERTIFICATION PROCESS FOR HANGING ELEMENTS FROM THE CEILING
 RIGGING COMPLEX STRUCTURES**



Conditions for project approval:

- Minimum project content must be submitted.
- Reviews of project content must not uncover errors.
- During analysis of project and applications, and of the structure of the halls involved, safety factors must meet prevailing regulations.
- Suitable materials must be used.
- Quality certifications of the precise materials must be provided.
- Assembly procedures must be followed so there is no damage to the hall's structure or pose a threat to the safety of people and the facilities.
- All project data shall be presented in accordance with the International System of Measuring Units and provided in Spanish or English.

Once a rigging project is approved, the exhibitor may perform the assembly on the dates scheduled for each event. The assembly must be exactly as approved in the application. Any changes must be notified and reviewed by all implicated parties (Abraxys, Graó Tècnic, Fira's appointed supplier for Rigging services & Fira Barcelona).

Applicants must have the project approval document and copies of approved plans available at all times during assembly.

6. MANDATORY REGULATIONS FOR RIGGING HARDWARE

EUROPEAN REGULATIONS:

- UNE EN 13414. Steel wire cable slings. Safety
- UNE-EN 1677. Series of regulations for sling accessories. Safety.
- UNE-EN 12385:2003. Steel cables. Safety.
- UNE-EN 13411:2002. Steel cable grips. Safety.
- UNE-EN 13889:2004+A1:2009. Forged steel shackles for general lifting purposes - dee shackles and bow shackles - Grade 6 – safety
- Directive on machinery 2006/42/CE

SPANISH REGULATIONS:

- CTE. Technical building code

RECCOMENDED PRACTICES:

- NTP 155: Cables de acero
- NTP 221: Eslingas de cables de acero

7. INSPECTIONS & BUILD PERIOD

FIRA through its official structural technicians Graó Tècnic may carry out any inspection is during assembly. Contractors must facilitate such inspections. To this end, they must make any auxiliary means used, such as lifting baskets, scaffolds, and ladders or other, available to the appointed inspectors.

Applicants must have the project approval document and copies of approved plans available at all times during assembly.

Assembly of installations that are not specifically set out in the approved projects is forbidden. If during the assembly of any element there are reasonable doubts about their suitability, FIRA may require viability tests. The costs of such testing shall be charged to the exhibitor.

Before lifting any rigged elements, you must advise **Graó Tècnic, on +34 670965795** or contact the hall manager and get your hanging connections inspected, otherwise additional costs for inspecting connections at height will be charged to the exhibitor.

FIRA and its appointed technicians have the authority to stop any structure from being built or raised if deemed necessary for safety reasons or non-compliance with the submitted documentation.

All rigging on stands must be finished by Saturday Feb 25th, as machinery is not allowed to enter the hall and no work at height is permitted after that date.

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Manual

1. REMINDER FOR RIGGING AND CEILING JOINTS



REMINDER FOR RIGGING AND CEILING JOINTS

Rigging points are provided with an o-ring or a hook. It is strictly prohibited to modify any part above these fittings

CONNECTORS

WRONG ❌

TRUSS-BANNER JOINTS

$\neq 90^\circ$

BANNER

JOINTS

STEEL CABLE

WOOD

WOOD

NO SCREWS WORKING ON TENSION (regardless the materials used)

LIFTING GEAR AND CONNECTORS

1. Long and short linked chains
2. Steel cable using 2 or less rope clamps and on the short side
3. Carabiner screwed
4. Carabiner unscrewed
5. Tumbuckle with hook and without safety
6. Rope clams/perrillos

RIGHT ✅

TRUSS-BANNER JOINTS

90°

BANNER

TIMBER JOINTS

STEEL CABLE

STEEL PLATE

WOOD

METAL

BOLTED SHEAR CONNECTION (regardless the materials used)

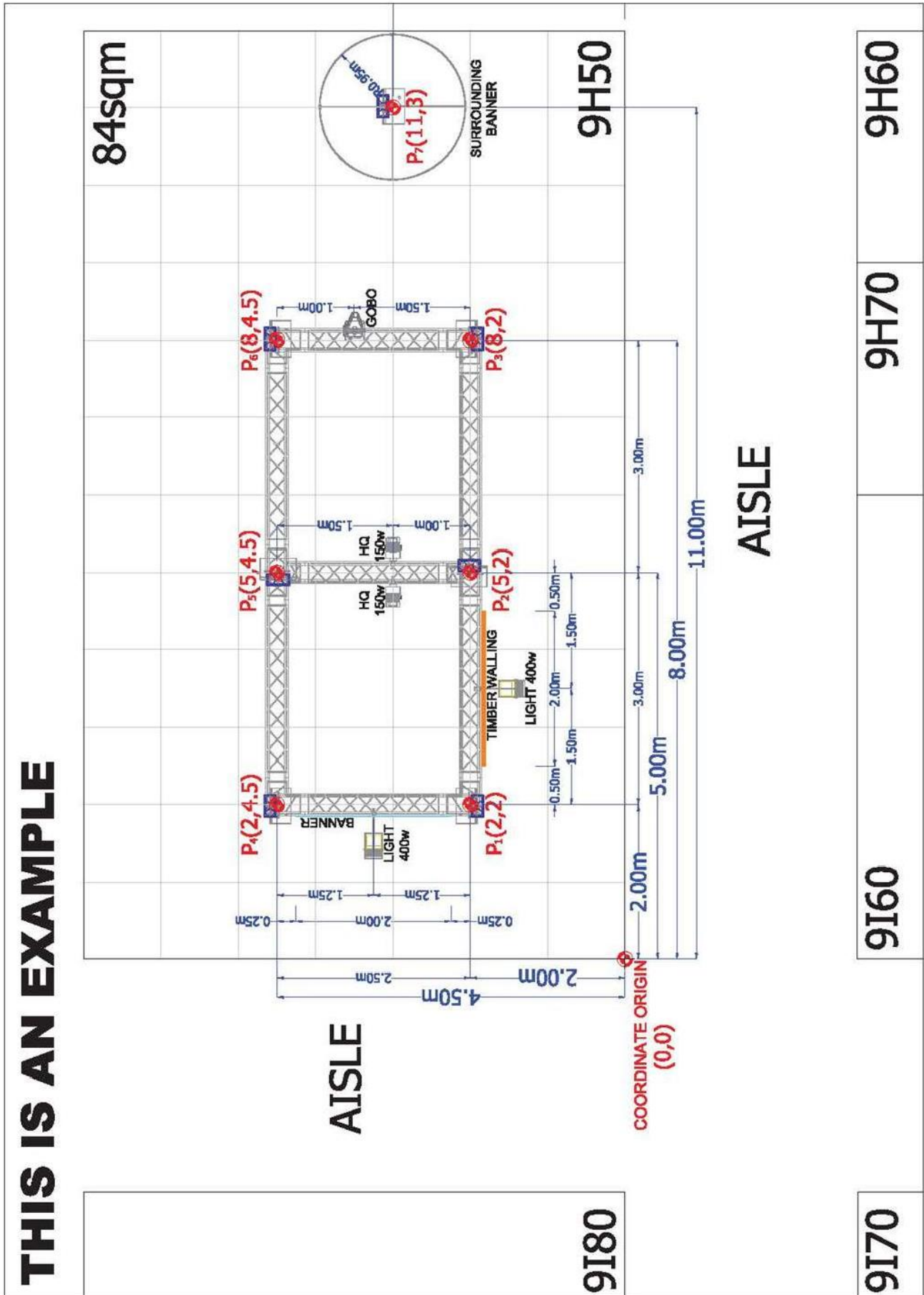
BOLT WITH A STEEL PLATE (regardless the materials used)

LIFTING GEAR AND CONNECTORS

All the material must bear the EC mark code and be displayed the maximum load-bearing capacity.
All suspended elements must be secured with a safety cable.

1. Round strand cable
2. Steel cable using 4 rope clamps and on the long side (it would be better to avoid it)
3. Quick link with clamping nut
4. Wire rope holder with 6 balls
5. Tumbuckle with safety
6. Shackles
7. Rope lock "Gripplle".

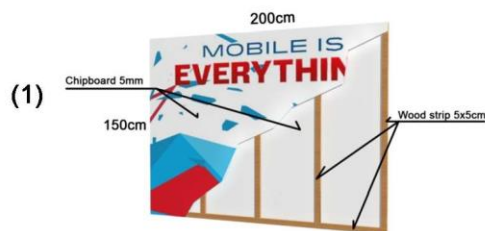
2. SAMPLE OF REQUIRED DOCUMENTATION



TOTAL LOAD EXAMPLE:



ELEMENTS WEIGHT				
FIXED ELEMENT OF RIGGING POINT		Unit weight	Units	Total weight
	Motor hoist 500 Kg	30,00 Kg /un	7	210,00 Kg
	Truss 300 x 300mm	5,00 Kg /m	19,5	97,50 Kg
	Auxiliar truss, steel ropes and security cables	4 Kg /un	7	28,00 Kg
TOTAL WEIGHT FIXED ELEMENT OF RIGGING POINT				335,50 Kg
OTHER ELEMENTS		Unit weight	Units	Total weight
	(1) Timber walling 200 x 150cm	29,40 Kg /un	1	29,40 Kg
	Banner 200 x 120cm	0,50 Kg /sqm	2,4	1,20 Kg
	Lights 400w	14 Kg /un	2	28,00 Kg
	Lights 150w	5,00 Kg /un	2	10,00 Kg
	Gobo	30,00 Kg /un	1	30,00 Kg
	(2) Surrounding banner	9,1 Kg /un	1	9,10 Kg
TOTAL WEIGH TO OTHER ELEMENTS				107,70 Kg
TOTAL WEIGHGT				443,20 Kg



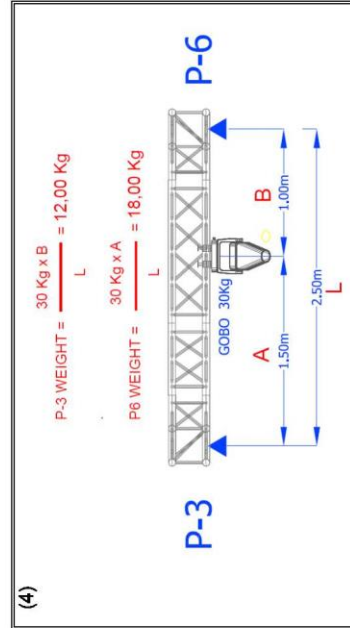
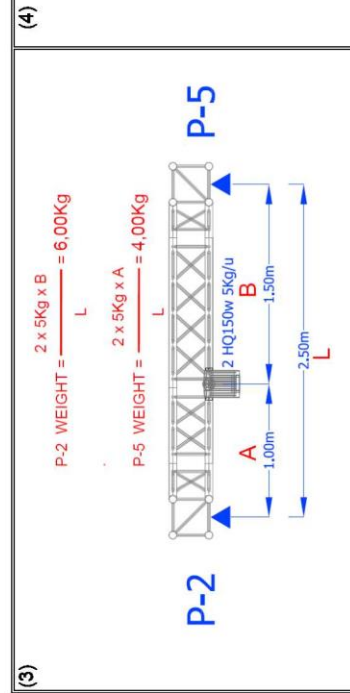
(1) Timber walling 200 x 150cm	Un	Volume m3				Density Kg / m3	Weight Kg
		A m	B m	L m	m3		
Wood strip 5 x 5 cm	2	0,05	0,05	2,00	0,005	600	6,00
Chip Board thickness 5mm	5	0,05	0,05	1,40	0,0035	600	10,50
	2	0,005	1,50	2,00	0,015	430	12,90
(1) WEIGHGT:							29,40



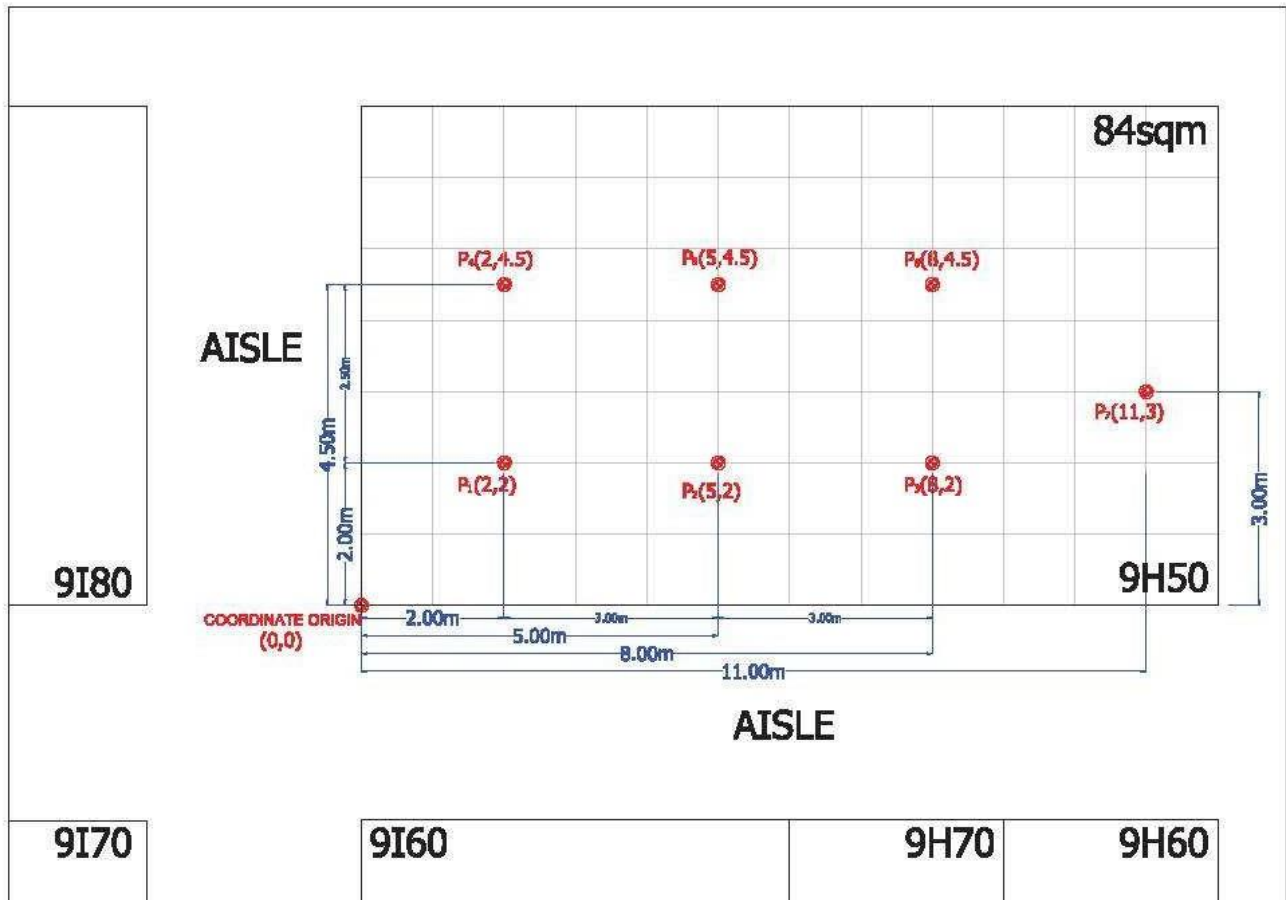
(2) Surrounding banner	Un	Area and length			Density		Weight Kg
		R m	H m	Area/length	Kg/ m	Kg / sqm	
Banner Circumf. 0,95 cm radius x 2,25m	1	0,95	2,25	13,42 sqm		0,5	6,71
Curved aluminum profile Ø 10mm /1mm	2	0,95		5,97 m	0,2		2,39
(2) WEIGHGT:							9,10

DISTRIBUTION LOAD EXAMPLE

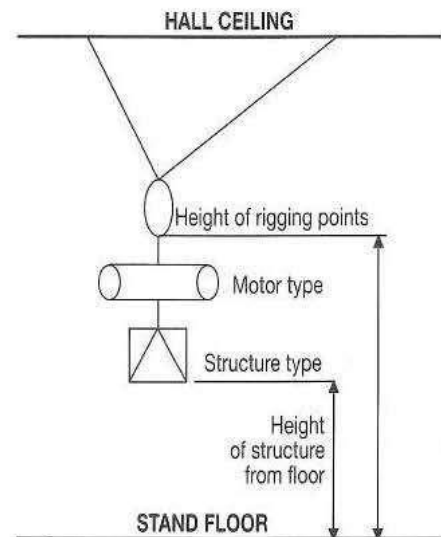
ELEMENT	Unit weight	RIGGING POINTS														TOTAL		
		P-1		P-2		P-3		P-4		P-5		P-6		P-7				
		UNITS	WEIGHT	UNITS	WEIGHT	UNITS	WEIGHT	UNITS	WEIGHT	UNITS	WEIGHT	UNITS	WEIGHT	UNITS	WEIGHT			
Motor hoist 500 Kg	30,00 Kg /un	1	30	1	30	1	30	1	30	1	30	1	30	1	30	1	30	210,00
Truss 300 x 300mm	5,00 Kg /m	2,75	13,75	4,25	21,25	2,75	13,75	2,75	13,75	4,25	21,25	2,75	13,75	2,75	13,75			97,50
Auxiliar truss, steel ropes and security cables	4,00 Kg /un	1	4	1	4	1	4	1	4	1	4	1	4	1	4	1	4	28,00
Timber walling 200 x 150cm	29,40 Kg /un	0,5	14,7	0,5	14,7													29,40
Banner 200 x 120cm	1,20 Kg /sqm	0,5	0,6					0,5	0,6									1,20
Lights 400w	14,00 Kg /un	1	14	0,5	7			0,5	7									28,00
Lights 150w	5,00 Kg /un			(3)	6									(3)	4			10,00
Gobo	30,00 Kg /un					(4)	12								(4)	18		30,00
Surrounding banner	9,10 Kg /un																1	9,10
		P-1 =	77,05	P-2 =	82,95	P-3 =	59,75	P-4 =	55,35	P-5 =	59,25	P-6 =	65,75	P-7 =	43,10			443,20



COORDINATES + WEIGHTS EXAMPLE



COORDINATES OF RIGGING POINTS				
POINT	X	Y	HEIGHT	WEIGHT
P-1	2,00	2,00	7,00	77,05 Kg
P-2	5,00	2,00	7,00	82,95 Kg
P-3	8,00	2,00	7,00	59,75 Kg
P-4	2,00	4,50	7,00	55,35 Kg
P-5	5,00	4,50	7,00	59,25 Kg
P-6	8,00	4,50	7,00	65,75 Kg
P-7	11,00	3,00	9,00	43,10 Kg

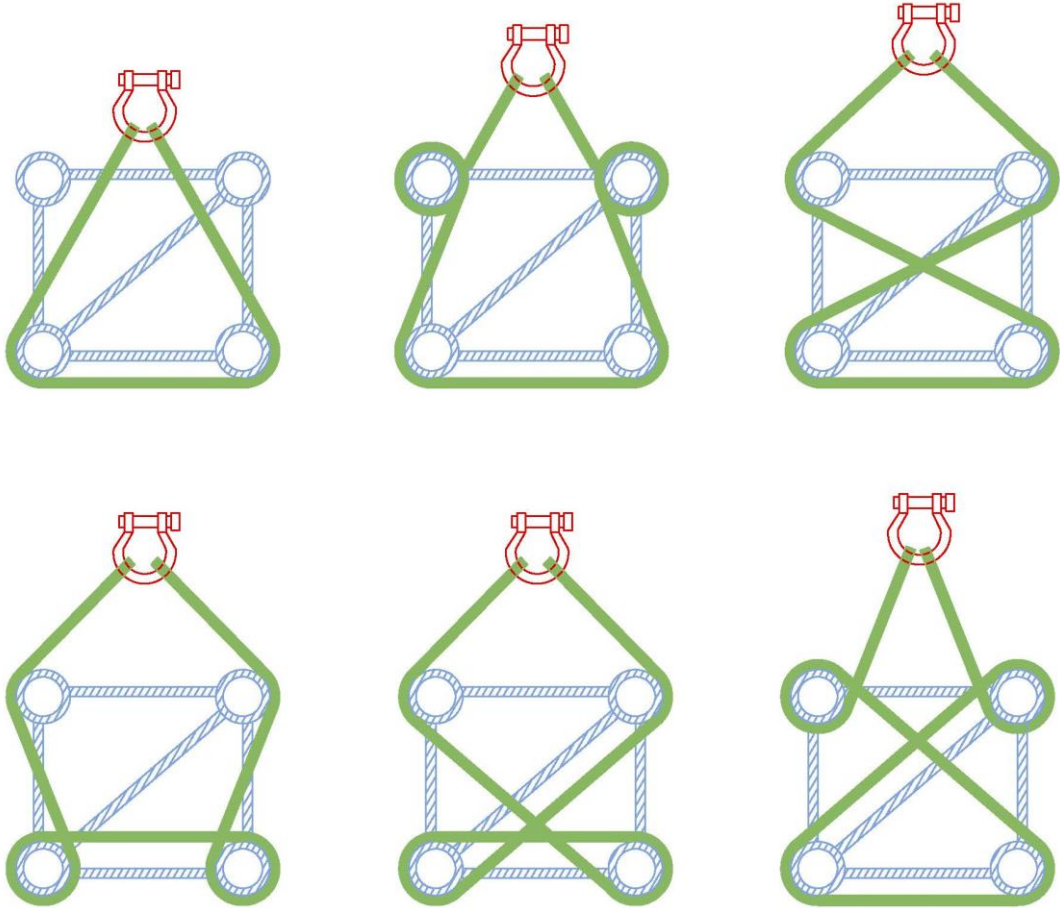


3. SPECIFIC WEIGHT OF THE MOST COMMON MATERIALS

MATERIAL	WEIGHTS		ILLUSTRATIVE EXAMPLE
<i>Truss 30x30 NORMAL 2mm</i>	5 - 6 Kg/m	50 - 60 N/m	
<i>Truss 30x30 3mm Heavy duty</i>	8 -9 Kg/m	80 - 90 N/m	
<i>Motor up to 500 kg. Depends on the chain length</i>	22 - 30 Kg/ut	220 - 300 N/ut	
<i>Motor up to 1000 kg. Depends on the chain length</i>	35 - 45 Kg/ut	350 - 450 N/ut	
<i>Wires, slings and safety wires. Depends on length</i>	3 - 4 Kg/ut	35 - 45 N/ut	
<i>Manual chain hoist. Depends on length</i>	20 - 30 Kg/ut	200 - 300 Ng/ut	
<i>Electrical wire. According to section 0,6-1,1Kv 5x6</i>	550 gr/m	5,5 N/m	
<i>Electrical wire. According to section 0,6-1,1Kv 5x10</i>	873 gr/m	8,73 N/m	
<i>Electrical wire. According to section RV-K0,6-1,1Kv 4x2,5</i>	135 gr/m	1,35 N/m	
<i>Fixed spotlight</i>	5 Kg	50 N	
<i>Mobile spotlight</i>	30 Kg	300 N	
<i>Halide lamps</i>	12 - 15 Kg	120 - 150 N	
<i>Built-in walls/ceilings</i>	8 -10 Kg	80 -100 N	
<i>Banner</i>	350-600 gr/m ²	3,5-6 N/m ²	
<i>Opaque textile ceiling</i>	300-350 gr/m ²	3-3,5 N/m ²	
<i>Textile ceiling</i>	120-180 gr/m ²	1,2-1,8 N/m ²	
<i>Pine wood, spruce bar (resinous woods)</i>	600-620 Kg/m ³	6,00-6,20 kN/m ³	
<i>DM wood (MDF, Medium densitiy fibreboard)</i>	750-770 Kg/m ³	7,50-7,70 kN/m ³	
<i>Normal chipboard</i>	660-680 Kg/m ³	6,60-6,80 kN/m ³	
<i>Fireproof chipboard</i>	720 Kg/m ³	7,20 kN/m ³	
<i>Laminated chipboard (melamine)</i>	700 Kg/m ³	7,00 kN/m ³	
<i>Plywood</i>	430 Kg/m ³	4,30 kN/m ³	
<i>Hot-rolled steel profiles</i>	7.850 Kg/m ³	78,50 kN/m ³	
<i>Alluminium profiles</i>	2.700 Kg/m ³	27 kN/m ³	

4. GOOD PRACTICES WITH RIGGING HARDWARE: SLING HITCHES

With a star the most appropriate practice to sling truss. Notice always technical data of the slings and trusses.



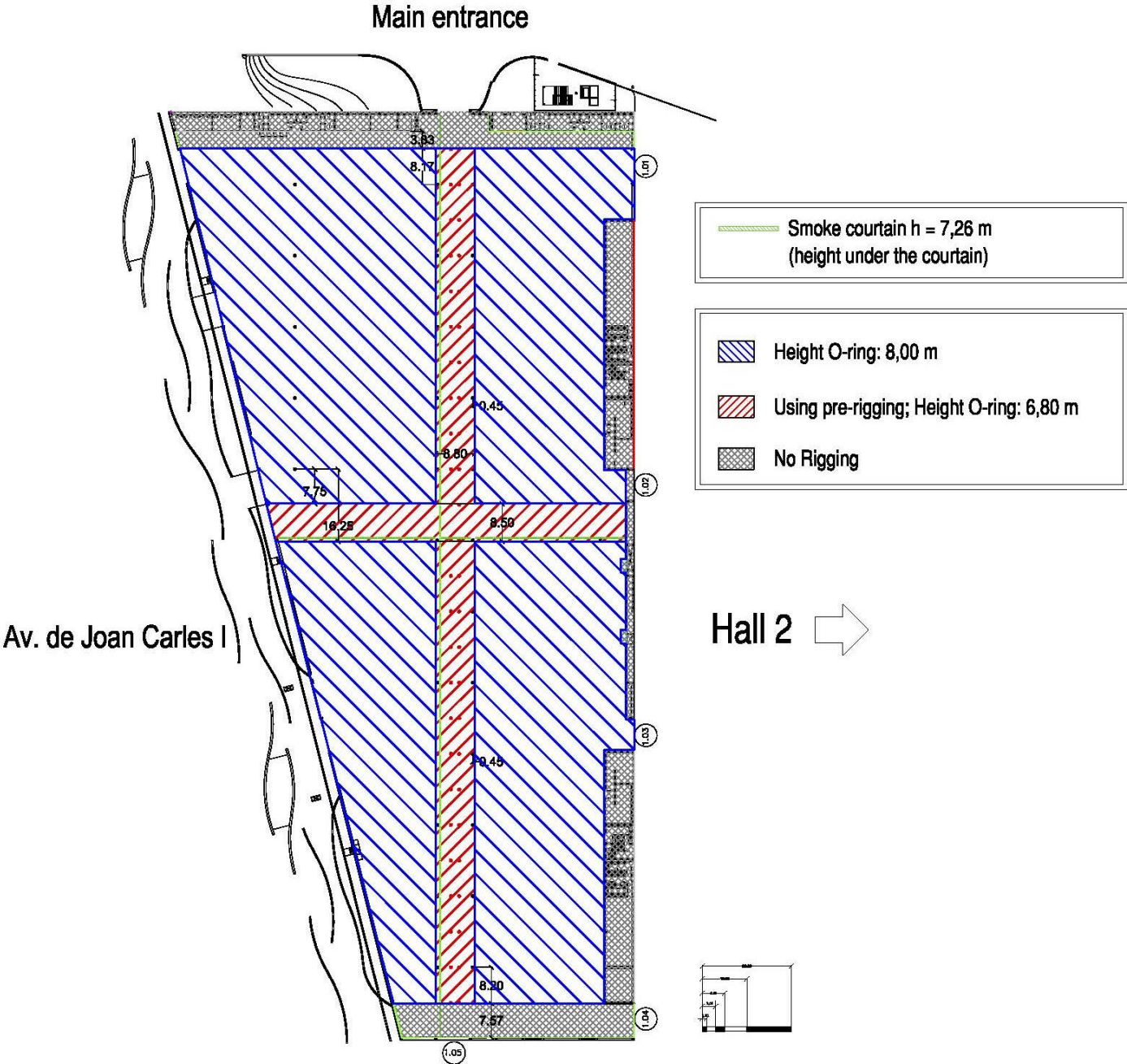
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Appendix

(RIGGING RESTRICTIONS FLOORPLANS)

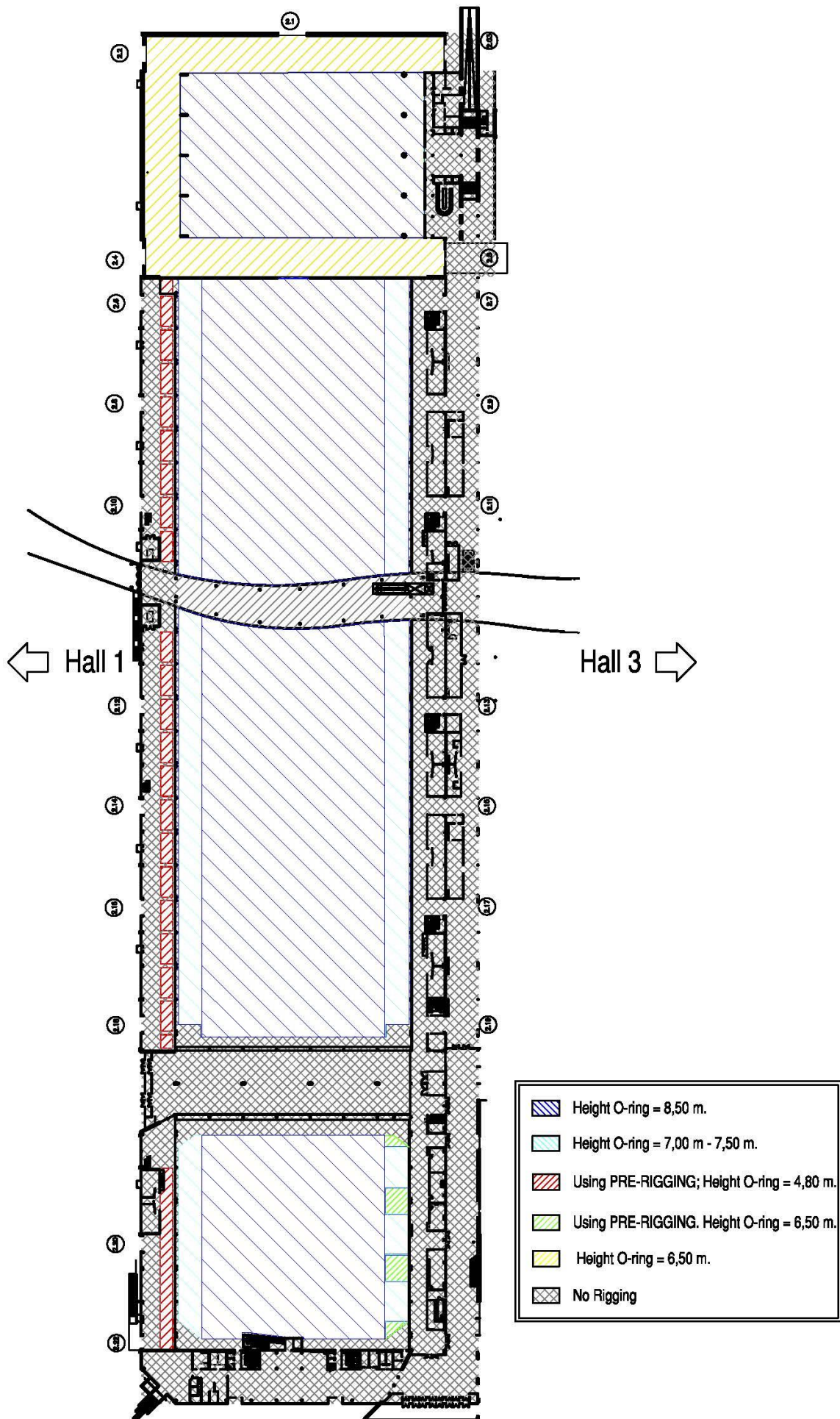
General rules for hanging elements and structures in halls / Rigging

M2 H1. Pre rigging areas and Rigging restrictions



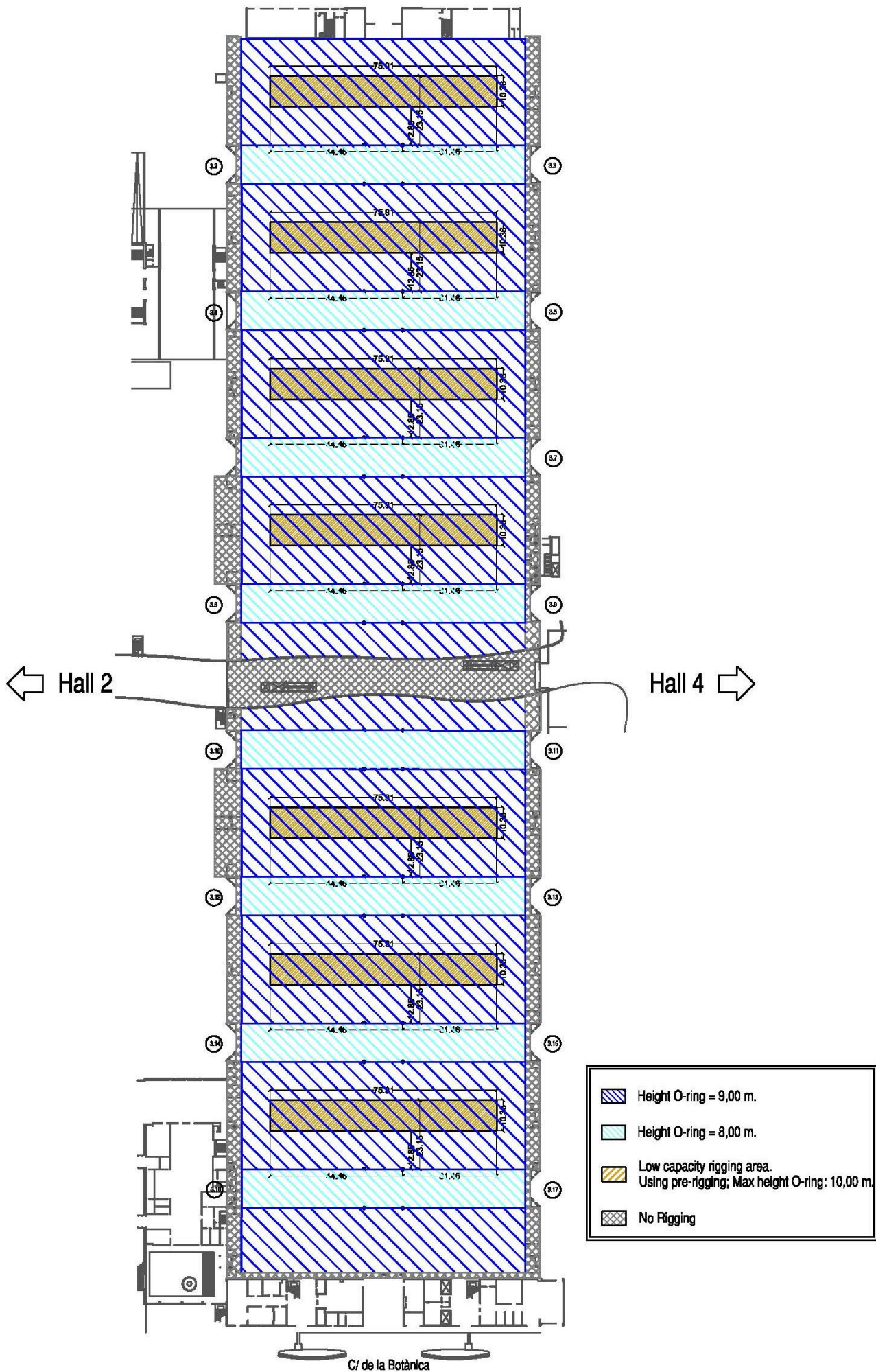
General rules for hanging elements and structures in halls / Rigging

M2 H2. Pre rigging areas and Rigging restrictions



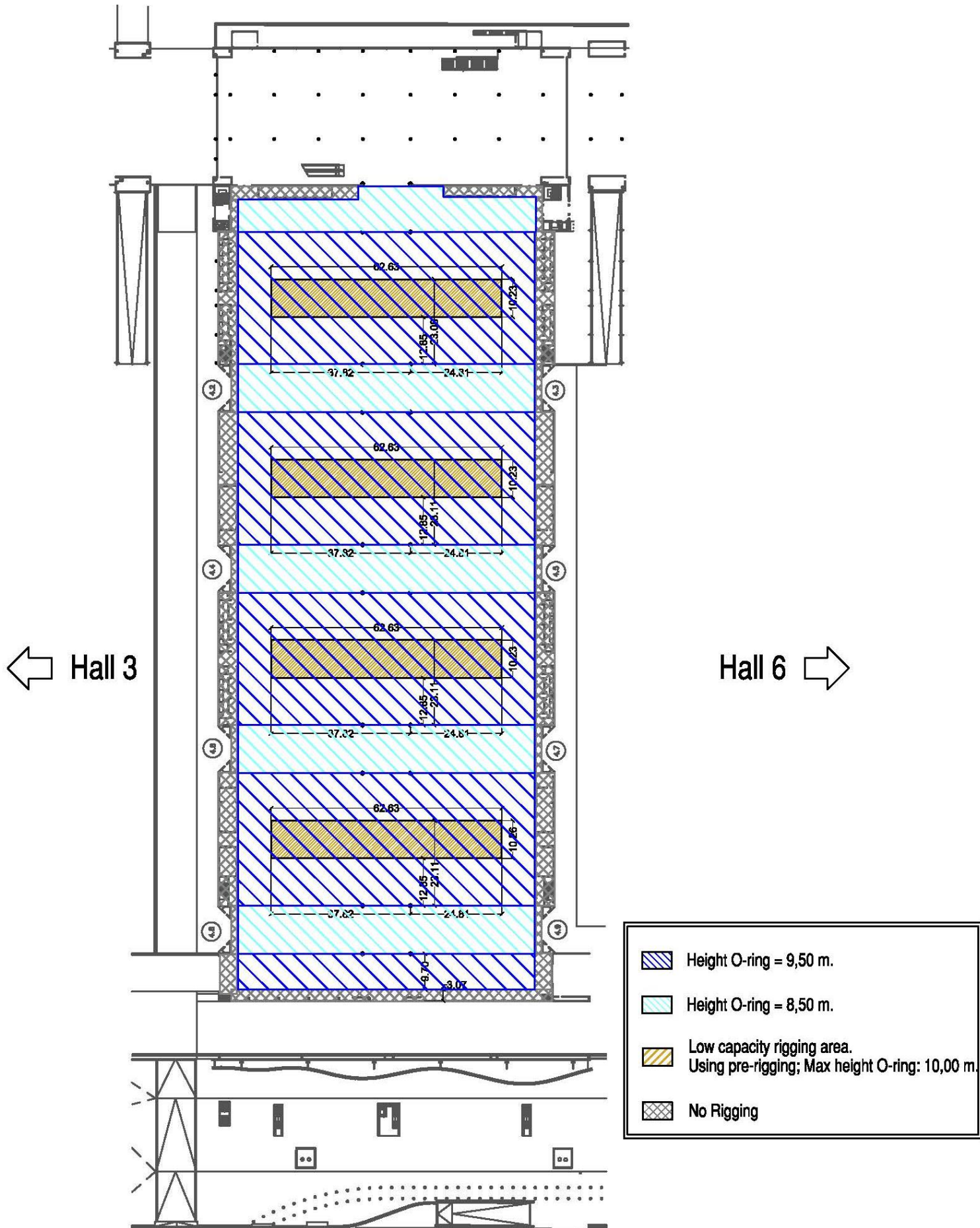
General rules for hanging elements and structures in halls / Rigging

M2 H3. Pre rigging areas and Rigging restrictions



General rules for hanging elements and structures in halls / Rigging

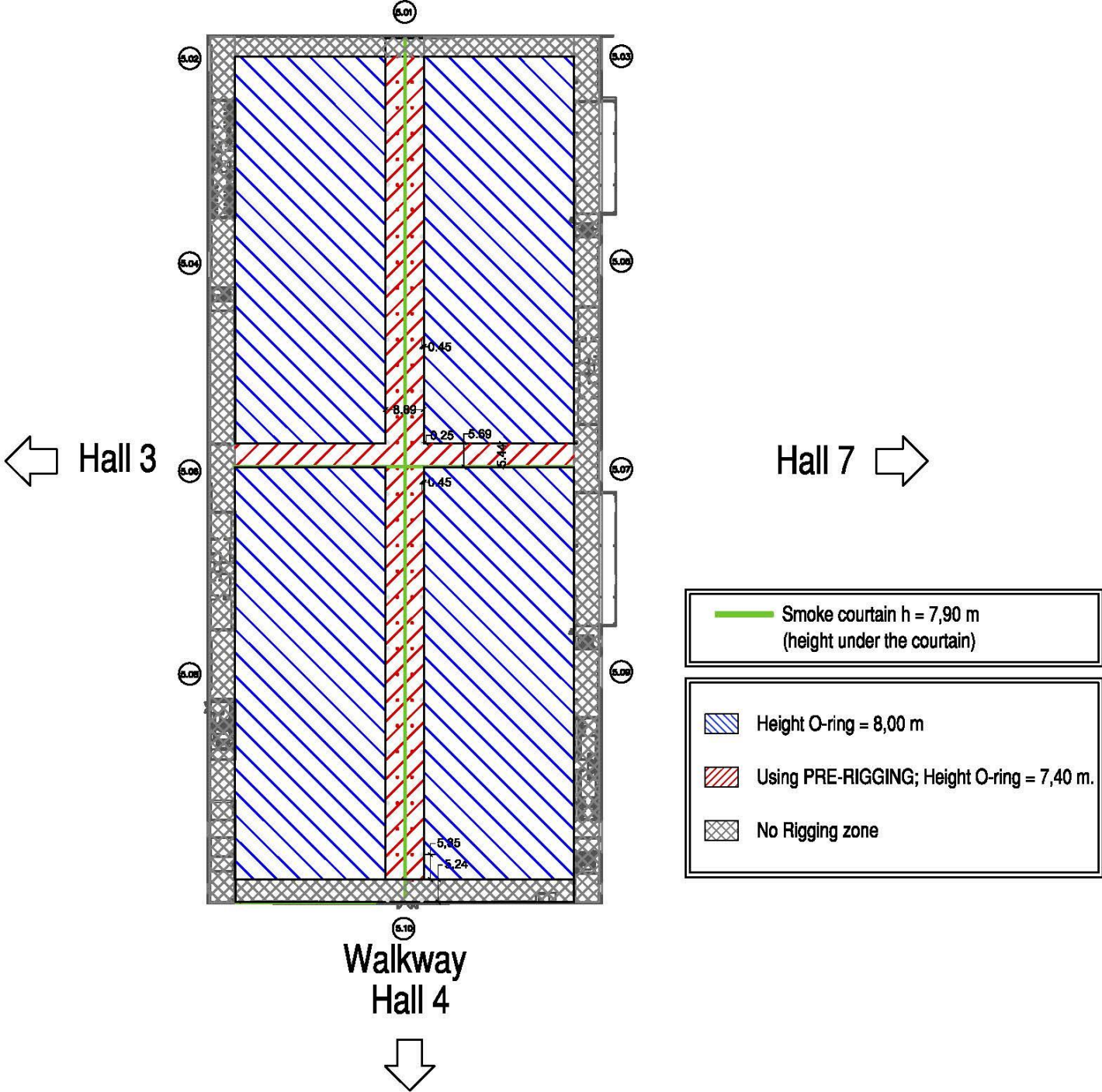
M2 H4. Pre rigging areas and Rigging restrictions



General rules for hanging elements and structures in halls / Rigging

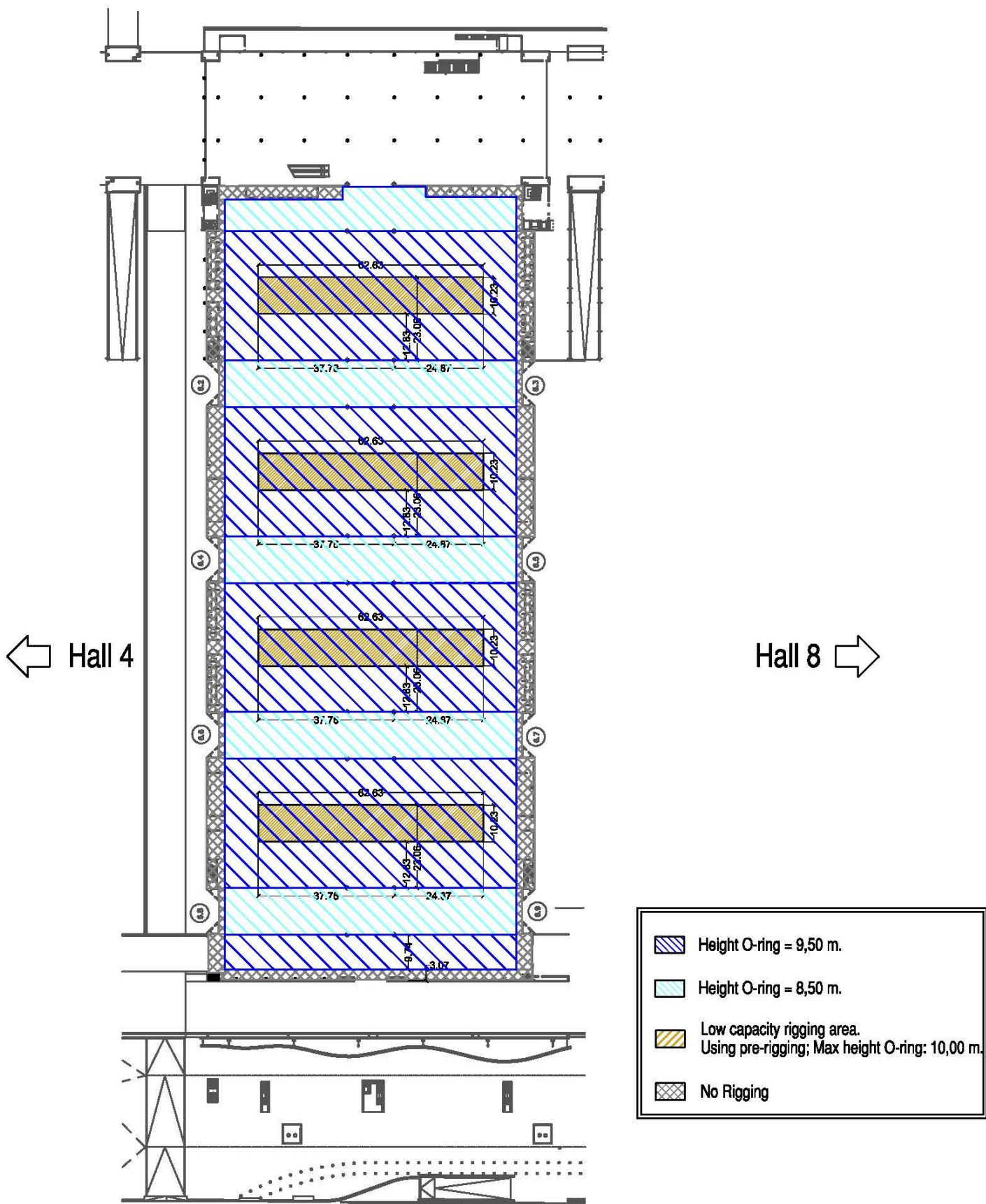
M2 H5. Pre rigging areas and Rigging restrictions

c / de les Ciències



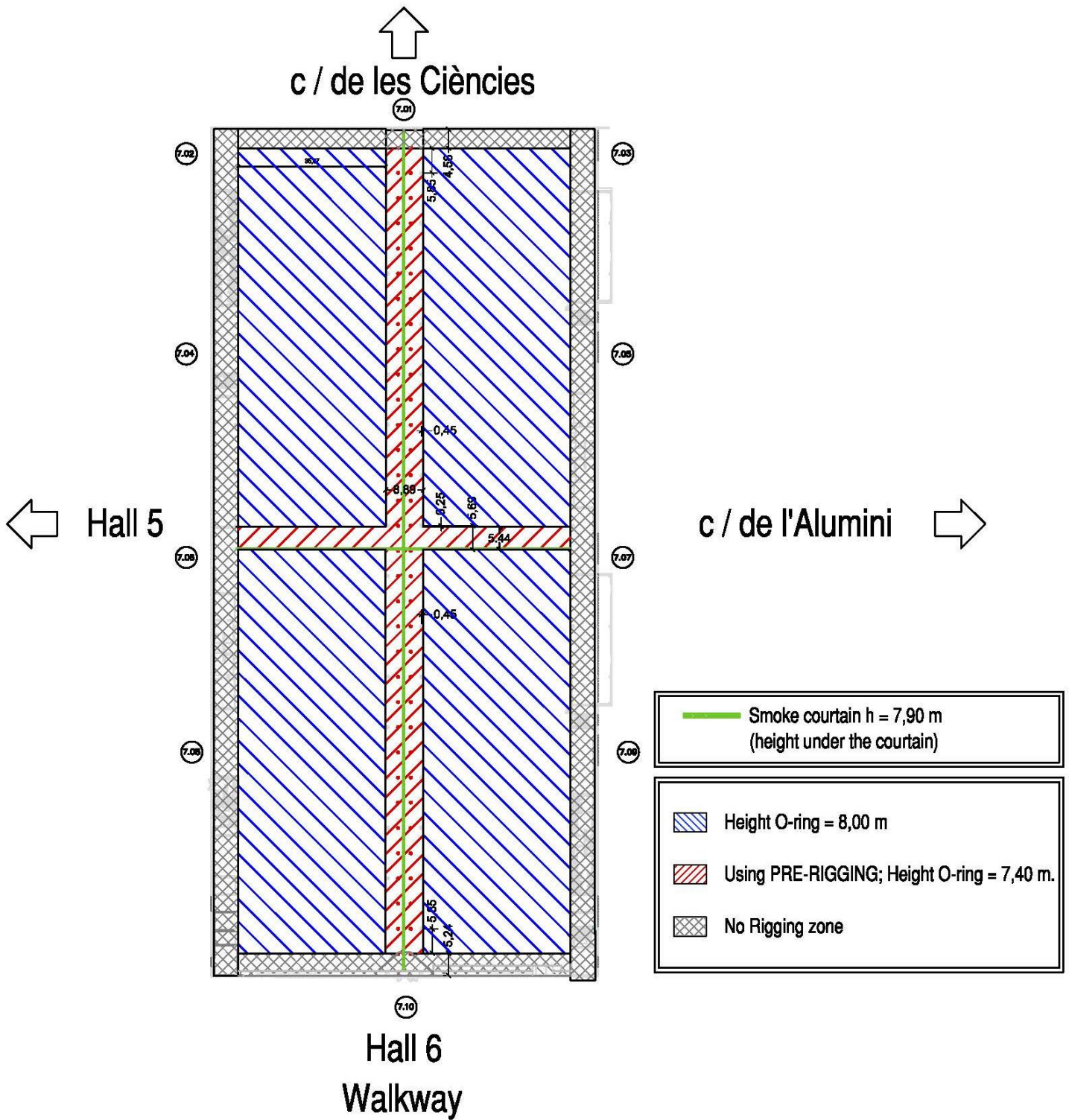
General rules for hanging elements and structures in halls / Rigging

M2 H6. Pre rigging areas and Rigging restrictions



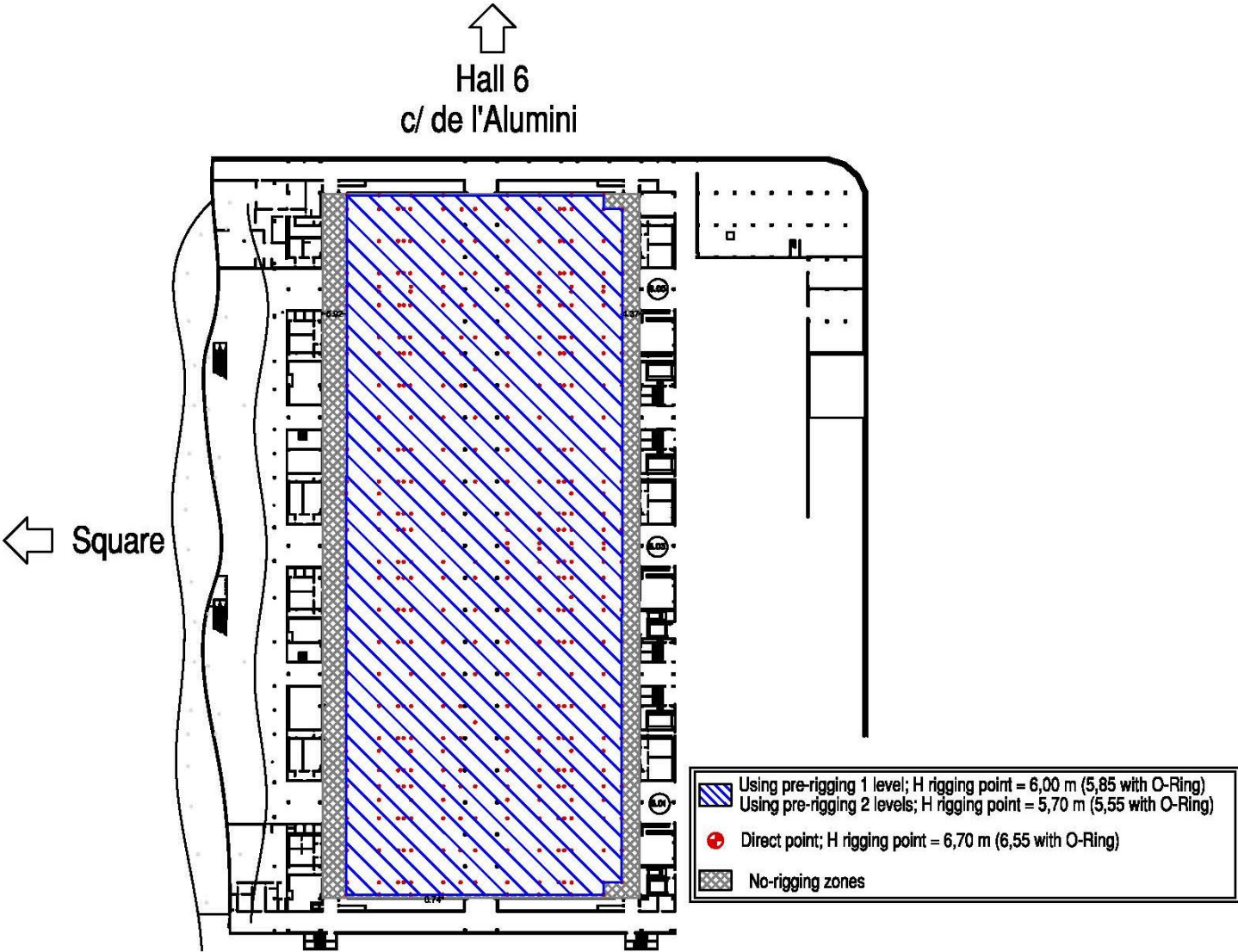
General rules for hanging elements and structures in halls / Rigging

M2 H7. Pre rigging areas and Rigging restrictions



General rules for hanging elements and structures in halls / Rigging

M2 H8.0. Pre rigging areas and Rigging restrictions



General rules for hanging elements and structures in halls / Rigging

M2 H8.1. Pre rigging areas and Rigging restrictions

