What is the design of uandksound?

Covers the following:

Home theater series certification specification

THX

01

Room acoustic design and system debugging

HAA

02

Specializing in planning and installing home electronic systems

CEDIA

03

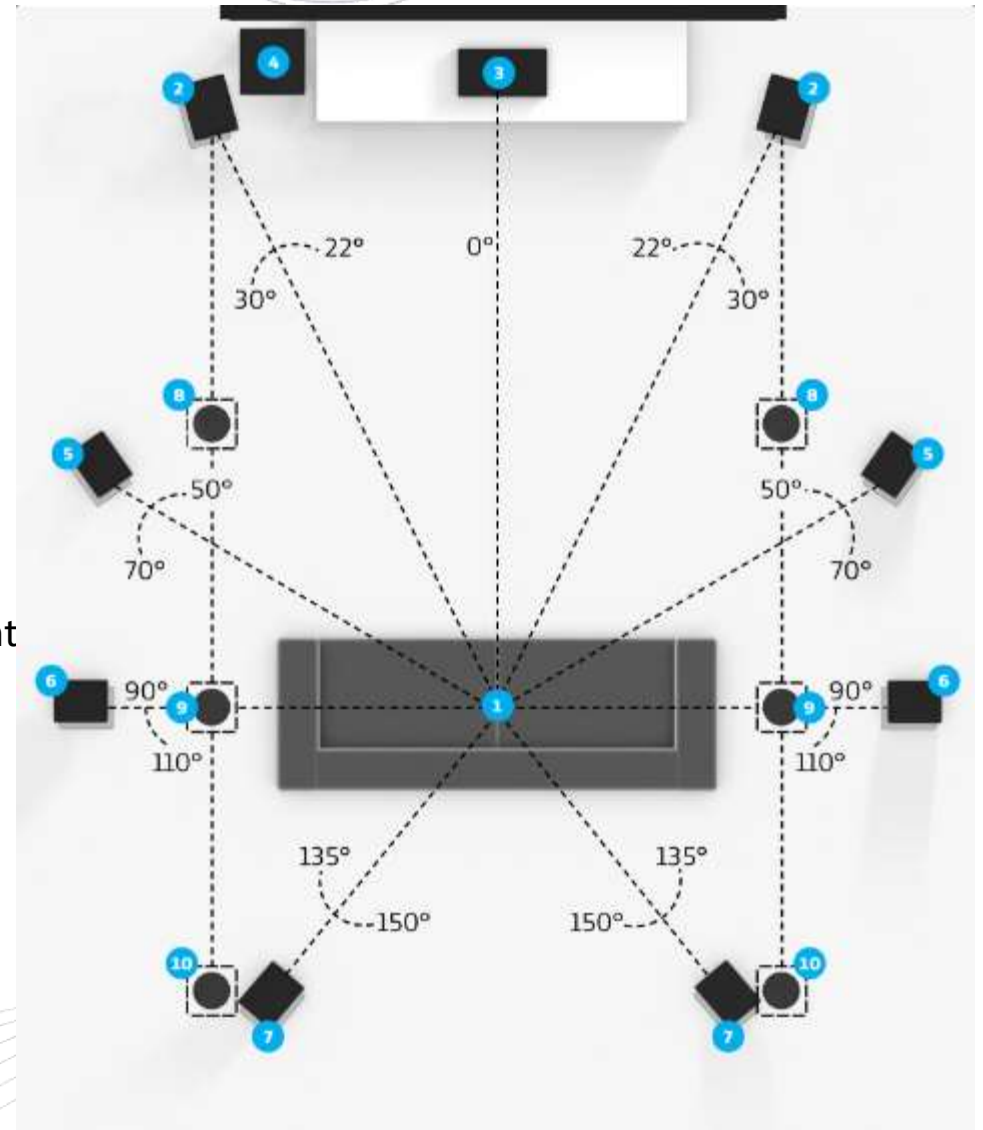
The most important professional video design

PMI

04

Problem points to consider when designing a AV room

1. Whether the room size conforms to THX optimal acoustic ratio
2. Estimate the best orientation for the room and determine what improvements need to be made
3. Room sound insulation
4. Determine the number and location of seats
5. Determine the curtain size
6. Reduce the problem by using subwoofer placement
7. Curved front wall barrier wall
8. Determine the surround speaker
9. Determine the front width increase
10. Identify the sky speaker
11. Determine the acoustic treatment strategy
12. Modeling design



uandksound Proposal list

Draw No:A0

Scalie: 1:1

Date:22/03/29

Desing:leijuan

Draw:leijuan

Approved:Micheal

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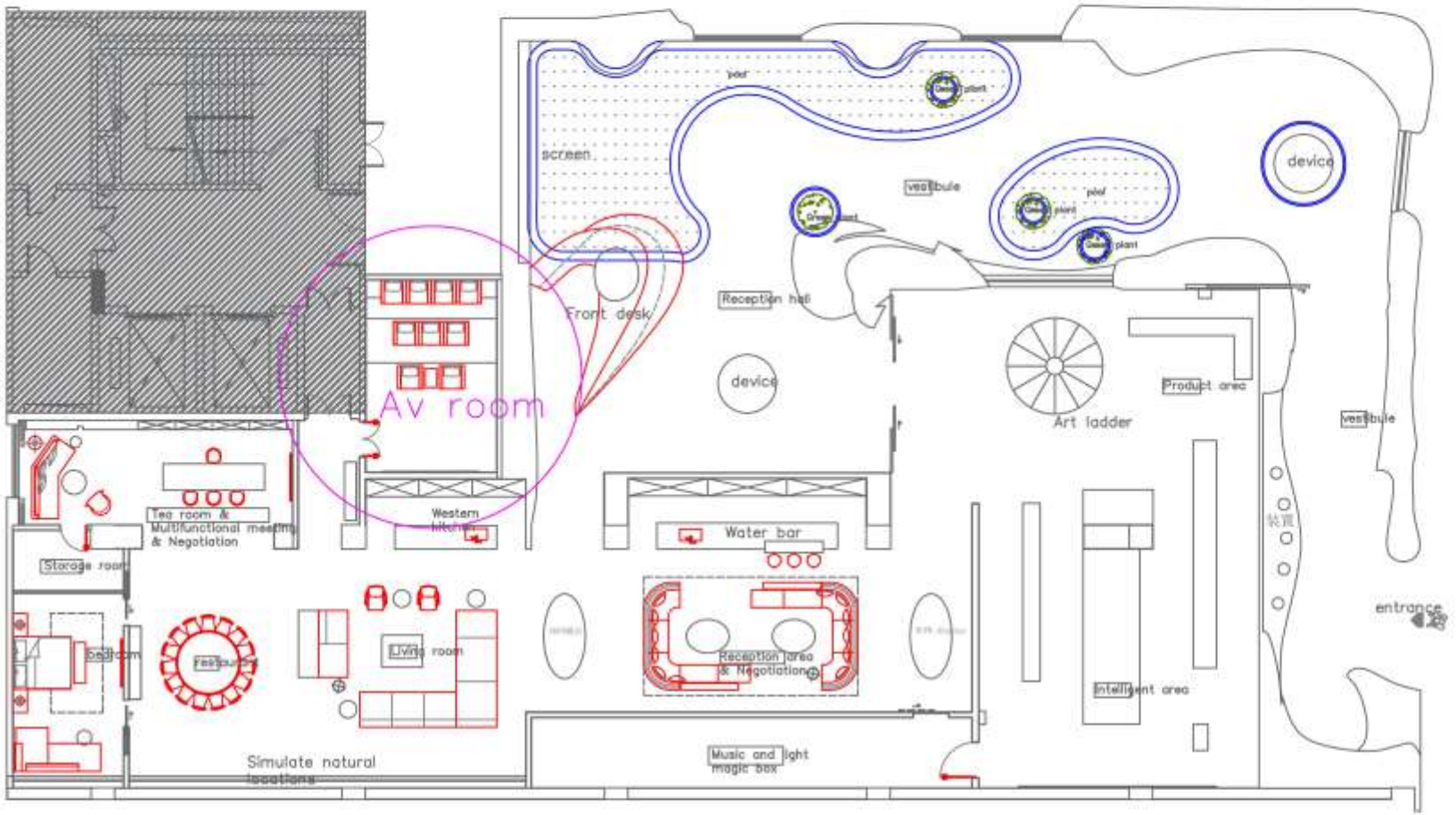
PL-00

directory



Original plan

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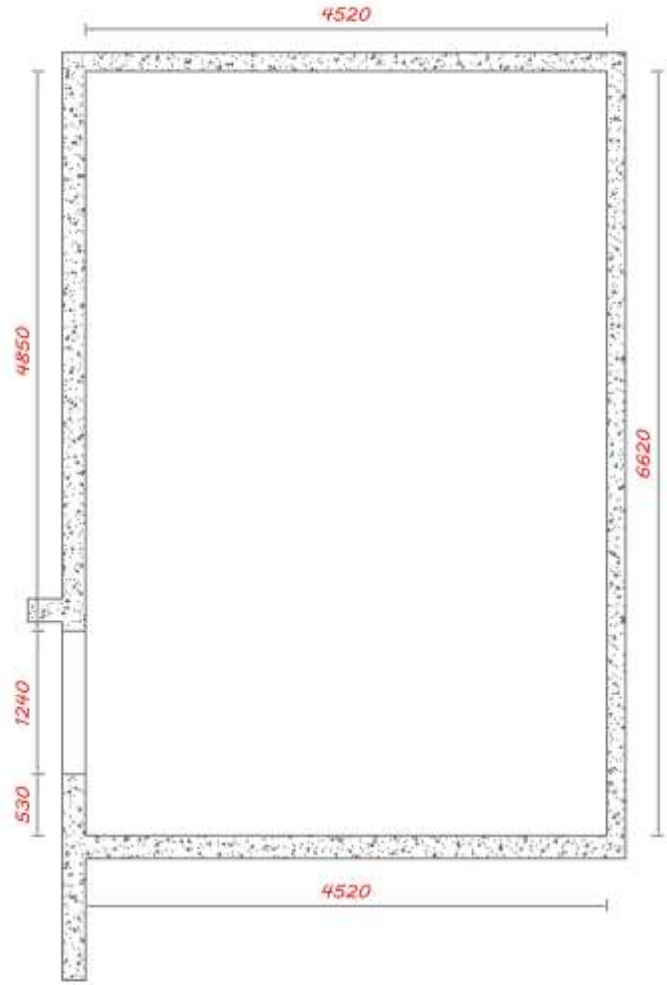

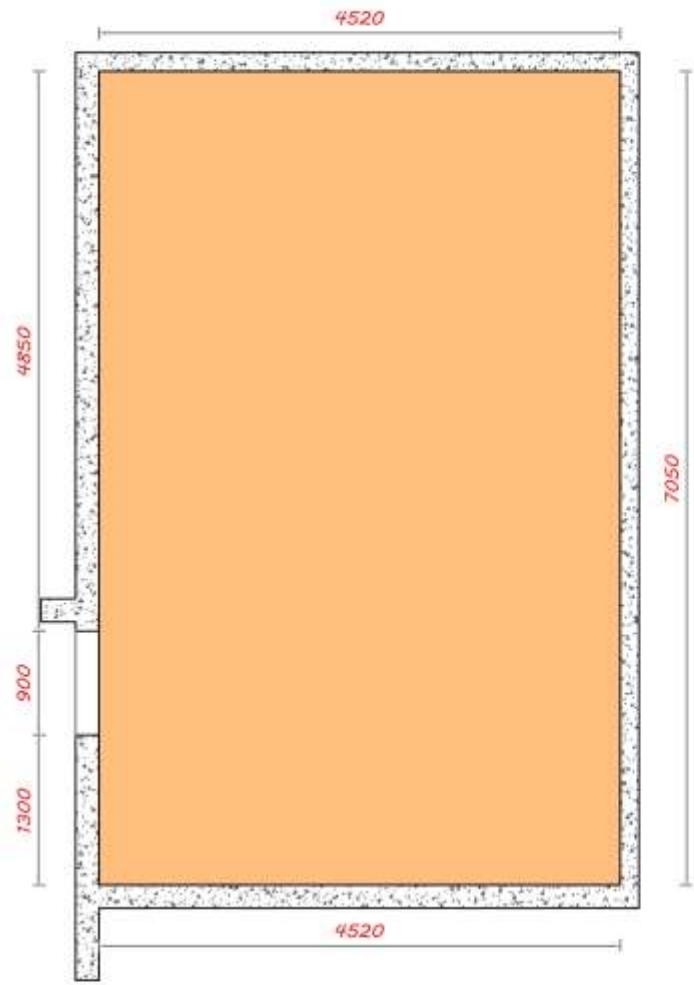

The optimal ratio of THX acoustic room is 1.6:2.5, which can effectively reduce the standing wave phenomenon in the room.
Suggestion 1: Change the room door to 900mm and use professional soundproof doors
Suggestion 2: Adjust the size of the room 4520mm*6620mm to 4520mm*7050mm close to the proportion requirements, suitable for making a video room
Video room area: 31.8㎡

Area size map

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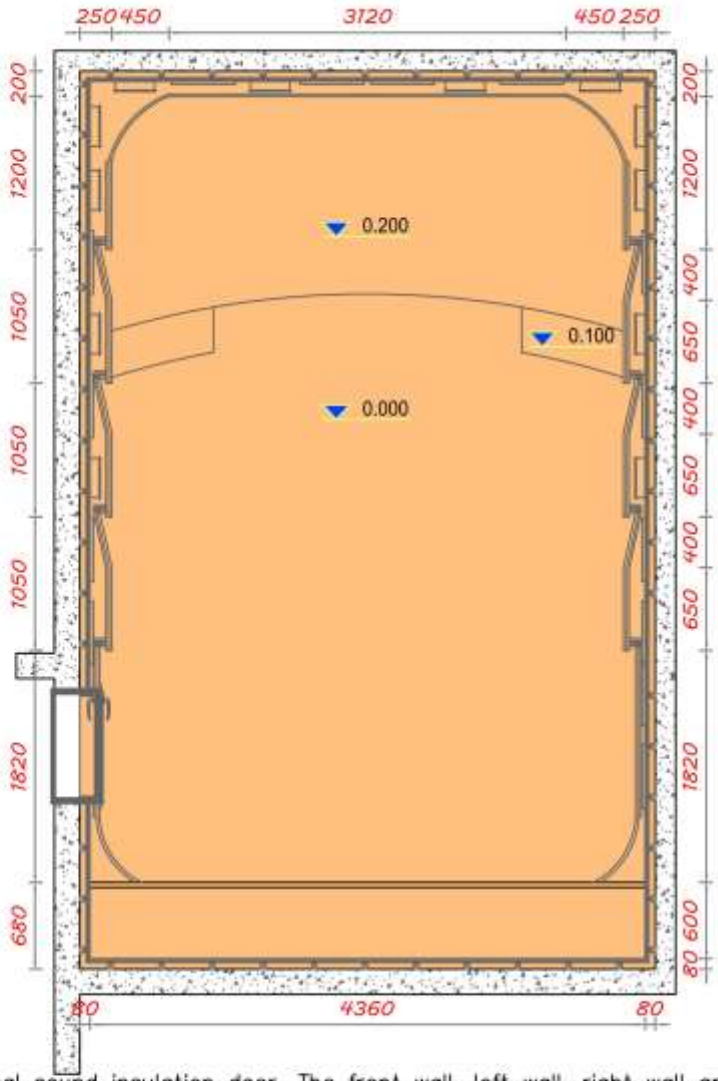

The entrance door is made of professional sound insulation door. The front wall, left wall, right wall and back wall are installed with wall shock absorber and environmental sound insulation filling cotton, which can maximize the effect of shock absorption and sound insulation, so as not to affect the experience of other areas

The four walls are equipped with acoustic design, and the front wall is pasted with German imported sound-absorbing material: Basf Basotect G to absorb the reflected sound of the main box of the front wall to the maximum extent to avoid interference with direct sound waves. The left wall, right wall and back wall are designed with 2D and 3D diffusion plates, which are stuck with German imported sound absorbing materials: Basf Basotect G, which can better show the surround effect of Dolby panoramic sound and absorb standing waves, so that the cinema effect is at the top level

Damping and sound insulation drawing

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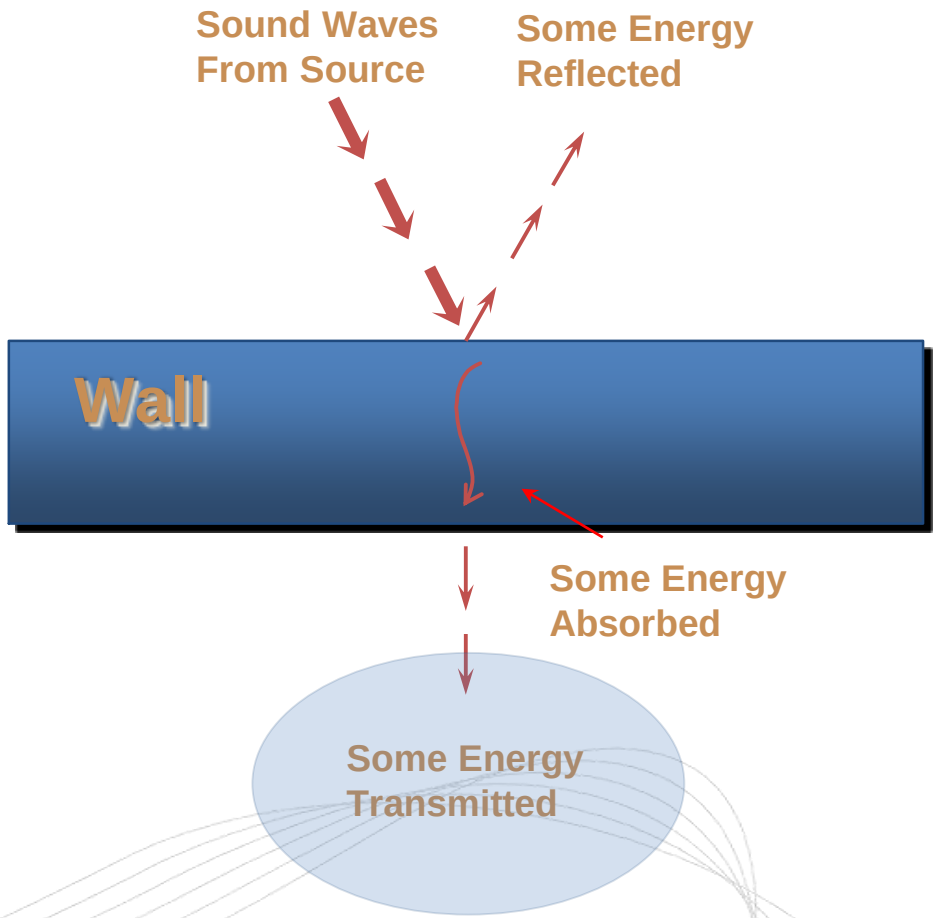
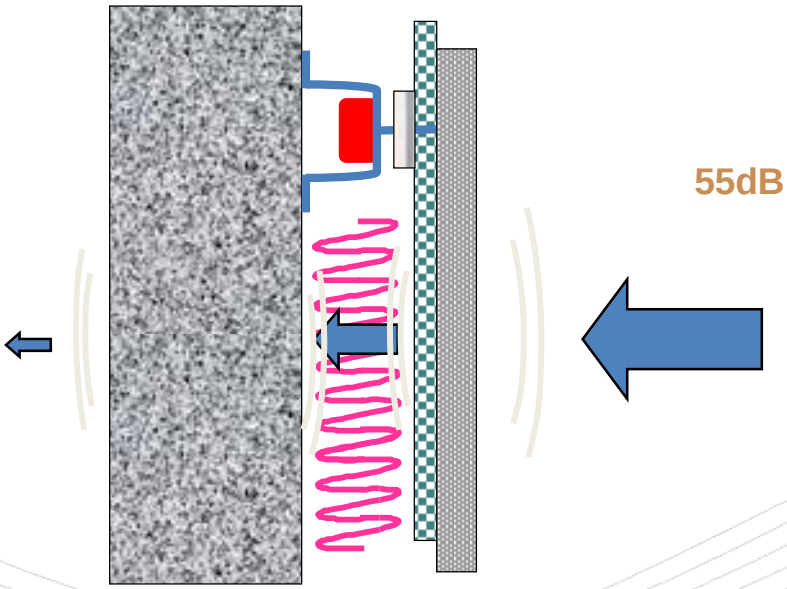
Principle of sound insulation

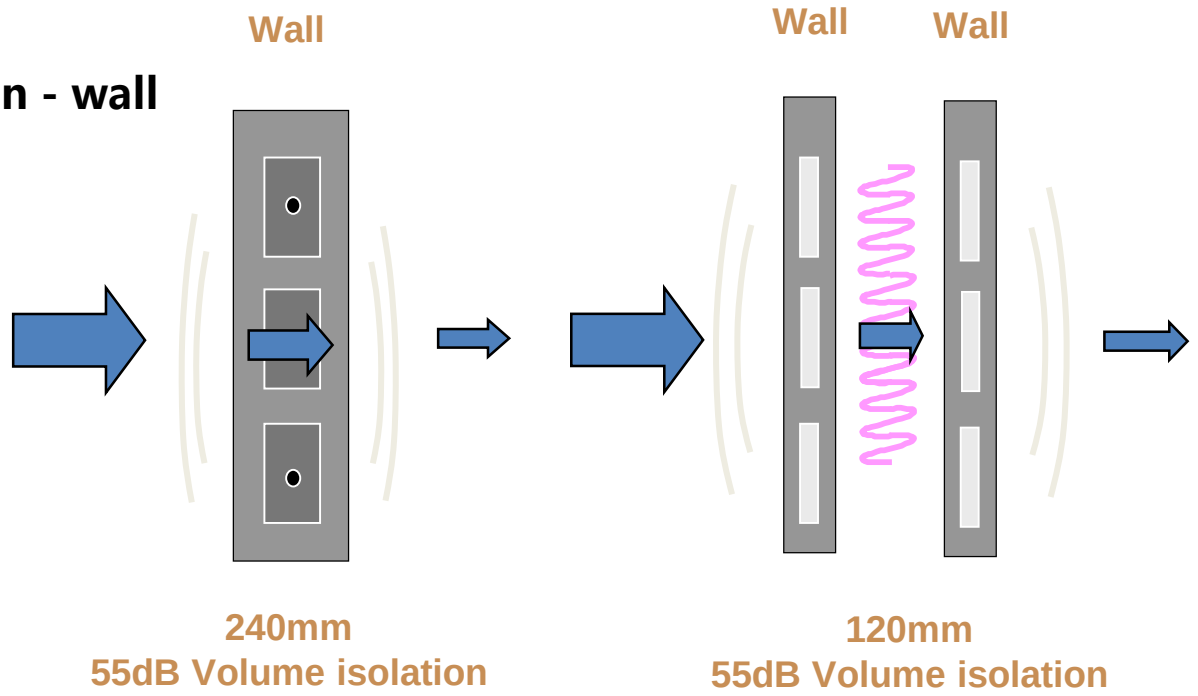
Principle: When the sound is transmitted to the wall, part of the sound energy will be reflected, part will be absorbed by the wall, part will pass through the wall, and the part through the wall will affect other areas, need to be minimized



The method of sound insulation - wall

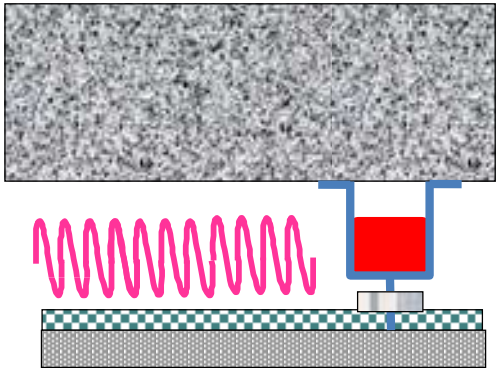
Methods: Sound energy can be converted into mechanical energy and then into heat energy for consumption by using shock absorber



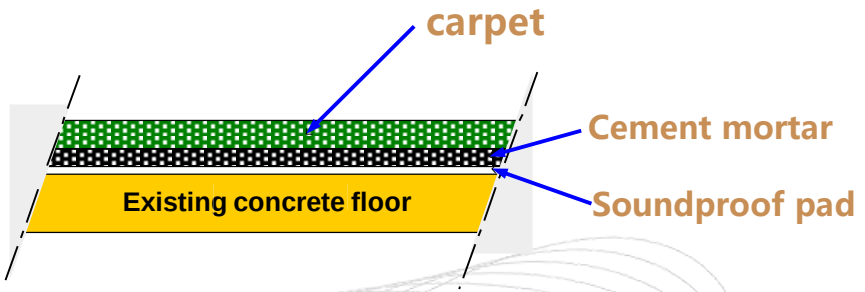


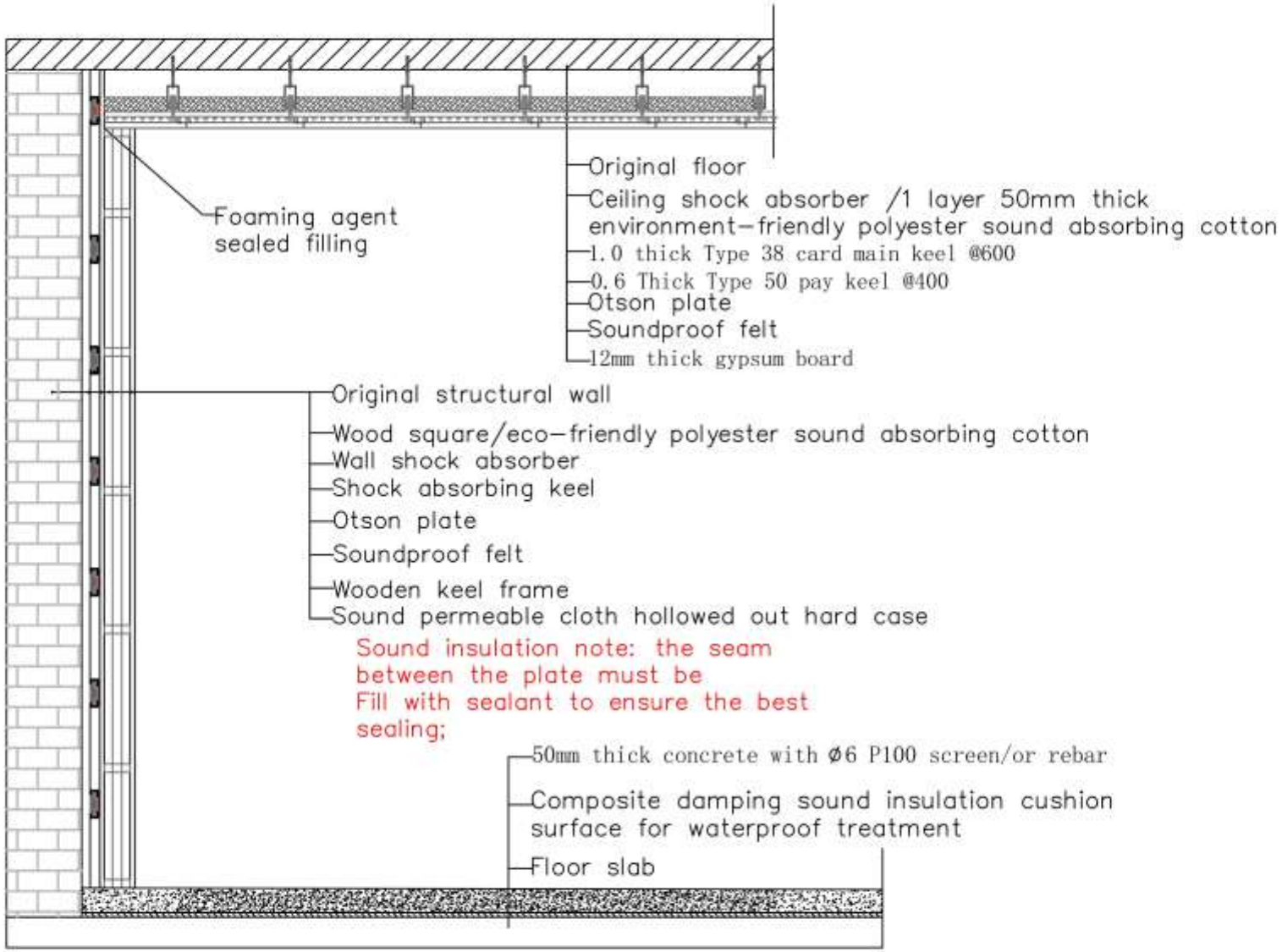
The method of sound insulation - ceiling and ground

Suspended ceiling structure



Ground sound insulation





Acoustical sound insulation treatment diagram

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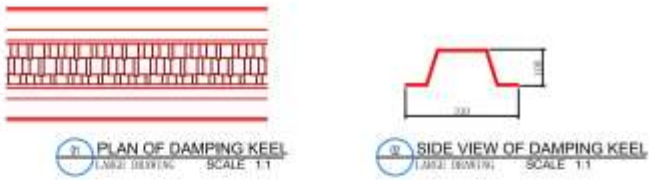
Elastic shock absorber member



Elastic shock absorbing keel

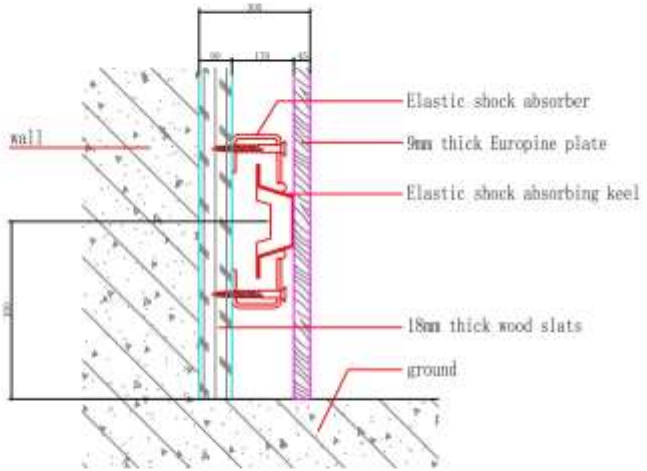
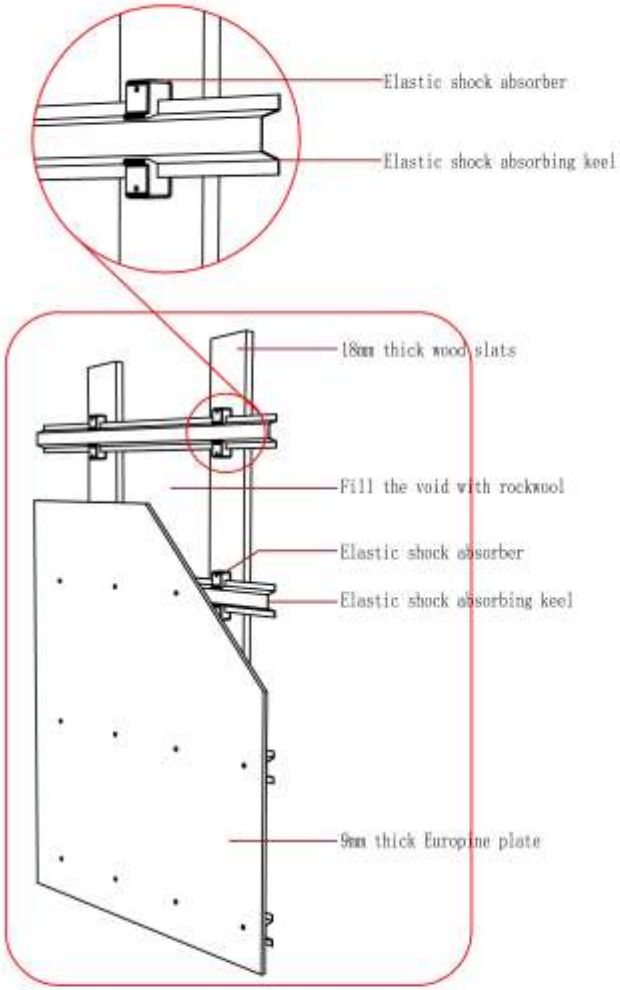


Diagram of elastic damping node



Structure drawing of shock absorbing wall (large drawing)

Wall diagram

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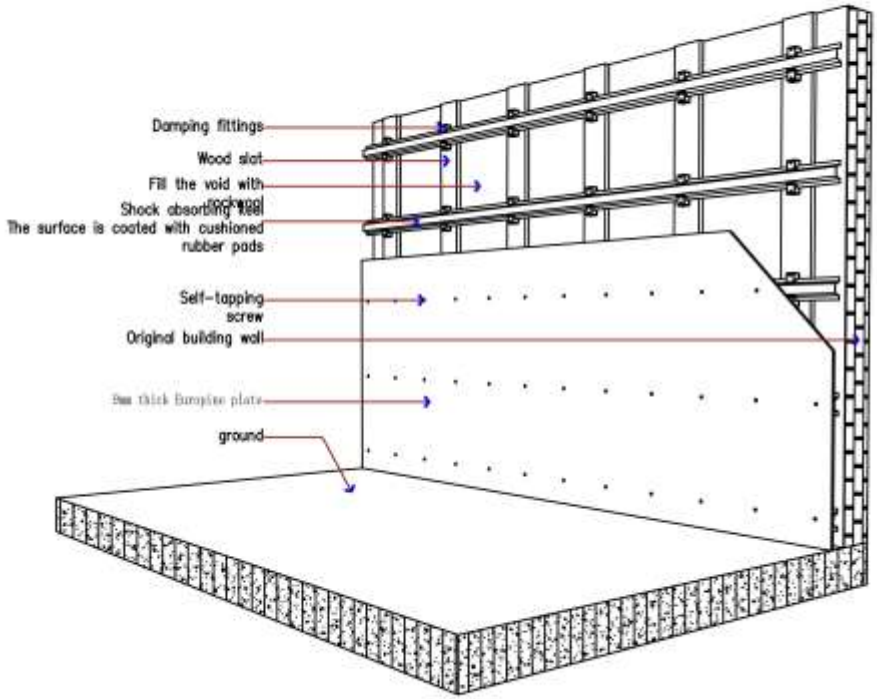

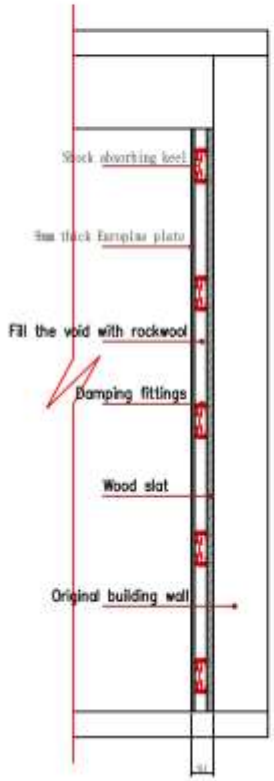

Shock-absorbing wall practice diagram

Note: After the wall is leveled, the woodworking board vertical bar is fixed on the wall, the spacing is 500mm, the woodworking board is cut into 100mm wide vertical bar is fixed on the wall, the damping keel and accessories are fixed on the vertical bar, the keel is 2mm cushioned rubber pad, and then the keel is nailed with 9mm Europine board.

Detail drawing of damping section

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glottis

The way of sound wave transmission through the door is mainly door and door crack, therefore, to obtain a high sound insulation glottis must start from the above two aspects.

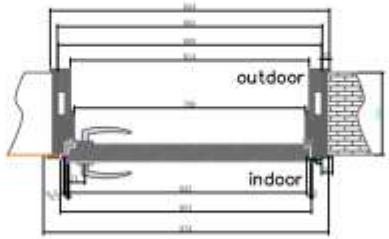
1, improve the door door sound insulation

In order to ensure that the door closure is light and flexible, it is not possible to excessively use the method of increasing the door fan rearrange to obtain a higher volume of insulation can be used with different sound resistance to make material group composite multi-layer composite structure door fan.

2. Improve the sealing measures of the door seam.

The influence of door crack on sound insulation quantity is the variation of sound insulation quantity when different sealing methods of door crack are used on the same diaphragm door.

Structure: sound insulation layer + mechanical layer + flame retardant layer + decorative layer + closed structure

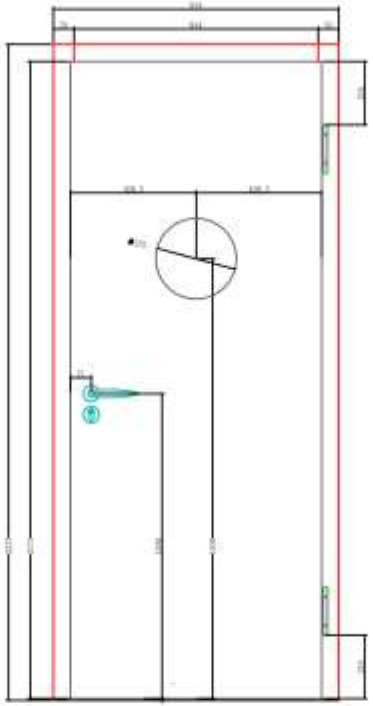


a-aProfile map

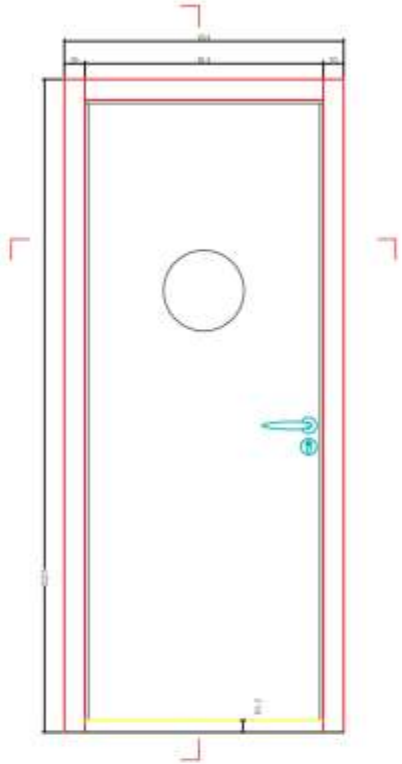
Opening direction

Left inward opening

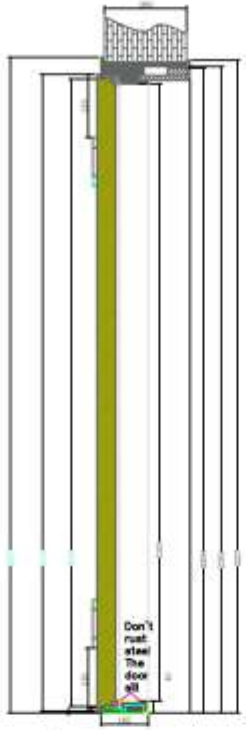
Door size:
2205*905*(200-400)mm
Door frame size:
2200*900*(200-400)mm
Door page size:
2173*857*65mm
Opening direction: according to the order standard



Elevation of the outdoor door



Elevation of the door



b-bProfile map

Soundproof door sample

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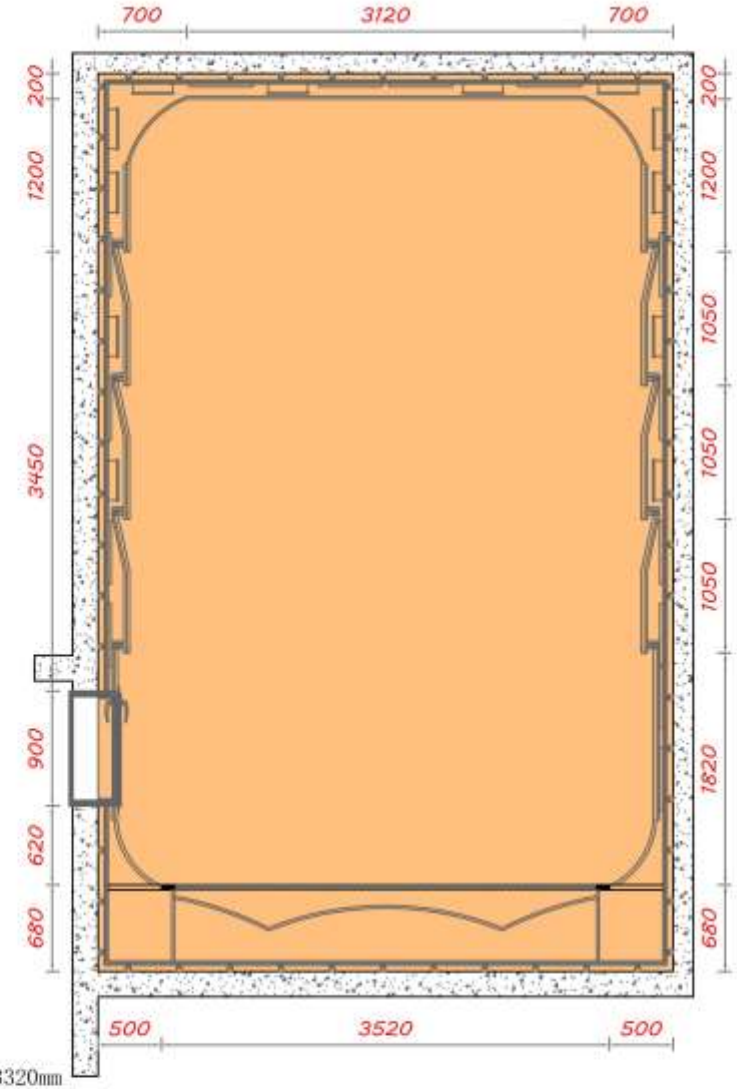

Projection size of 150 inch curtain :1870*3320mm
Including frame size :2070*3520mm

The 150 inch transparent screen can effectively restore the 1:1 large picture sense of the cinema in the space, and achieve shocking visual impact experience in the private space

A high gain surface coating is required for the 150 "sound-permeable screen, which is tested on the projected screen to achieve the IMAX 2D digital film brightness of 22 fL; The IMAX 3D digital movie is 11fL bright

Screen size drawing

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Date:22/03/29

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Draw:leijuan

Approved:Micheal

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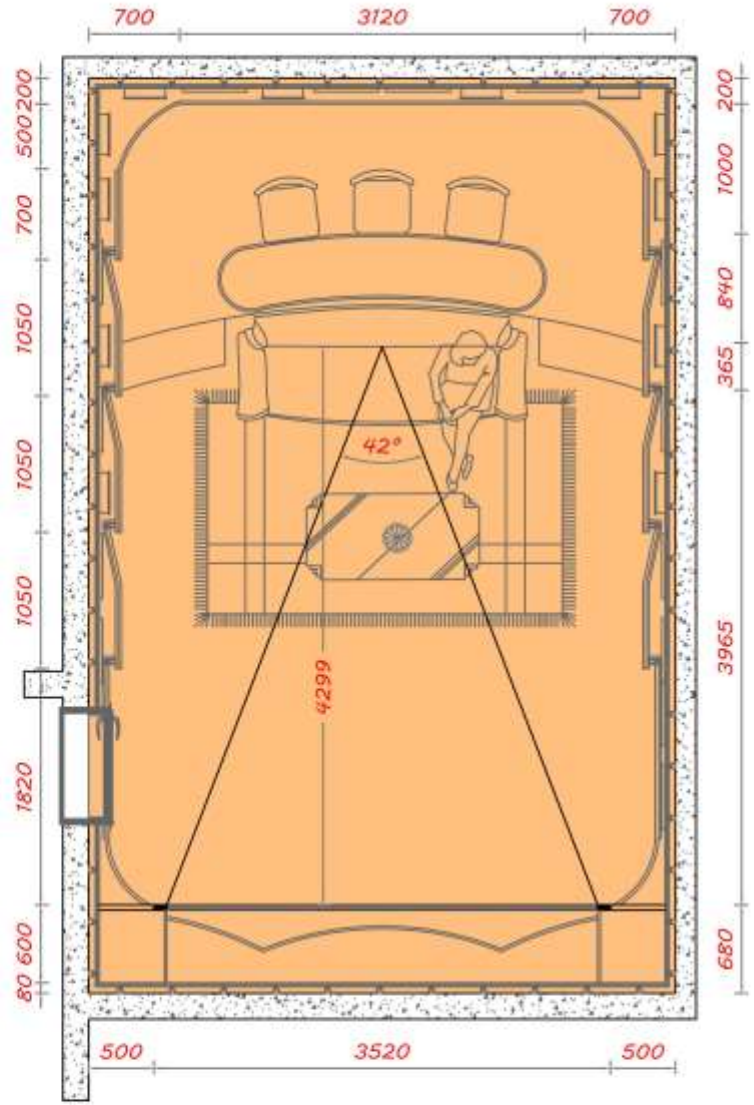

1. Viewing distance: 2k video viewing distance: 3 times the height of the picture
Viewing distance of 3K video: twice the height of the picture
4K video viewing distance: 1.5 times picture height
According to the height of the picture 1870mm, the best viewing distance is 2805mm--5610mm
2. Video Angle requirement: The optimal viewing Angle of cinema is 28° -52°

According to the above two points of analysis, the screen size and sofa distance perfectly match the design requirements, the maximum viewing screen can be 150 inches curtain

Curtain and sofa design plan

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Dolby Panoramic Sound 9.1.6 Plan standard layout

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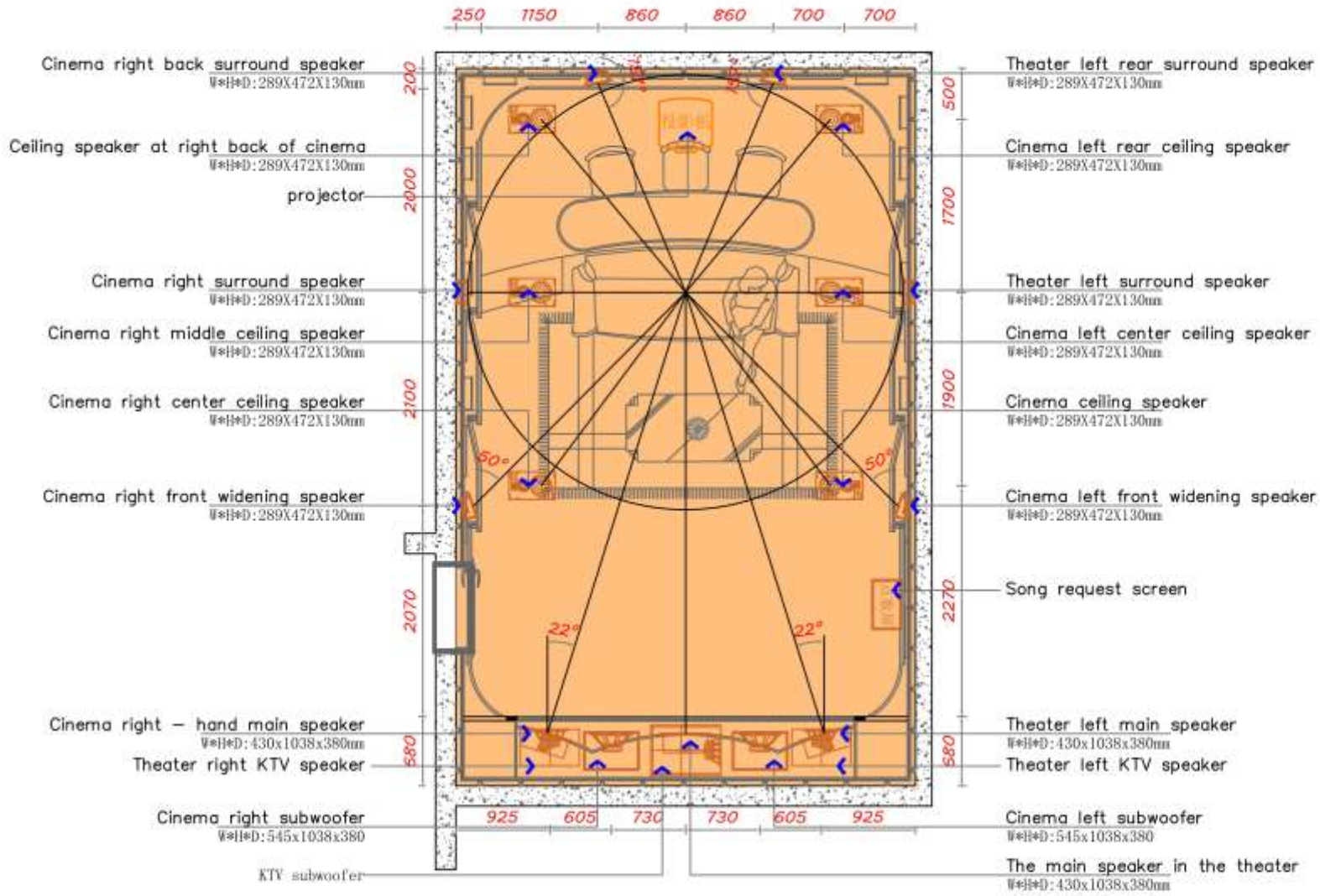

The front and back two rows of sofa are in the best sound field coverage
According to Dolby Panoramic Sound 9.1.6 standard layout. The front wall around the main speaker to the middle offset 22°, the left and right wall around the speaker offset 50°, the back wall around the speaker offset 157° (all offset speakers need to do support fixed offset speaker), so that the speaker high frequency without loss to the listening area, to achieve the audio-visual enjoyment of professional theaters

Speaker point layout

Desing:leijuan	Draw:leijuan	Approved:Micheal
Draw No:A0	Scalie: 1:1	Date:22/03/29

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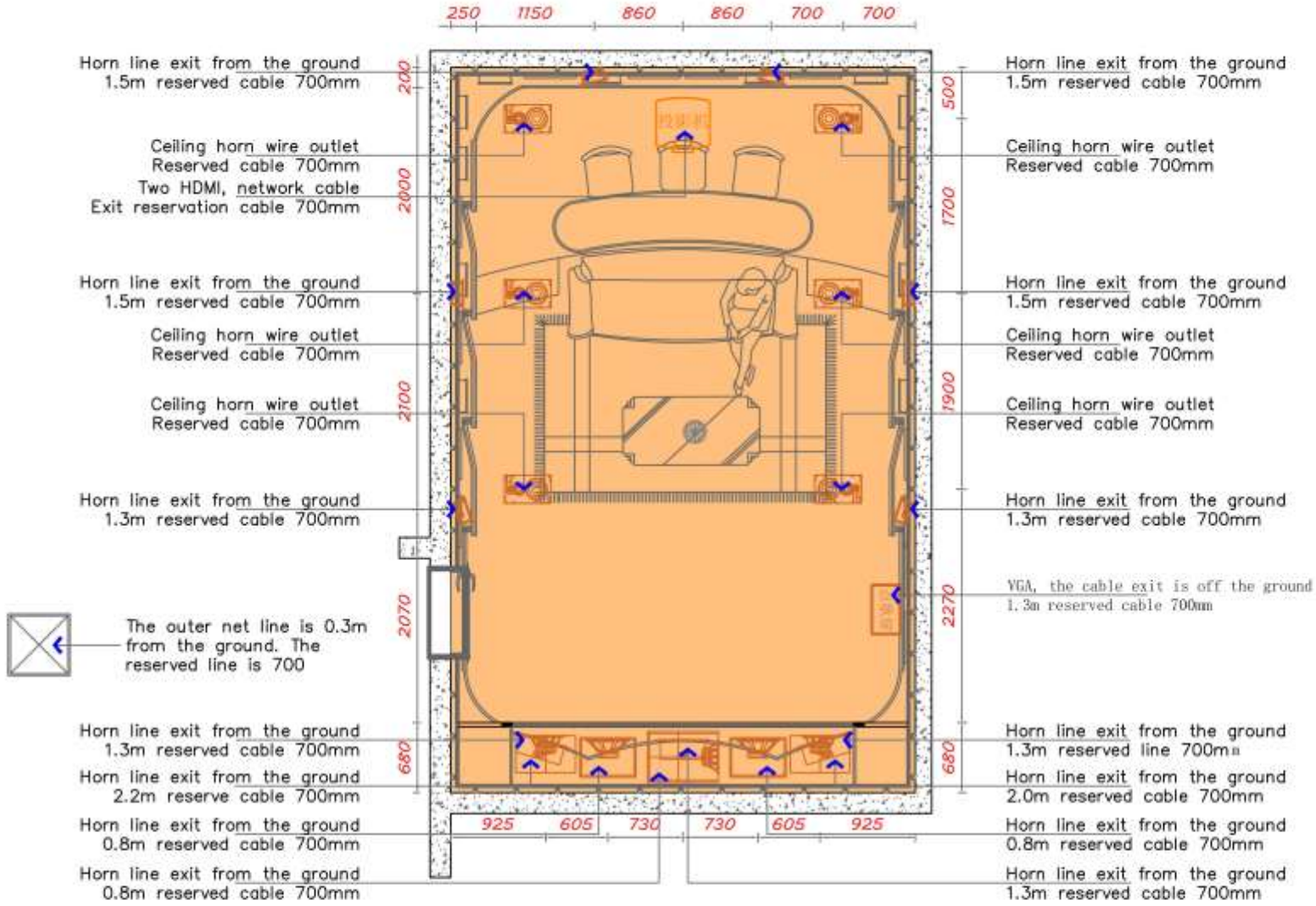

Note:

1. The weak current signal lines of all cinemas shall be separated from the strong wires and routed by separate wire tubes;
2. Each weak current signal cable of all theaters should be individually marked;
3. All the weak current signal cables of the cinema should be covered with plastic wire tubes and sealed with tape to avoid being crushed, dirty and damp.

Weak current layout

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Draw:leijuan			Approved:Micheal

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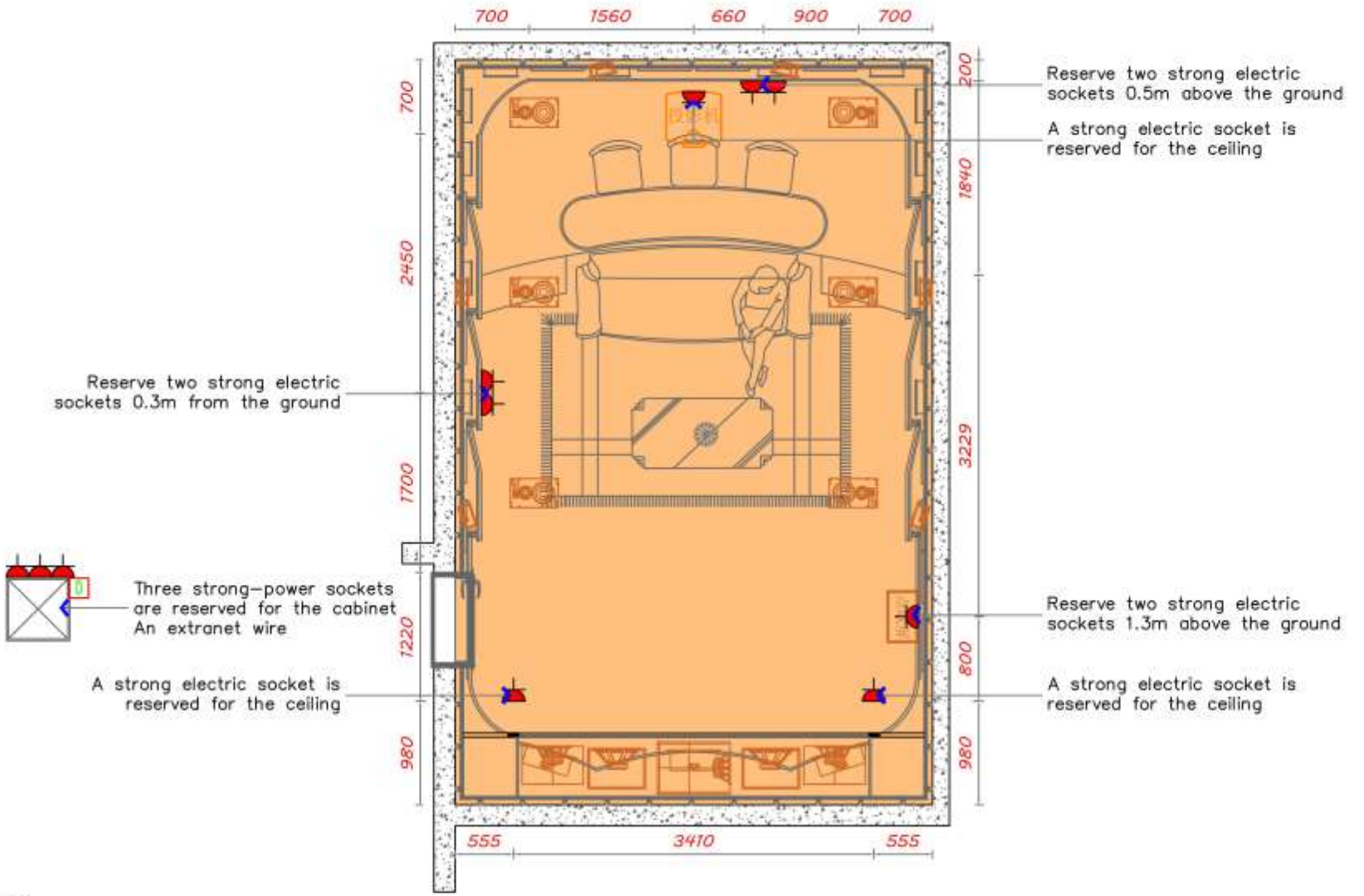

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legend	remarks
	Network socket
	Strong current socket

Strong current layout

Desing:leijuan	Draw No:A0	Date:22/03/29
Draw:leijuan	Scalie: 1:1	Approved:Micheal

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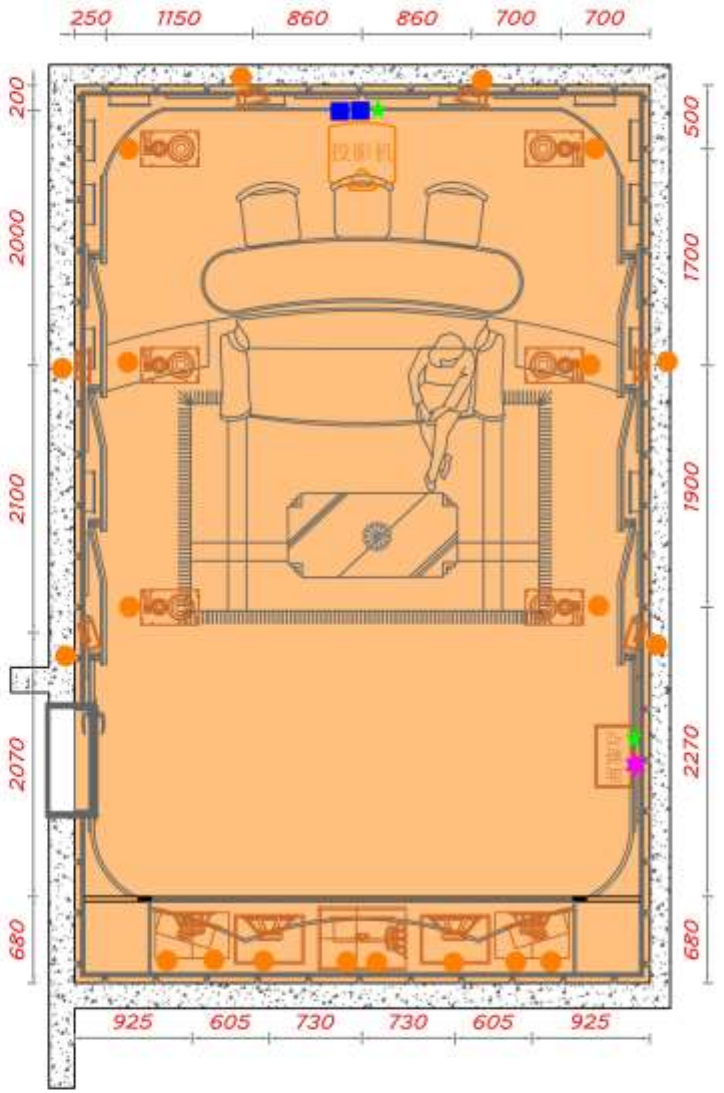

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name	quantity	mark
Horn wire	20pcs	●
HDMI	2pcs	■
Network cable	2pcs	★
VGA cable	1pcs	✸

Weak current distribution map

Draw No:A0

Scalie: 1:1

Date:22/03/29

Desing:leijuan

Draw:leijuan

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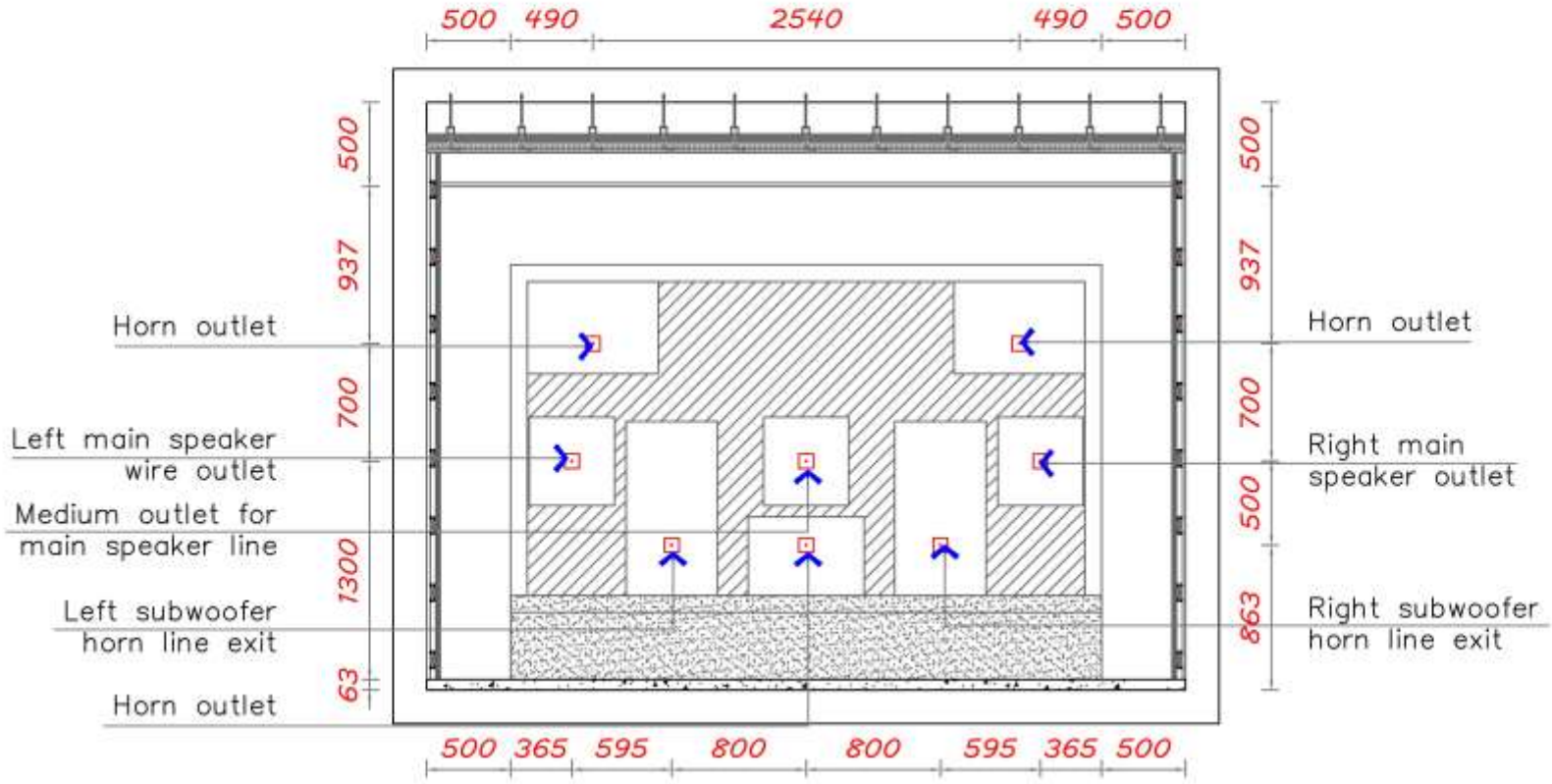

Note:

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Strong and weak current elevation

Desing:leijuan	Draw No:A0	Scalie: 1:1
Draw:leijuan		Date:22/03/29
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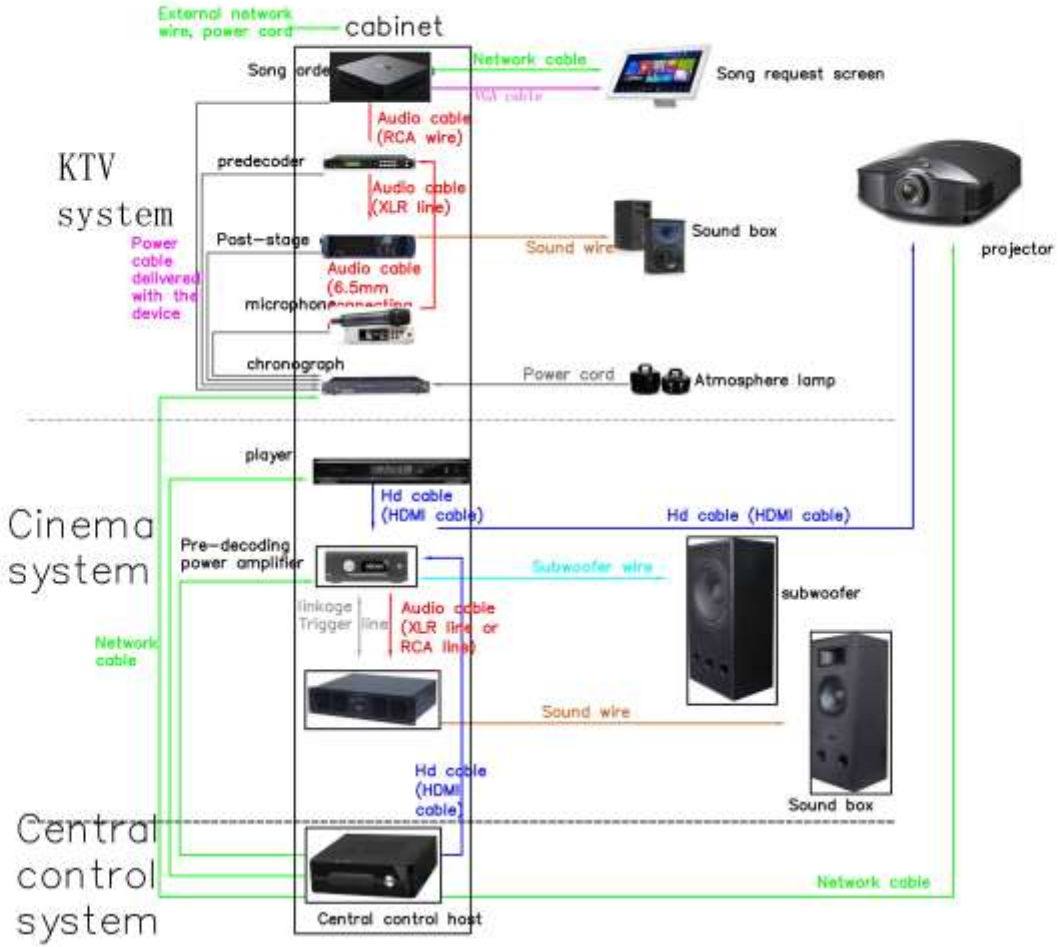

1. The cabinet is required to pull out the external network cable and reserve power sockets (the quantity and specific positions are subject to the drawings).
2. Connect two HDMI cables from the cabinet and one network cable to the video display terminal (the specific position and reserved length are based on the drawings). Reserve a power socket for the video display terminal
3. Lead the sound box cable from the cabinet to the point of the sound box (the specific quantity, reserved length and position are subject to the drawing, and each sound box needs to lead a separate line)
4. Lead the subwoofer wire to the subwoofer sound box at the cabinet, and reserve a strong electric socket at the subwoofer (the specific position and reserved length shall be subject to the drawing identification).
5. Connect the network cable and VGA cable from the cabinet to the song request screen (the specific position and reserved length are based on the drawing). The power supply must be reserved for the song request screen.
6. The power supply of the KTV atmosphere lamp is led to the cabinet

Device connection diagram

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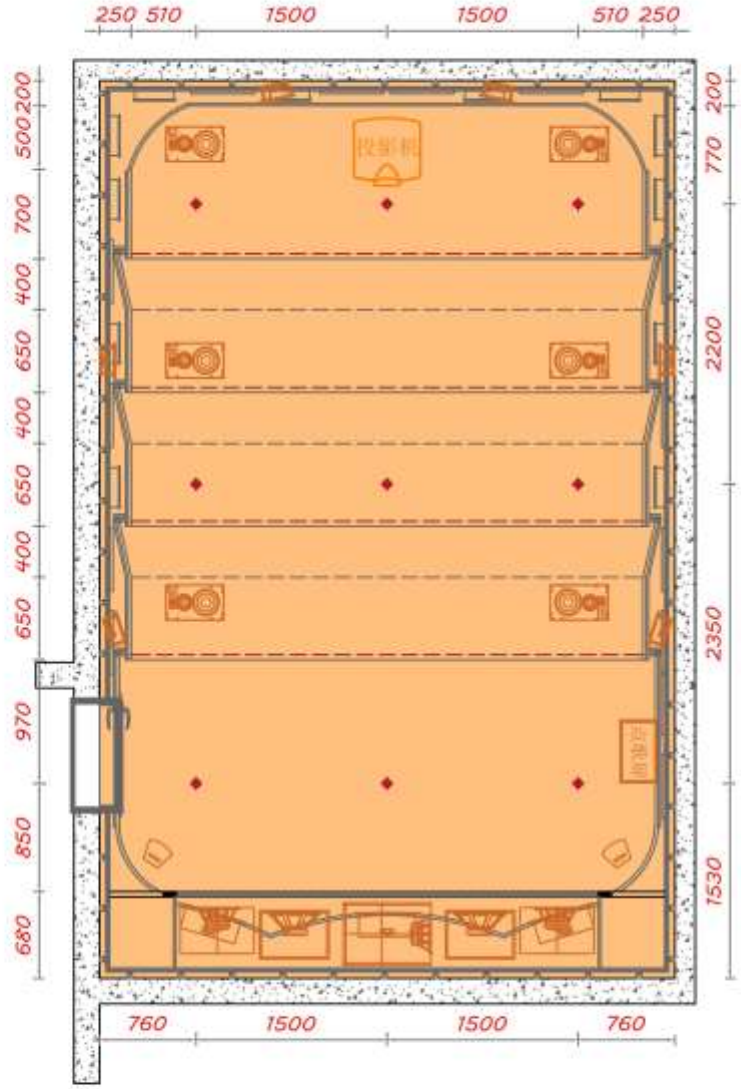

legend	name
	Butterfly lamp
	downlight
	Lamp strip

Smallpox layout plan

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Draw:leijuan

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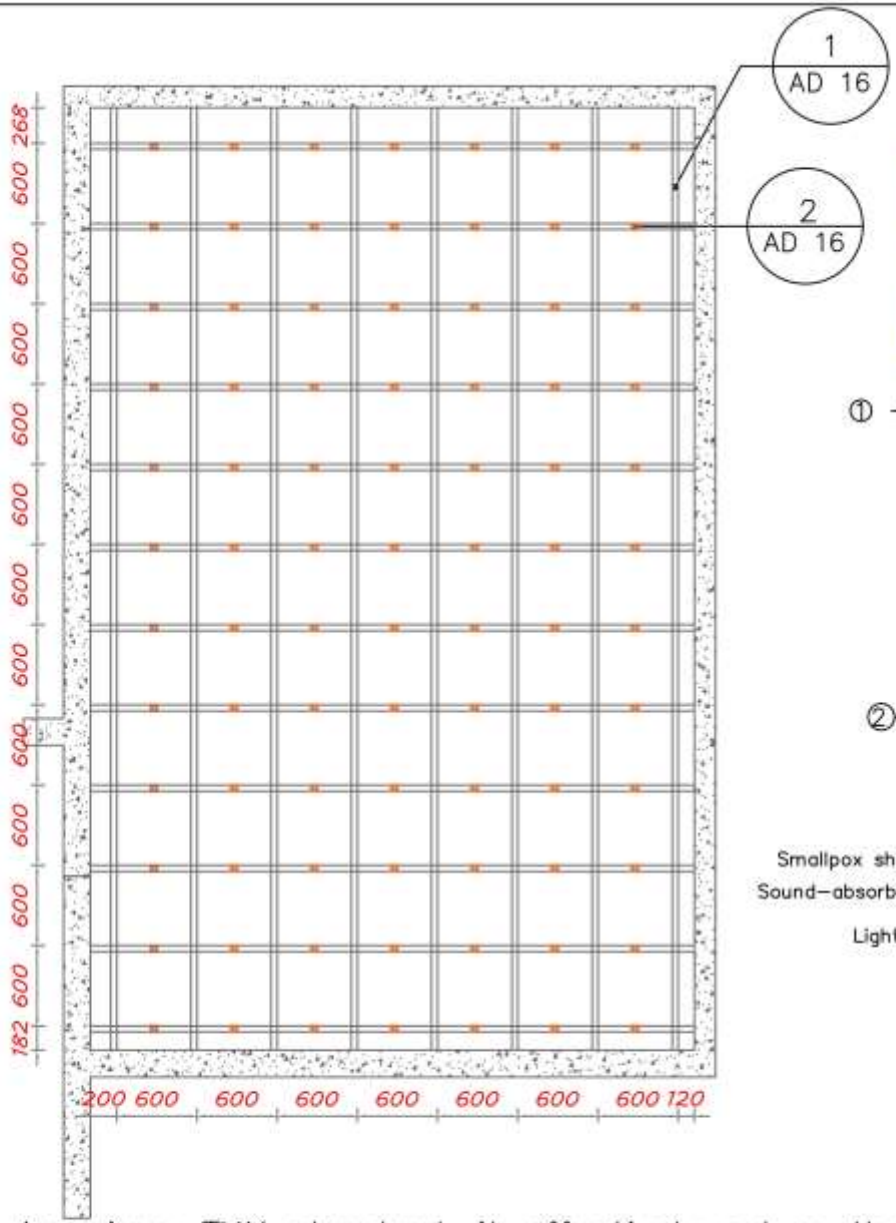
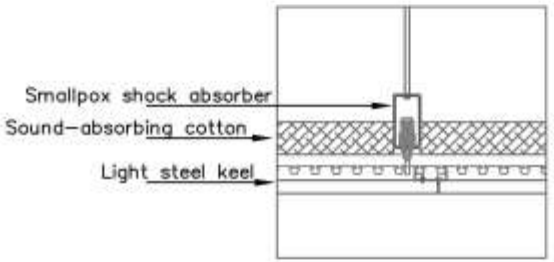


① Real picture of ceiling shock absorber

② Smallpox shock absorber



③ The upper part of the shock absorber is installed on the ceiling wall panel, and the lower part is installed on the ceiling keel

According to the American THX standard, it effectively solves the problem of low frequency resident wave and low frequency sound insulation on smallpox.

Ceiling damping layout

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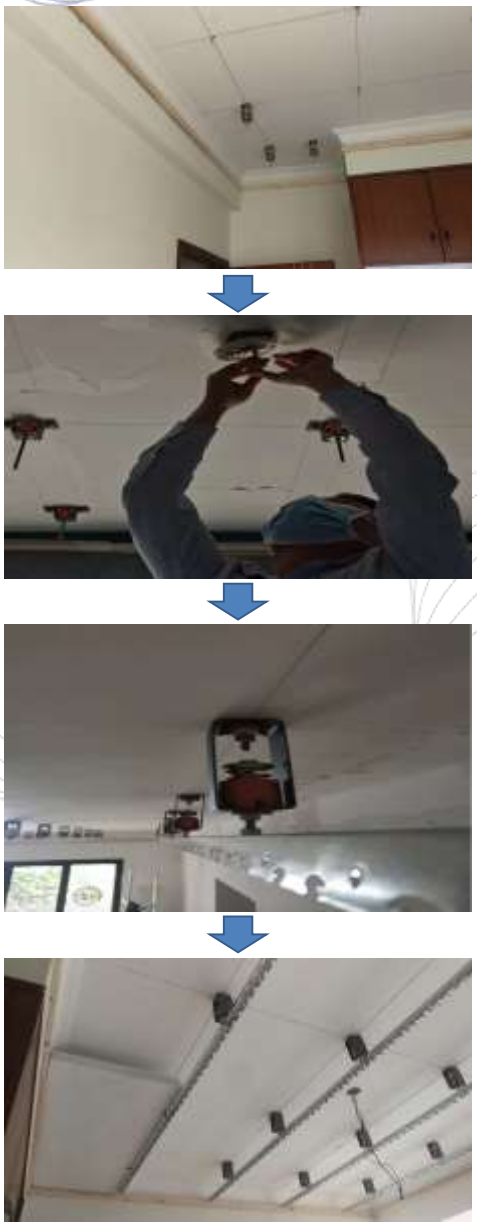
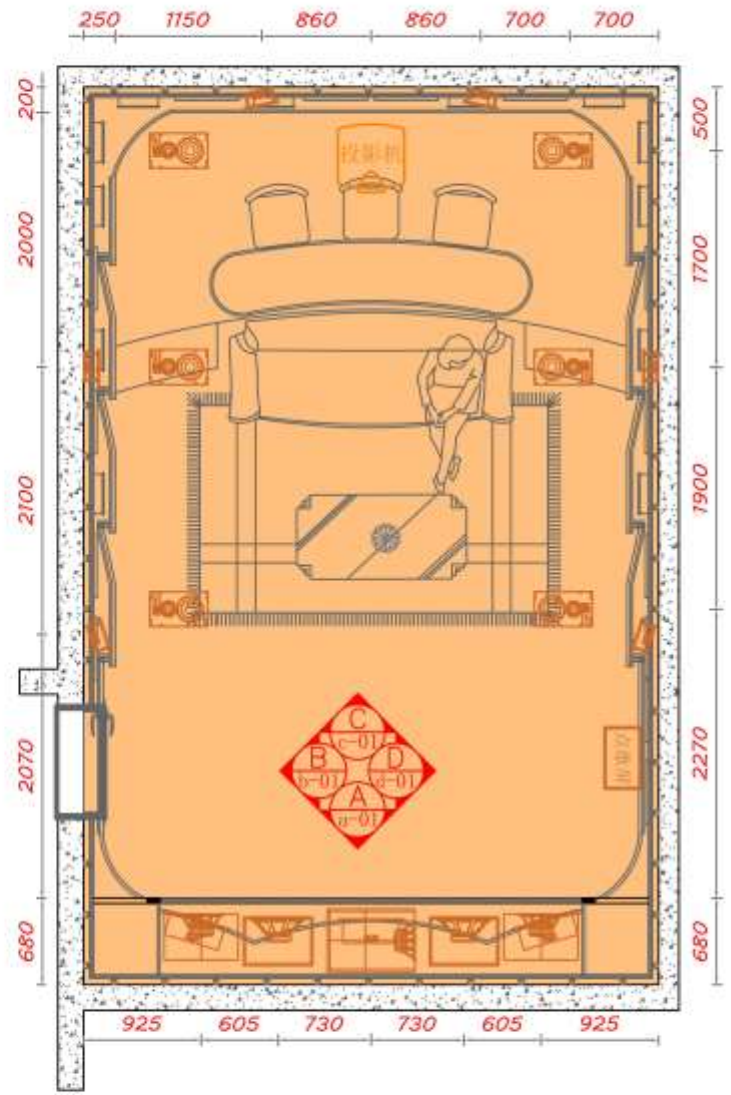
Sound insulation and vibration reduction

- Reasonable scheme
- Qualified product
- Strict construction

Legend of ceiling or wall construction site





Plane index chart

Desing:leijuan	Draw No:A0		
Draw:leijuan	Scalie: 1:1		
Approved:Micheal	Date:22/03/29		

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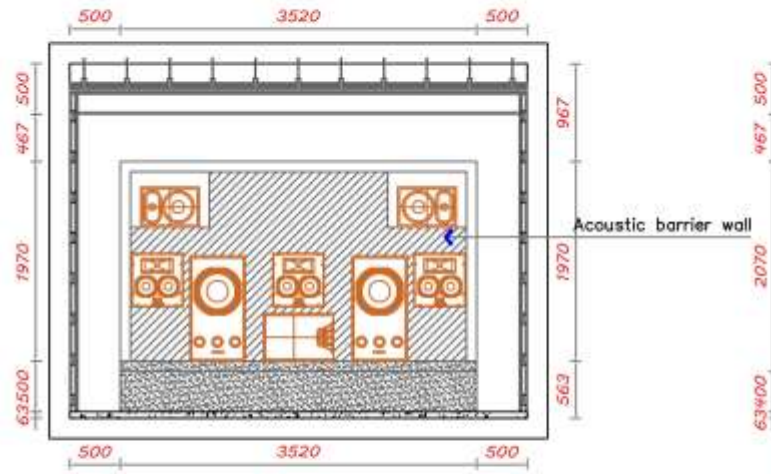
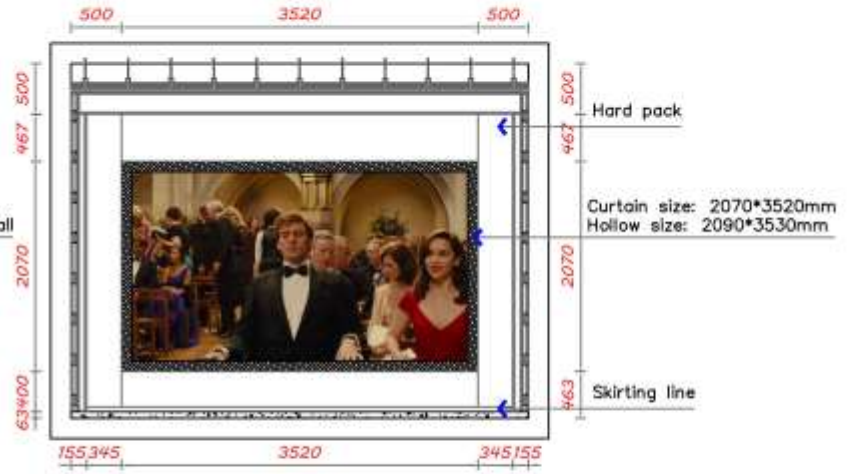
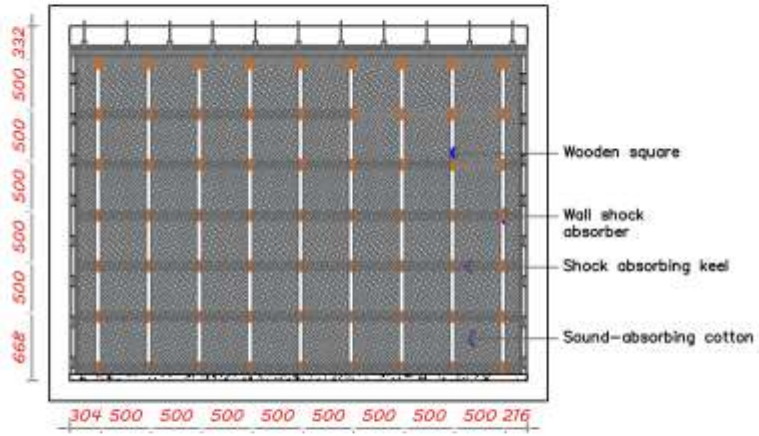
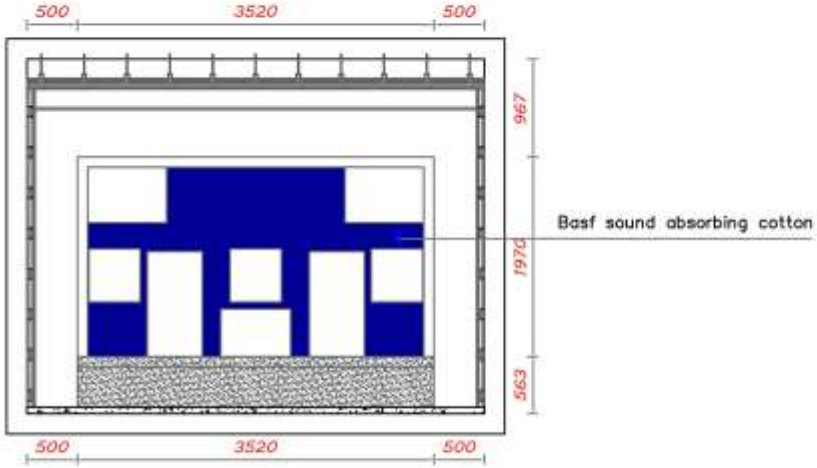








Outside the curtain area of hard packaging; The projection screen is 40 centimeters off the ground

The heavy bass platform is made of lightweight brick, filled with ceramide and levelled with cement concrete

A
a-01
Elevation plan

Elevation of front wall

vandksound

All sizes in this drawing are designed. All sizes need to be checked on site. If there is any deviation from the field size, it can be adjusted according to the actual situation with the consent of the designer.

Draw No:A0

Scalie: 1:1

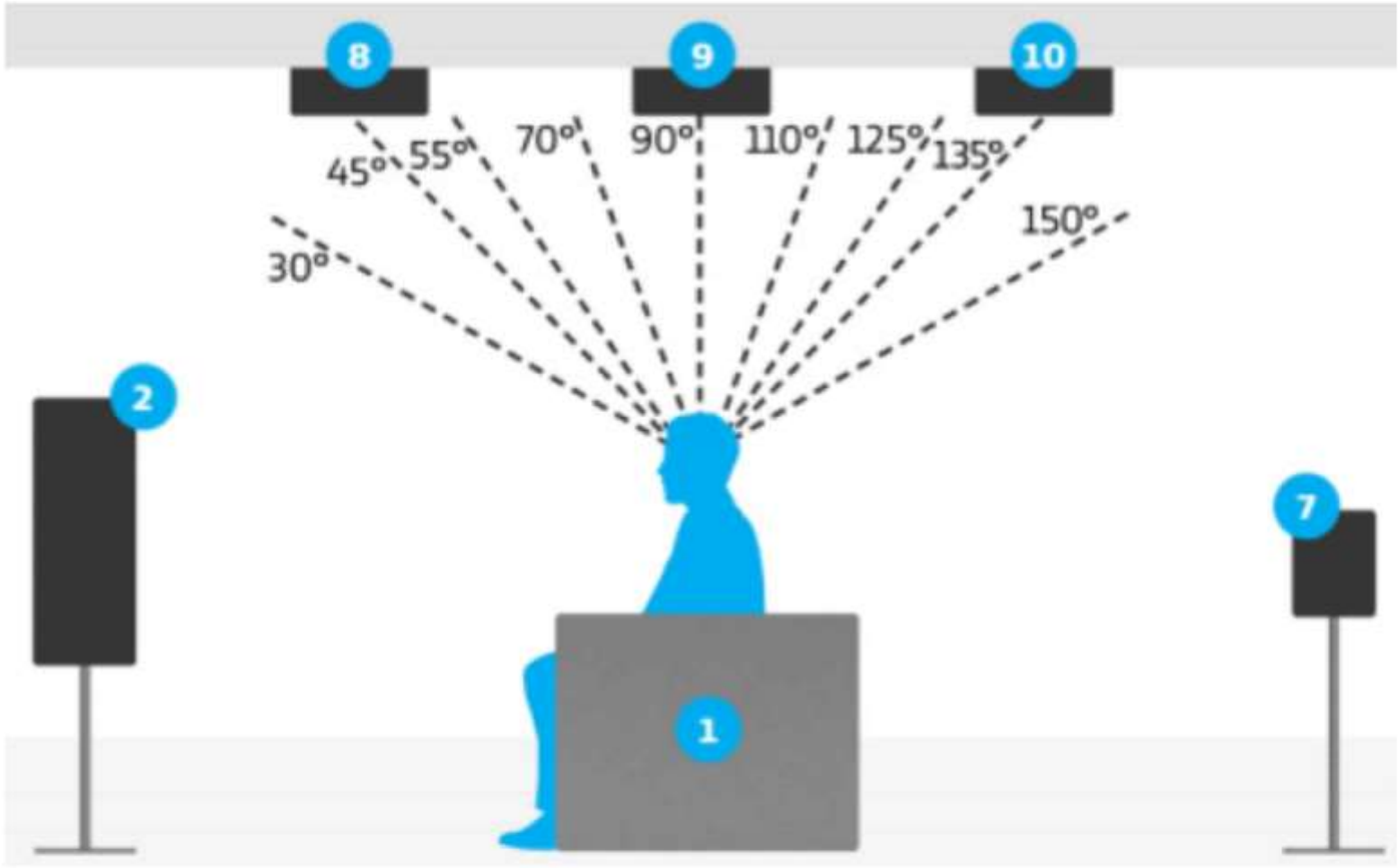
Date:22/03/29

Desing:leijuan

Draw:leijuan

Approved:Micheal

Client Approved
PL-20



Dolby Panoramic acoustic elevation

vandksound

All sizes in this drawing are designed. All sizes need to be checked on site. If there is any deviation from the field size, it can be adjusted according to the actual situation with the consent of the designer.

Desing:leijuan	Draw No:A0		
Draw:leijuan	Scalie: 1:1		
Approved:Micheal	Date:22/03/29		

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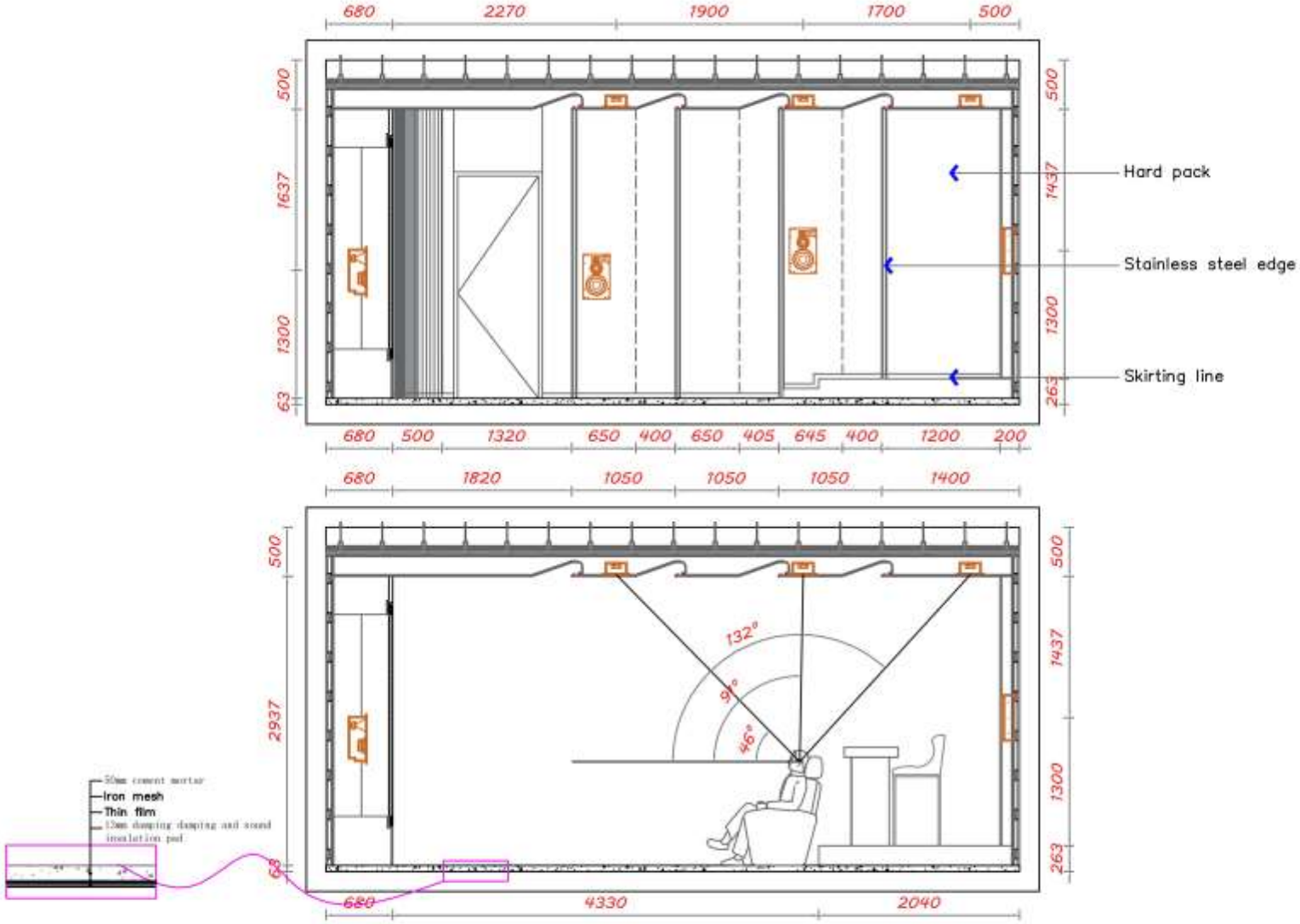
PL-21



Speaker mask cloth; Projection screen 40 cm off the ground;
The sofa platform spacing is 36cm, the step height spacing is 10cm, and the drop between the platforms is 20cm. The rear position does not block the line of sight

B
a-01
Elevation plan

Elevation of right wall

All sizes in this drawing are designed. All sizes need to be checked on site. If there is any deviation from the field size, it can be adjusted according to the actual situation with the consent of the designer.

Draw No:A0	Scalie: 1:1	Date:22/03/29
Desing:leijuan	Draw:leijuan	Approved:Micheal

Client Approved
PL-22

Space construction sound content covers

1 Sound absorption

The effect of converting sound energy into heat energy after sound enters a porous material or causes a plate to vibrate in a flexible deformation.

2 Diffuse Acoustic Filed

When enough normal modes are excited in a closed space, the different modes have their own specific propagation directions, so that the sound wave reaching a certain point includes various possible incidence directions.

3 reflex

When sound waves travel to different substances, they change their direction at the interface and return to the original substance. The reflection of the original wall of the audio-visual space is superior to other reflective layers.

Basf Basotect G

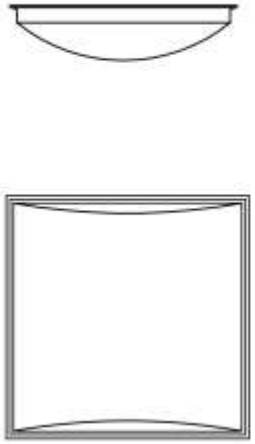
Sound absorbing material, according to the THX standard of the United States in the video space in accordance with 25% sound absorption processing.

Smallpox shock absorber

According to the American THX standard, it effectively solves the problem of low frequency resident wave and low frequency sound insulation in the video and audio space.

Wall shock absorber

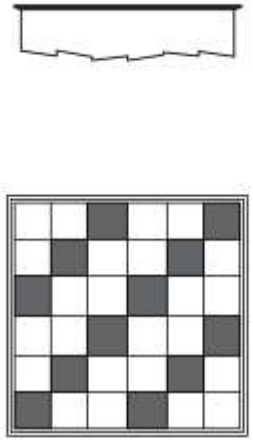
According to the American THX standard, it effectively solves the problem of low frequency resident wave and low frequency sound insulation in the video and audio space.



2D diffuser plate

According to the American THX standard, the front wall can effectively radiate the sound directly to the listening area in the video and audio space (according to the American PMI standard in the spatial layout).

According to THX standard 2D, 3D diffusion plate space area of 25%



3D diffuser plate

According to the American THX standard, acoustic waves can be effectively reflected in the listening area in the video and audio space, so that the listening area can create a strong sense of space (according to the spatial layout of the American PMI standard).

According to THX standard 2D, 3D diffusion plate space area of 25%

Acoustic material interpretation diagram

vandksound

Draw No:A0	Scalie: 1:1	Date:22/03/29
Desing:leijuan	Draw:leijuan	Approved:Micheal

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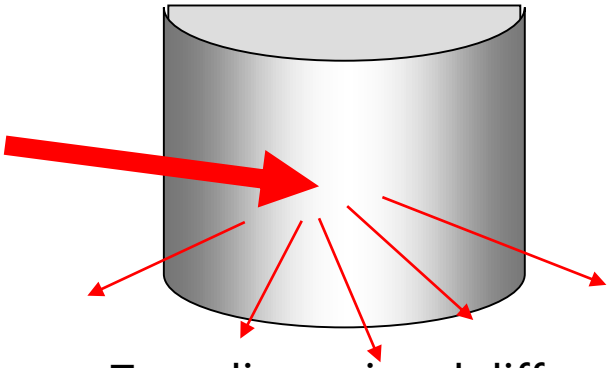
PL-23

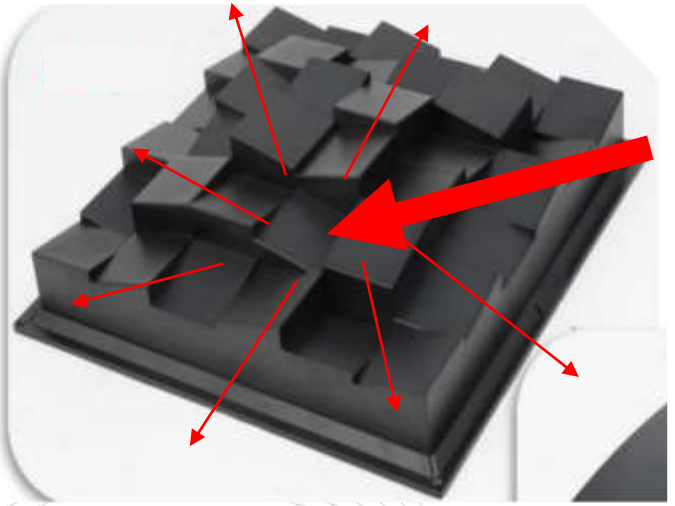
Acoustic treatment - diffusion plate

- Two-dimensional diffusion can make reflected sound wave form sector diffusion
- Used in the front half of the side wall of the room to diffuse the sound waves emitted by the front speaker



Two-dimensional diffuser

- Three - dimensional diffusion makes spherical diffusion of sound waves
- Used in the back of the room to diffuse the sound waves emitted around the speakers



Three-dimensional diffuser

Instructions for diffuser installation:

1. Apply a continuous strip of foam around the perimeter edge of the back of each diffuser.

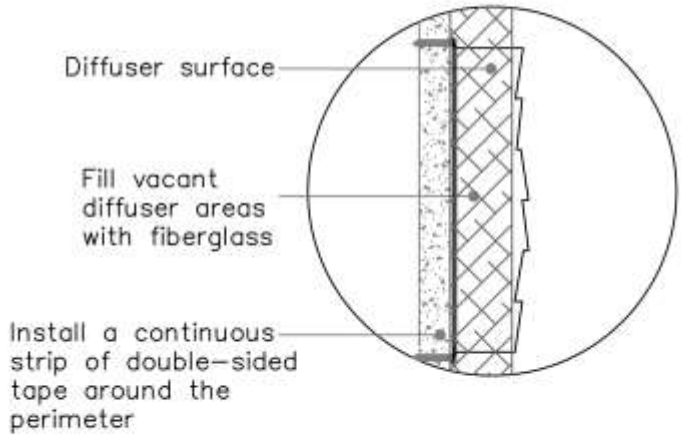
2. Install medium density glass fiber in the empty back cavity of the diffuser.

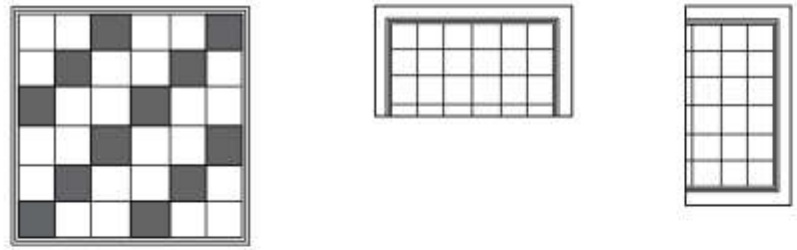
3. Use proper screws to tighten each corner of the diffusion plate.

4. The diffuser to be cut should be filled with expanding foam before cutting. Use fine cutting methods to avoid cracking the plastic

5. The part of the mounting flange of the diffuser can be trimmed to make it suitable for some applications, allowing the remaining flange to mount the diffuser intact so that it does not rattle on the wall or ceiling.

6. Diffuser should be black. If diffusers are not black, paint all diffusers matte black before installation.





Acoustic material interpretation diagram

Desing:leijuan	Draw No:A0	
Draw:leijuan	Scalie: 1:1	Date:22/03/29
Approved:Micheal		

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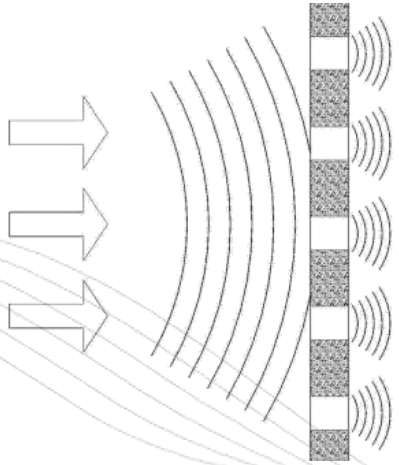
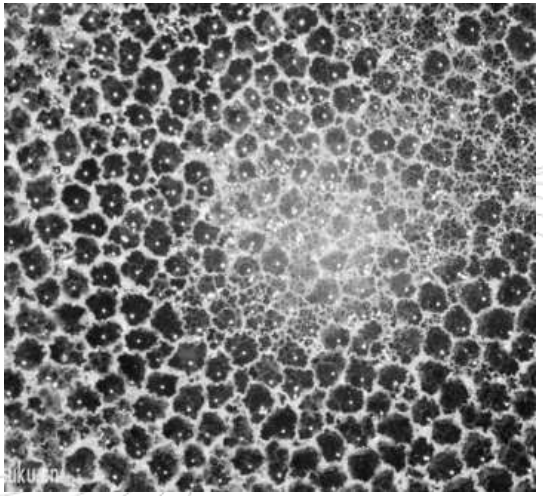
PL-24

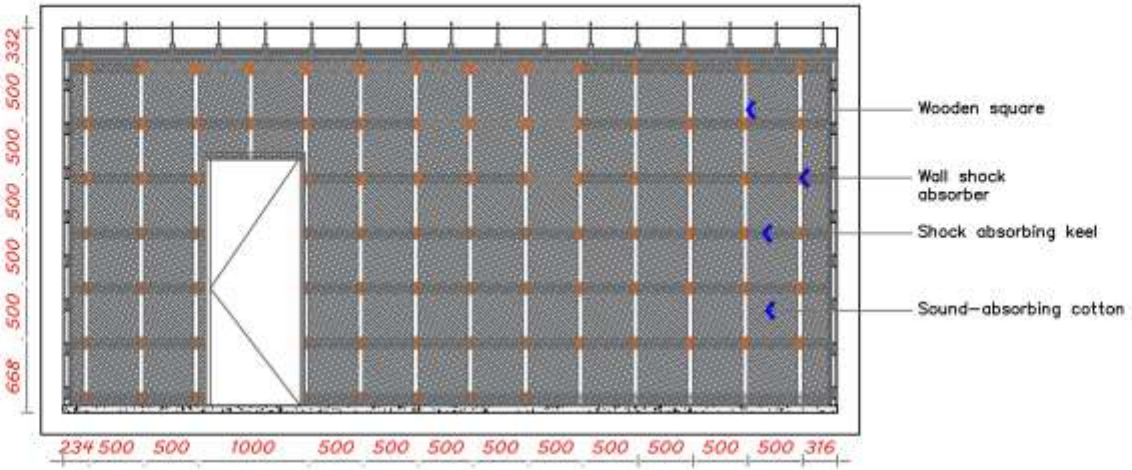
sound-absorbing

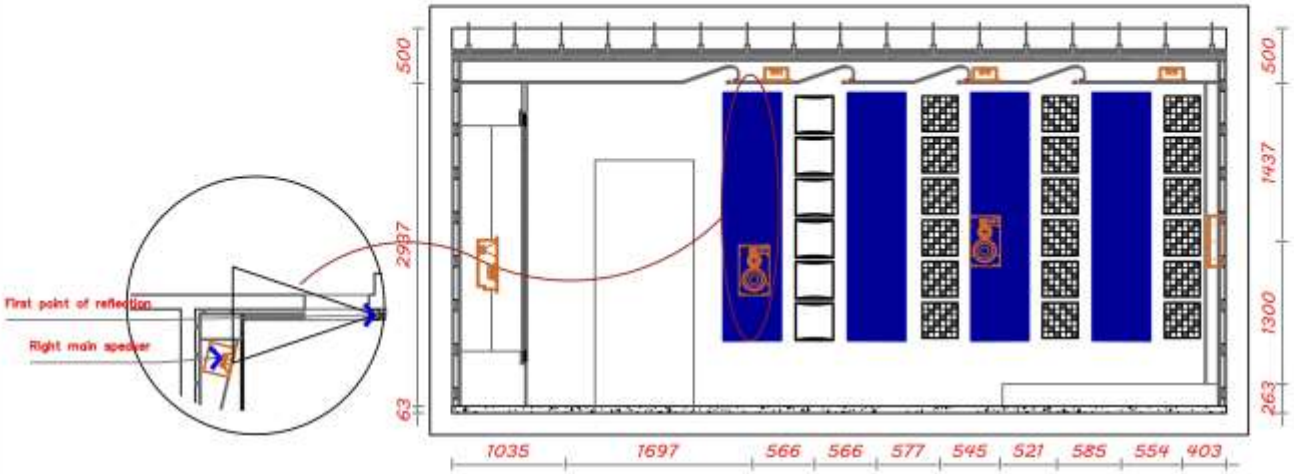
Sound wave propagation in the air and air particle due to vibration friction sound energy into heat energy, caused by the phenomenon of gradual attenuation of sound wave with the increase of the propagation distance, known as air absorption;

When the sound wave is incident on the porous sound absorbing material, due to the viscous resistance of the air and the vibration friction between the air and the pore wall, a considerable part of the sound energy is converted into heat energy and absorbed.









2D diffuser p 3D diffuser p Basf Basotect G

According to the United States PMI design

1. The damping and sound insulation layer can reduce the noise of the space by 35.0db to achieve the top sound insulation effect, and effectively inhibit the interference of low-frequency standing waves to the interior of the space, so that the low frequency is clean and powerful
2. Strong sound absorption at the first reflection point, reduce the interference of reflected sound on the main sound box, so that the sound is clean and pure
3. In the space layout of diffusion and sound-absorbing materials, the space reverberation time can be controlled within the range of 0.35ms, so as to achieve the best audiovisual effect and achieve the immersive enveloping sense.

B
a-01
Elevation plan

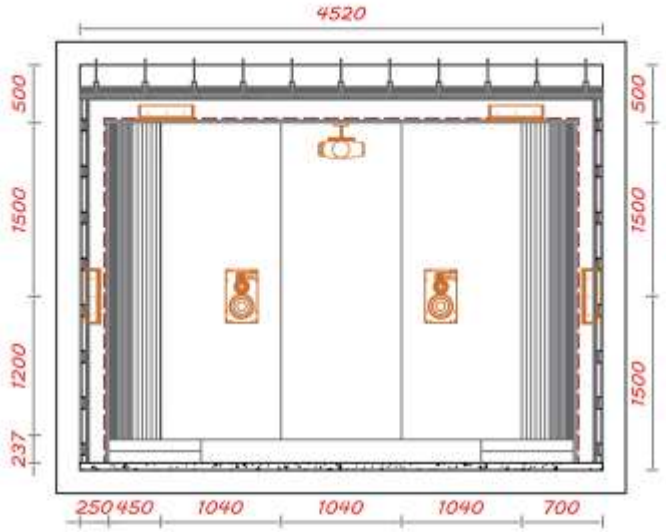
Acoustic damping elevation of right wall

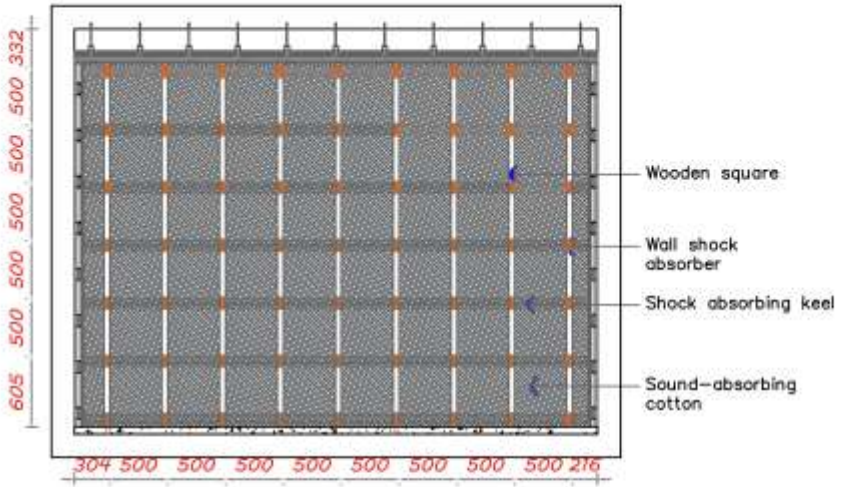
wandksound

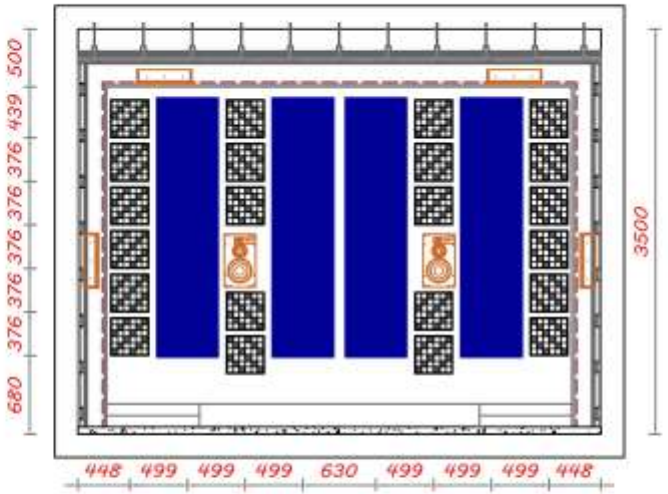
All sizes in this drawing are designed. All sizes need to be checked on site. If there is any deviation from the field size, it can be adjusted according to the actual situation with the consent of the designer.

Draw No:A0
Scalie: 1:1
Date:22/03/29
Desing:leijuan
Draw:leijuan
Approved:Micheal

Client Approved
PL-25







2D diffuser p 3D diffuser p Basf Basotect G

According to the United States PMI design

1. The damping and sound insulation layer can reduce the noise of the space by 35.0db to achieve the top sound insulation effect, and effectively inhibit the interference of low-frequency standing waves to the interior of the space, so that the low frequency is clean and powerful
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3. In the space layout of diffusion and sound-absorbing materials, the space reverberation time can be controlled within the range of 0.35ms, so as to achieve the best audiovisual effect and achieve the immersive enveloping sense.

C
c-01
Elevation plan

Acoustic shock absorption elevation of rear wall

vandksound

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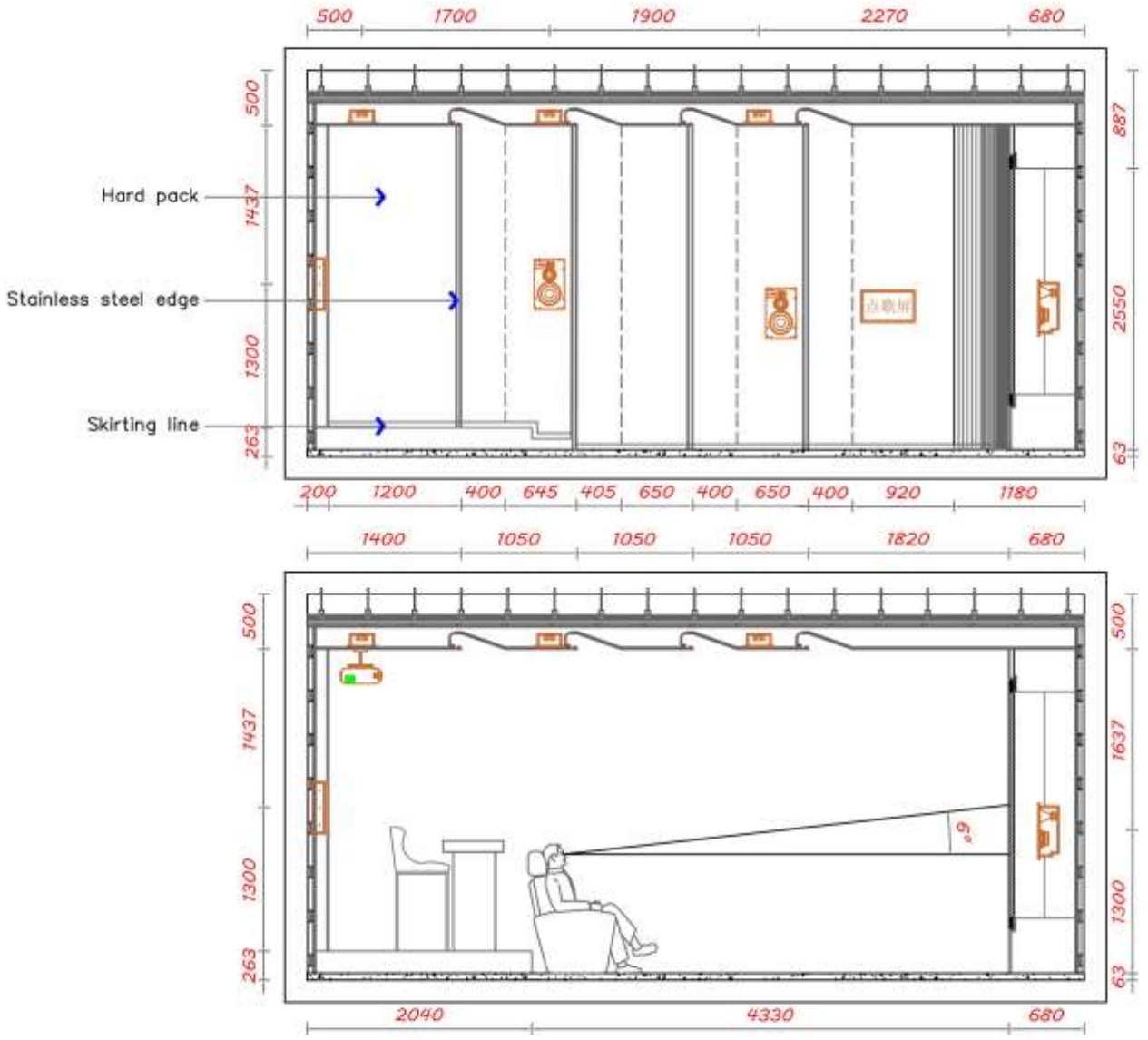
Draw No:A0
Scalie: 1:1
Date:22/03/29
Desing:leijuan
Draw:leijuan
Approved:Micheal

Client Approved
PL-26



Speaker mask cloth; Projection screen 40 cm off the ground;
The sofa platform spacing is 36cm, the step height spacing is 10cm, and the drop between the platforms is 20cm. The rear position does not block the line of sight

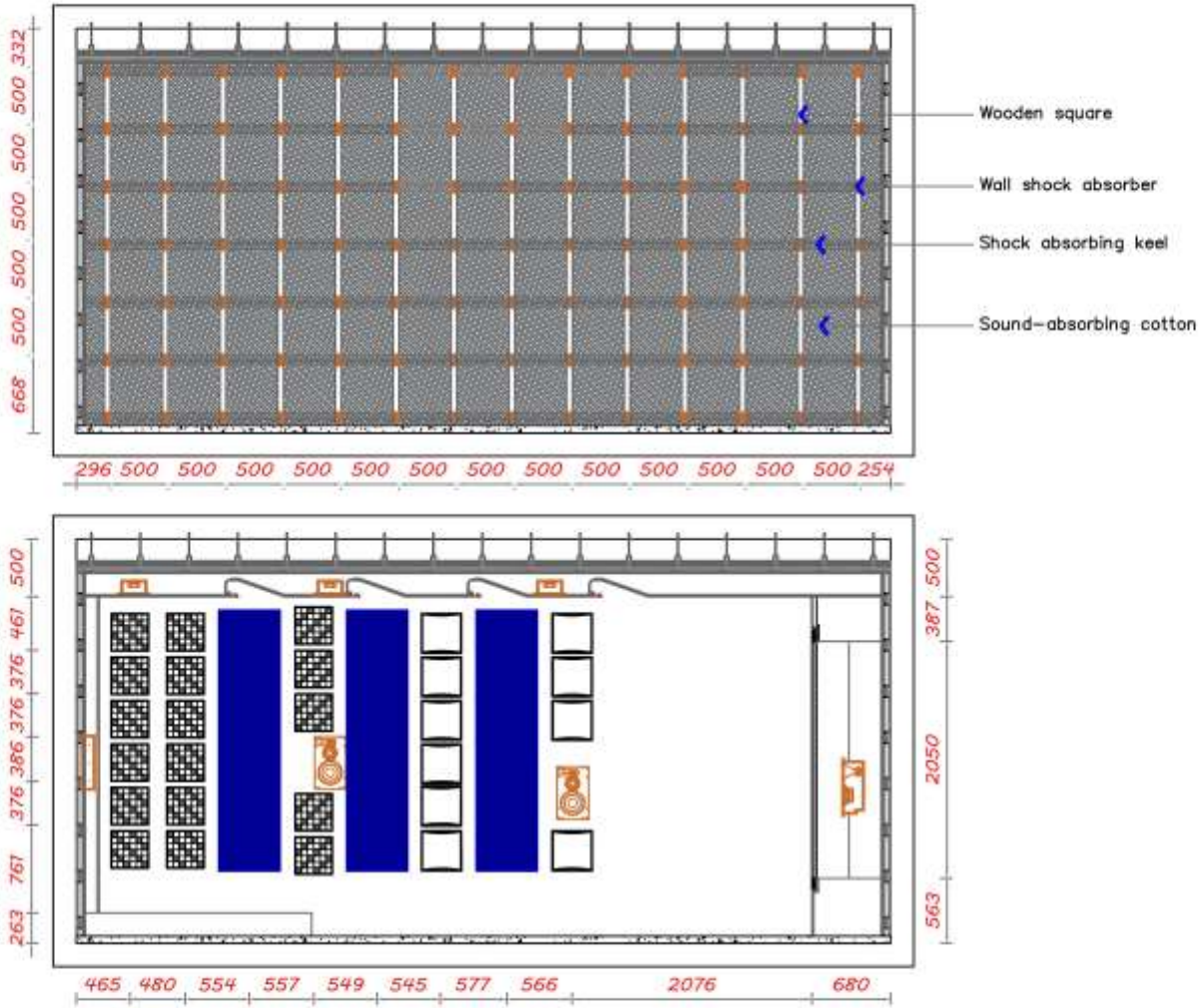
D
d-01
Elevation plan

Elevation of the left wall

wandksound

Draw No:A0	Scalie: 1:1	Date:22/03/29
Desing:leijuan	Draw:leijuan	Approved:Micheal

Client Approved
PL-27



2D diffuser 3D diffuser Basf Basotect G

According to the United States PMI design

1. The damping and sound insulation layer can reduce the noise of the space by 35.0db to achieve the top sound insulation effect, and effectively inhibit the interference of low-frequency standing waves to the interior of the space, so that the low frequency is clean and powerful
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3. In the space layout of diffusion and sound-absorbing materials, the space reverberation time can be controlled within the range of 0.35ms, so as to achieve the best audiovisual effect and achieve the immersive enveloping sense.

D
d-01
Elevation plan

Acoustic damping elevation of left wall

vandksound

All sizes in this drawing are designed. All sizes need to be checked on site. If there is any deviation from the field size, it can be adjusted according to the actual situation with the consent of the designer.

Draw No:A0	Scalie: 1:1	Date:22/03/29
Desing:leijuan	Draw:leijuan	Approved:Micheal

Client Approved
PL-28