INFLATING ACOUSTIC SAND PANELS

NOTES AND DETAILS

VER: PHSYB070112

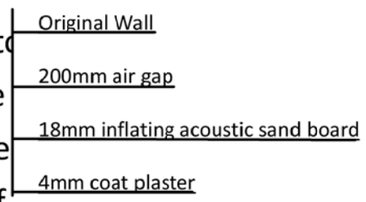
Product Instruction

Inflate acoustic sand panel is seamless, safety and environmental friendly, low cost building sound absorption products.

Its raw material is natural silica water glass vitreous volcanic lava sand, after high temperature inflating treatment, becoming popcorn-like fluffy particles, and then through the silicon-based polymer chemical action, the particles were aggregated into sandstone. During the polymerization process, there is always a large amount of pores between the extruded particles o that good porous sound absorption can be formed.

The main component of inflated acoustic sand panel are silica and silicon-based polymerization agent, which are non-toxic natural inorganic materials being very stable, environmentally friendly , non-combustible , weather resistance, acid and alkali resistance, not water soluble, resistance to sunlight.

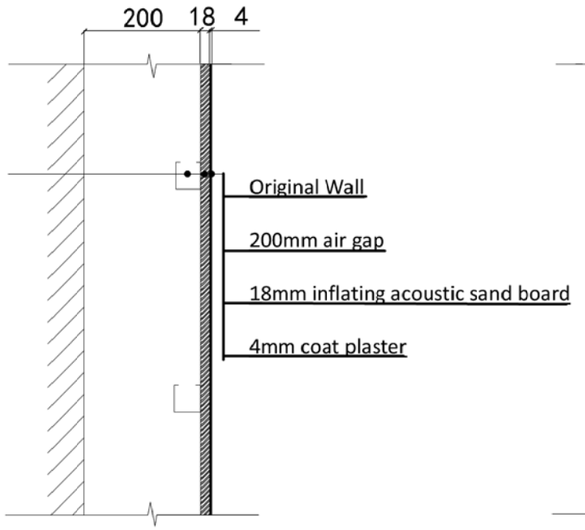
The coating layer of the material is also environmentally friendly sandstone, using a plastering or spraying method, covering the base layer panels, forming a large area seamless with sandstone [illegible] or decoration effect. Decorative surface of the sandst[illegible] on of flexible silica sand modification technology, the [illegible] ayer with the appropriate flexibility, coupled with the [illegible], expand and contraction of hot and humidwith self- [illegible] ill not crack, continuous area can reach more than 2000m2.

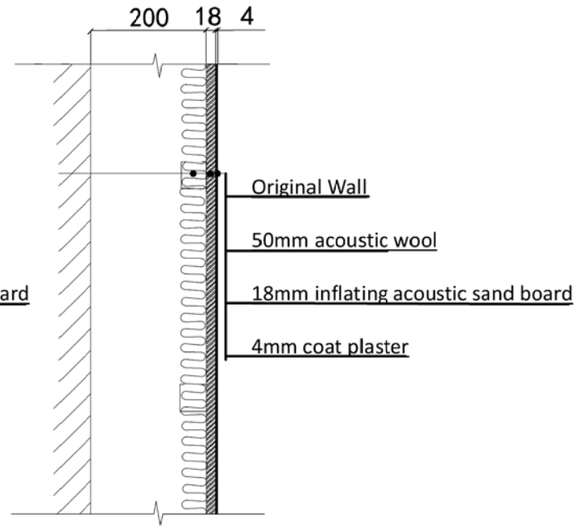


Inflating acoustic sand panels can be designed large-scale seamless surface. Can also be made into a corrugated, round, curved, cascade, caission, internal and external corner, hyperboloid and other shapes of decorative effect.

Inflating acoustic sand panels for theater, concert hall, performing art centers, recording studio and other professional acoustic spaces;

Also suitable for classrooms, conference rooms, museums, exhibition halls, offices, business hall, reception room, auction room, waiting room, courtroom, library, gallery, fitness center, shopping center, hotel lobby, ward and all of the spaces need sound absorption to reduce the reverberation. Also suitable for factory shop, Mechanical room, elevator shaft, underground tunnels and other places need noise reduction.





	Item	Frequency					
	NRC	125	250	500	1000	2000	4000
Structure 1	0.40	0.30	0.33	0.32	0.39	0.45	0.54
Structure 2	0.45	0.32	0.35	0.40	0.46	0.50	0.54

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Technique parameters

Physical parameters of inflating acoustical sand panels are shown in the chart below.

Item		Test Result	National requirements
Thickness	Substrate	18mm	Thickness
	Coat	3mm	
Surfaces density	Substrate	6.0kg/m^2	Surfaces density
	Coat	4.5kg/m^2	
Rupture strength		3.8MPa	⩾1.0 MPa
Compressive strength		12.4MPa	⩾10 MPa
Pound strength		5.2kJ/m^2	/
Nail-holding ability		>400N	/
Combustionclass		A2	A2
TVOCemission		<0.045 mg	⩽0.5 mg
Freezing and thawing cycle 25 times		>99%	⩾90%
Sound absorption coefficient		0.40～0.5	NRC⩾0.4

Item

Materials are divided into substrate and coat layer, the substrate is plate-like, through the frame fixed to the wall or ceiling. The coat layer is mortar-like, applied to the outer surface of the substrate by troweling or spraying, and dried to form a continuous, seamless, hard surface. Both the substrate and the coat layer are sandstone materials, rich in porosity (porosity up to 45% -50%).

The material is filled with pores, has a self-adaptability to the damp heat, and the sandstone finish is never cracked.

Almost all of the panels are natural inorganic, free of formaldehyde, benzene and other harmful emissions, laboratory testing is lower than 1/10 of the national standard. After installation,it is equal to or better than the highest level of latex paint or wallpaper, which means that you could stay in immediately.

The material has neutral PH value. Due to natural feature of sand, this material is notwater, acid and alkali soluble. Laboratory testing freeze-thaw cycle 25 times, simulated 25 years of extreme cold and heat cycle (a cycle: all immersion in water, frozen below 0 ℃, thawing, heating to high temperature), the material strength is not less than 99% of the original strength.

The sound absorption coefficient is optimized by graded particle size. The laboratory achieves different porosity through the ratio of sand particles with different sizes, and the optimum sand gradation with high sound absorption coefficient is finally determined by nearly a thousand experiments. The gradation is one of the core technologies of acoustical sand panels.

Construction Introduction

1 Arrival of materials

There are three types of materials:

1.1 Base board: plate, thickness 18mm, size 300X600, carton packaging;

1.2 Base material: For base plaster, including sand and slurry. Using paper bags and plastic transparent baskets for package separately. Paper bags identified as "base sand", transparent baskets identified as "base slurry." Base material is the original sand color;

1.3 Coat material: For coating, divided into troweling and spraying types, and cannot be mixed, including sand and slurry, Using paper bags and plastic transparent baskets for package separately. Paper bags identified as "troweling coat sand", For the trowel-type coat, or "spraying coat sand" for the spray-type coat; plastic bucket identified as "troweling coat slurry" for the trowel-type coat, or "spraying coat slurry" for the spray-type coat. Coat material is rich in color, including white, black, or other colors.

2 Base board installation

2.1 First step is installing the frame (steel frame or wood frame), frame spacing is set to 300mm.

2.2 Base board is first point glued with silicon glue to the frame (with compressed edge) for plaster. Then, the base board is fixed to the frame with screws, each board should use 6 nails. In order to prevent cracking, the base board should be drilled holes at the nail locations. When using wooden frame, air nail can be allied and each plate should be more than 12 nails.

2.3 Base board plastering. After the installation of a large area of the substrate, the frame connection or board patchwork may be uneven, which can be sanded and smoothed by sandpaper or the panel scrap.

2.4 Panel cutting: Marble saw and angle grinder can be used to cut and trim. The most convenient way is using wallpaper knife. Using the wallpaper knife to cut out a line as mark and cut off the mesh, and then the board can be easily broken by hand.

2.5 Note:

1) the front side of the substrate (the coated side) is the flat side of the panel, the back side (the keel side) is the side of edge compressed.

2) Inflated silica sand is brittle, so the panel has been added a layer of reinforced steel mesh to fully meet the strength requirements.

3) During the installation process, there may be a small amount of broken slag, which is normal. When base plaster and coat plaster are completed, there will be no dregs anymore.

3 Base plaster

3.1 Mix the base sand and base slurry of the base material. One bag of base sand matching one bag of base slurry. After mixing, stir it evenly.

3.2 Using a spatula for plastering on the wall or ceiling. Base plaster is the key to the final effect, which must be smooth. Scraper or other auxiliary tools can be used to improve the smoothness of the completion of the surface.

3.3 Under normal circumstances, the base plaster recommended scraping about 2-3mm thickness, and should also be placed into a layer of mesh fabric, to enhance the integrity and crack resistance. If in serious uneven substrate, may be appropriate to improve the scraping thickness, the thickest requirements shall not exceed 12mm.

3.4 conventional temperature, humidity, well-ventilated building on the ground, base plaster drying time is about 12-24h. In the basement and other poor ventilation, or high humidity conditions in the south, the drying time may be extended (there are examples of relative humidity of 90% or more in the basement, the drying time is 72-96h). Allows slight grinding after drying of the base plaster.

3.5 The sand particles gradation is a professional sound-absorbing formulation that forms a breathable and permeable sandstone layer with 130 million pores per square meter. Therefore, in order to prevent the plugging of the pores caused by sound absorption failure, the slurry shall not add any other additives, the completion of the surface shall not be applied to any non-product surface with any other paint.

3.6 very special circumstances, the slurry allowed to try to add a small amount of water on site to improve the different workers habits, the general amount of water for per bag should not exceed 2% of the sand weight.

3.7 Note: After the completion of the construction of base plaster, it is required to be surface smooth, edge straight to ensure the coat plaster or coat spray decorative effect.

4 Coat plaster

4.1 There are two kinds of coating, which are troweled smooth coat and spray textured coat.

4.2 The sand and slurry for troweling and spray coat are different, absolutely cannot be mixed.

4.3 Take a clean bucket, first poured into the slurry, and then the sand. Then stir with the mixer until forming into paste.

5 Trowel construction

5.1 Use a spatula to wipe the paste on the wall or base plaster. The effect of the coat layer is the final effect of the construction, which should be treated with caution, and strive to perfect.

5.2 recommended troweling more than twice, each thickness is about 1mm, the total coat plaster thickness should be controlled at 2-3mm.

5.3 conventional temperature, humidity, well-ventilated building on the ground, base plaster drying time is about 12-24h. In the basement and other poor ventilation, or high humidity conditions in the south, the drying time may be extended (there are examples of relative humidity of 90% or more in the basement, the drying time is 72-96h). Allows slight grinding after drying of the base plaster.

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5.6 Note: After the completion of the construction of base plaster, it is required to be surface smooth, edge straight to ensure the coat plaster or coat spray decorative effect.

6 Spray construction

6.1 Spray the sprayed paste onto the wall or base plaster using a conventional paint spray gun. The effect of the coat layer is the final effect of the construction, which should be treated with caution, and strive to perfect.

6.2 recommended troweling more than twice, each thickness is about 1mm, the total coat plaster thickness should be controlled at 2-3mm.

6.3 conventional temperature, humidity, well-ventilated building on the ground, base plaster drying time is about 12-24h. In the basement and other poor ventilation, or high humidity conditions in the south, the drying time may be extended (there are examples of relative humidity of 90% or more in the basement, the drying time is 72-96h). Allows slight grinding after drying of the base plaster.

6.4 The sand particles gradation is a professional sound-absorbing formulation that forms a breathable and permeable sandstone layer with 130 million pores per square meter. Therefore, in order to prevent the plugging of the pores caused by sound absorption failure, the slurry shall not add any other additives, the completion of the surface shall not be applied to any non-product surface with any other paint.

6.5 very special circumstances, the slurry allowed to try to add a small amount of water on site to improve the different worker's habits, the general amount of water for per bag should not exceed 2% of the sand weight.

6.6 Note: After the completion of the construction of base plaster, it is required to be surface smooth, edge straight to ensure the coat plaster or coat spray decorative effect.

7 Tools, technology, maintenance and clean

7.1 Construction tools: wallpaper knife, hand drill, mixer, trowel, scraper and so on. If spray: air pump (air pressure 0.8Mpa, outlet> 1.0m3 / min) + paint gun

7.2 frame leveling: frame must be leveling, otherwise the board cannot be flat, and will cause the extraneous plaster or spray.

7.3 installation board: In order to facilitate the board flat, while strengthening the installation strength, should be point glued on the frame with silicone adhesive. Can be installed by screw or air nail.

1) Screw mounting. Applicable to steel frame, wooden frame and so on. Board should be punched holes first. Acoustic sand panels are made of silicon-based polymerization, which makes it similar to the brittle of glass (also silica).If screws are direct tapped, the board may burst. Each panel should be drilled with at least six M2.5 screws.

2) Air nail installation. Applicable to wood frame, can be installed directly. Each air nail should be at least 20-30mm long.

3) board installation: should keep the flatness of the board, if found local deformation protrusion, sandpaper or angle grinder can be used.

7.4 Base plaster: the base material mixed well. In the bucket first into the base layer of pulp, then, into the base material. Use the mixer to stir evenly to form the paste. Seam treating first. Then apply the layer of mesh fabric, while troweling sand. The thickness troweled base plaster should be controlled under 2-3mm. In the process of plastering, 120 mesh sandpaper or panel scrap can be used to polish.

7.5 spray layer: Using the spray sand and slurry, and then stir as 7.4 recommended spraying more than twice, each thickness is about 1mm, the total coat plaster thickness should be controlled at 2-3mm.The spray coat Should completely cover the base plaster.

7.6 troweling coat: Using troweling sand and slurry, and then stir as 7.4. recommended troweling more than twice, each thickness is about 1mm, the total coat plaster thickness should be controlled at 2-3mm.Typical drying time is 12-24 hours. High level of construction workers can be smooth to achieve beautiful requirements. In the process of plastering, 120 mesh sandpaper or panel scrap can be used to polish.

7.7 Note:

1) The screws must be punched.

2) One bag of sand matching one bag of slurry, no additive slurry or water.

3) Slurry first poured, then sand poured in to bucket.

4) Scraper must be used to ensure the flatness of the base plaster.

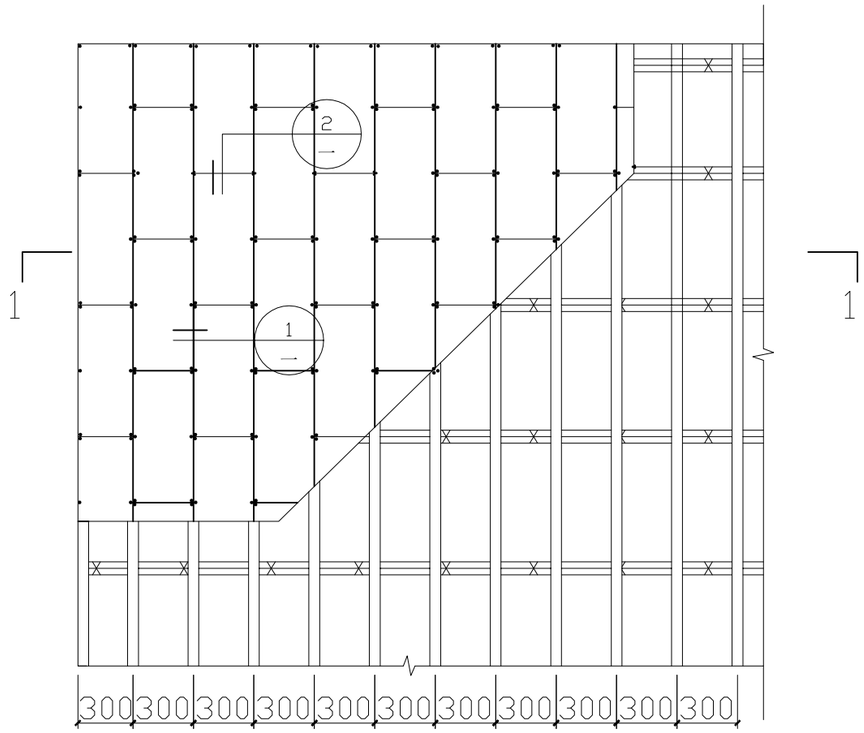
7.8 Maintenance and cleaning

1) collision avoidance: try to avoid sharp objects impact. Once stroked, additional plaster or spray is necessary.

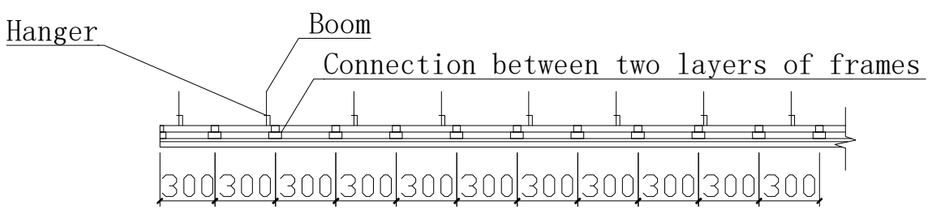
2) dust avoidance: try to avoid indoor dust to prevent surface pores blocked, aesthetic downgraded. After construction, pay attention to finished coat protection.

3) anti-stains: should prevent oil, water pollution into the surface pores, affecting the surface beautiful. In particular, prevent handprint of the electrical switch box installation (should require electricians to use white gloves), and avoid splashing of polluted water when clean the skirting.

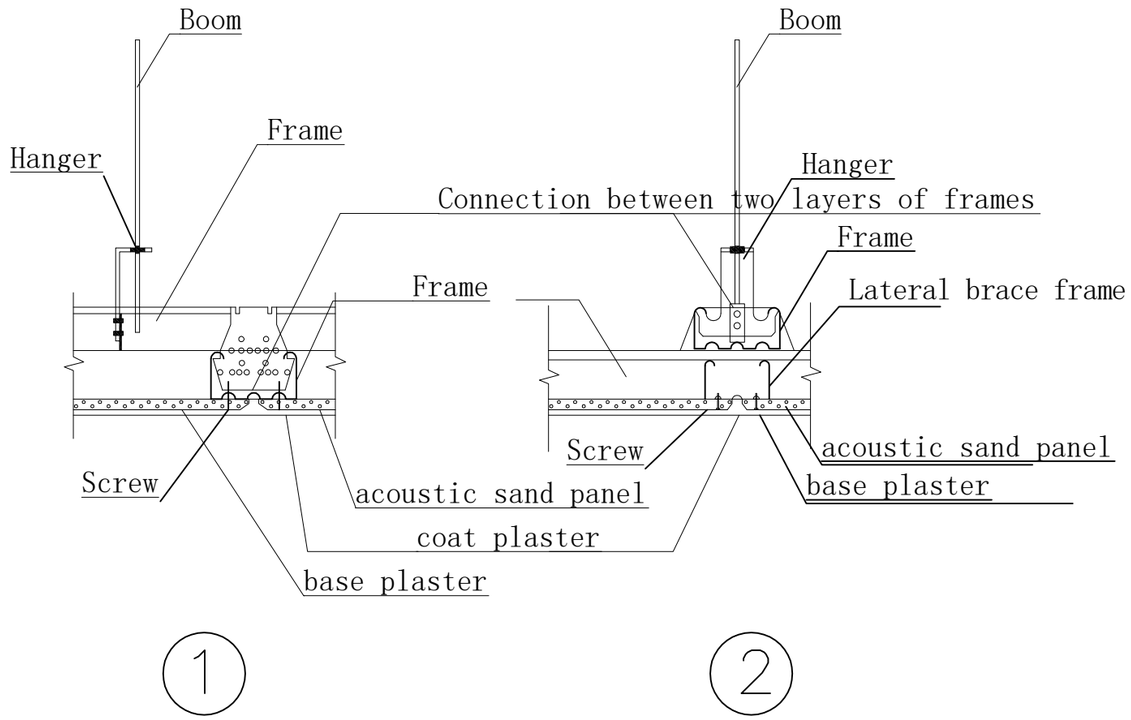
4) cleaning: for dust, air pump can blow dust. Slightly stains, can be gently wiped with a clean wet cloth. Note: no heavy wiping to prevent surface scratch which may degrade aesthetics.



double frame Up view



1—1 Section



Note: Double frame system is for suspended ceilings larger than 50 ㎡, wider than 4m and deeper than 450mm whether it is capable to bear human body weight or not.

Each acoustical sand panel is point glued and then fixed by 6 screws.

Frame details for ceiling						No.	PHSYB
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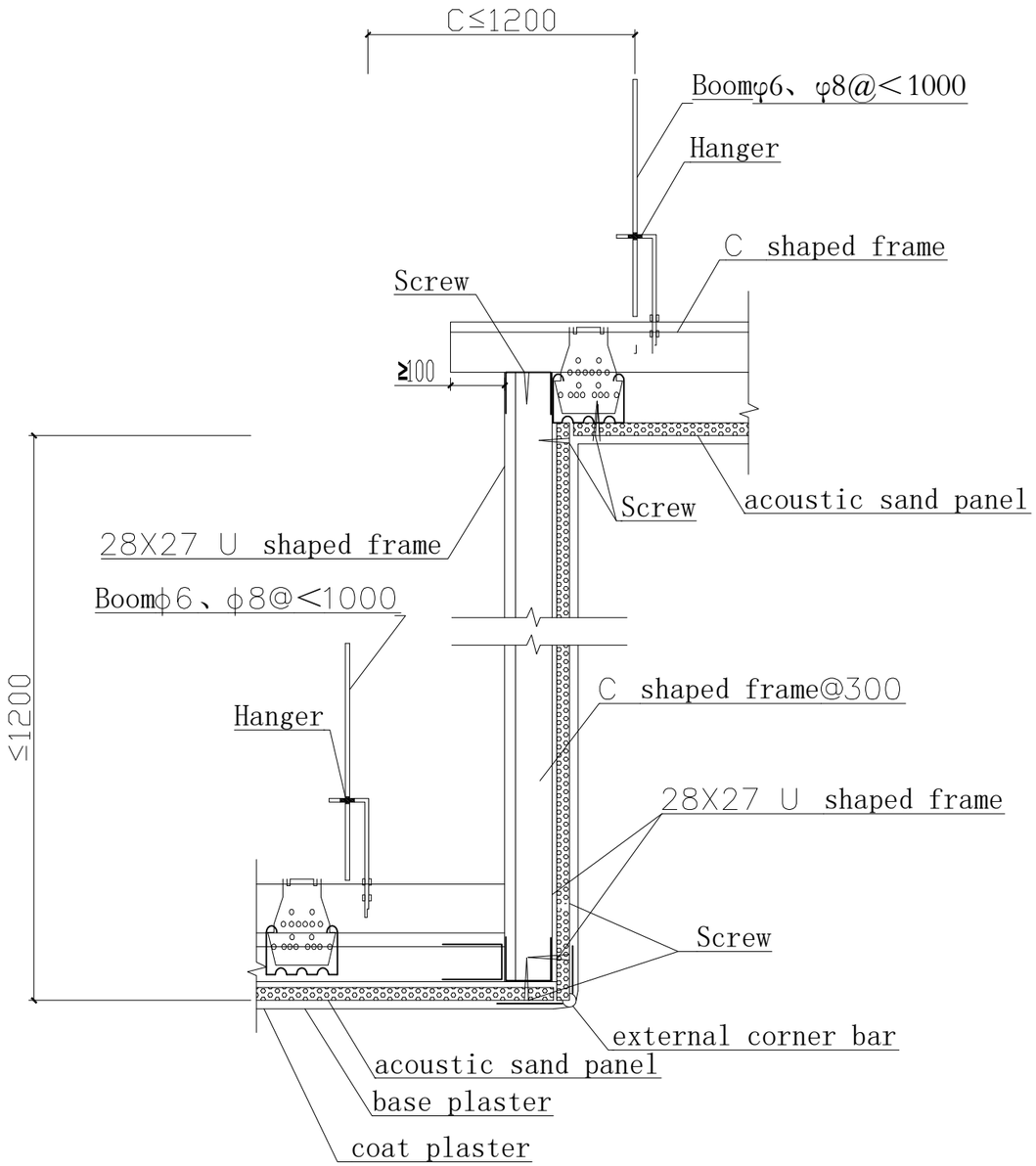
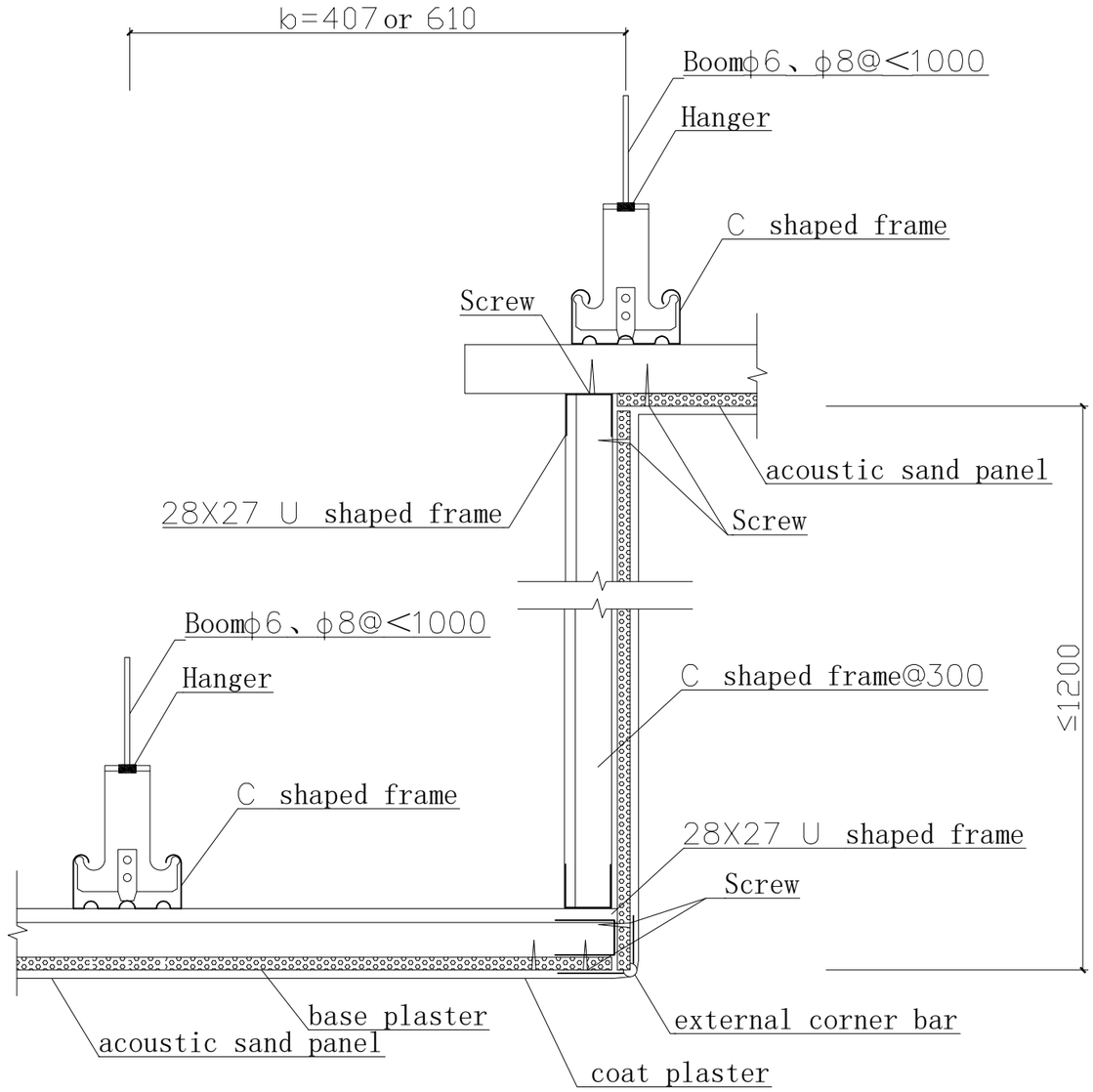


① double frame ceiling
Cascade frame details



② double frame ceiling
Cascade frame details

double frame ceiling Cascade frame details						No.	PHSYB
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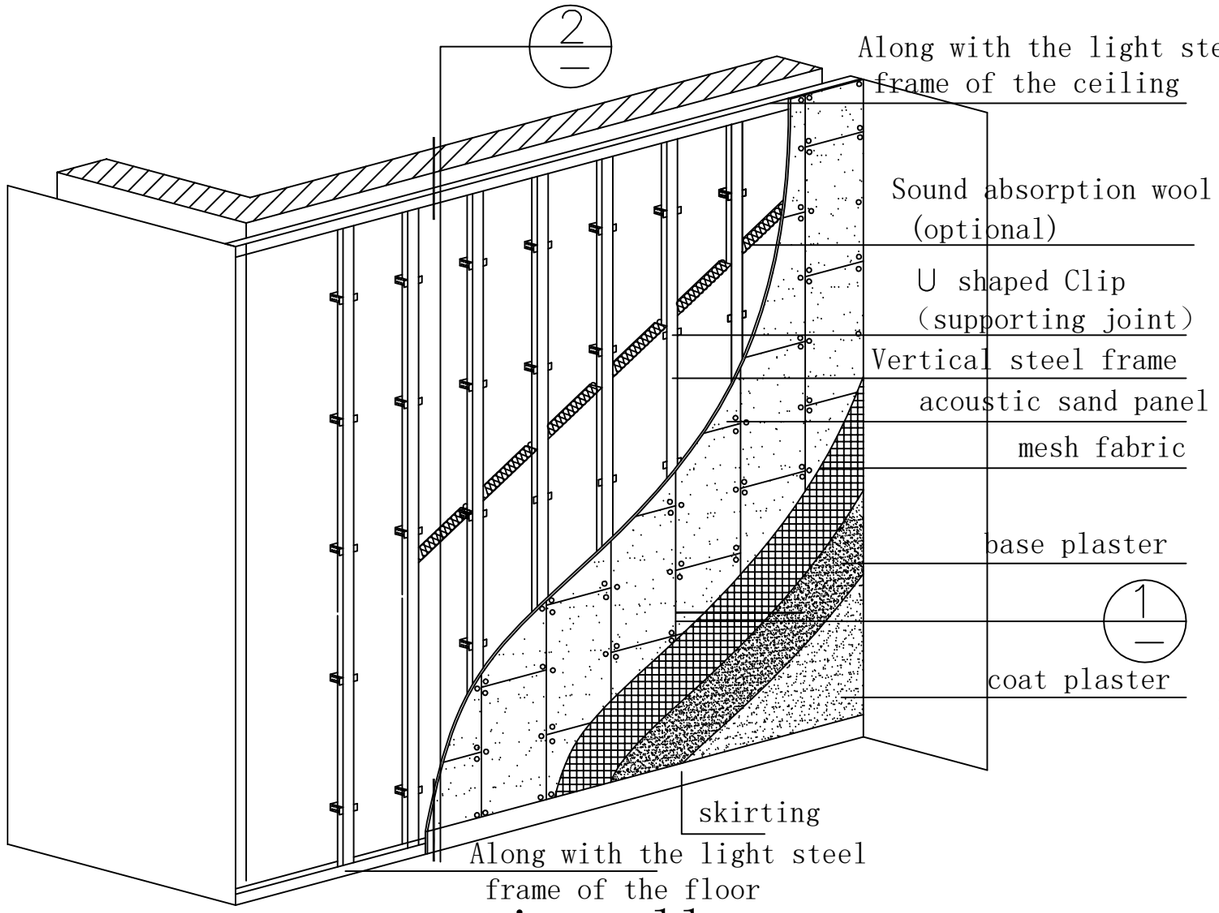
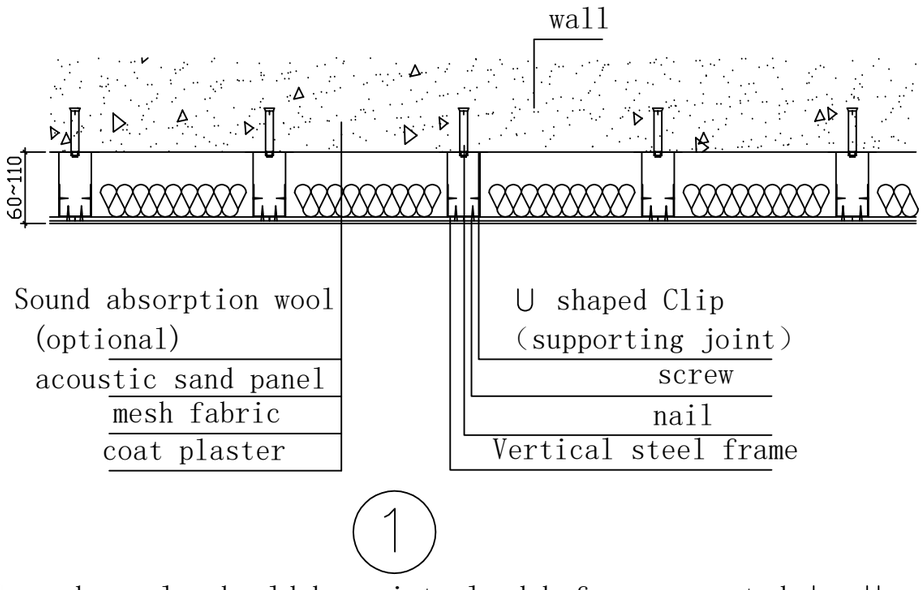


acoustic wall



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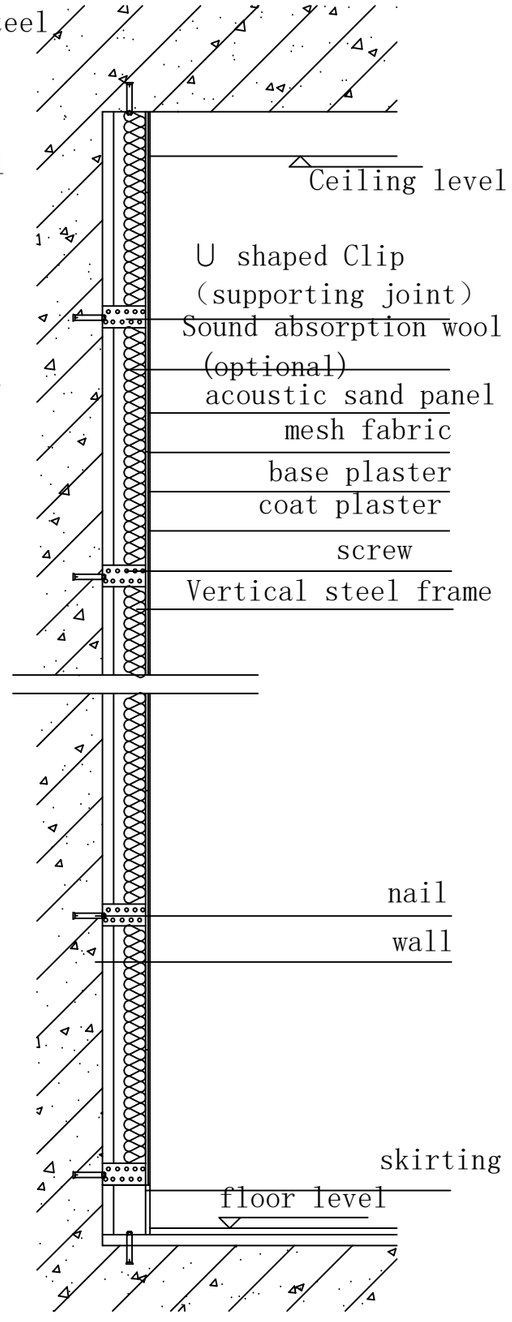

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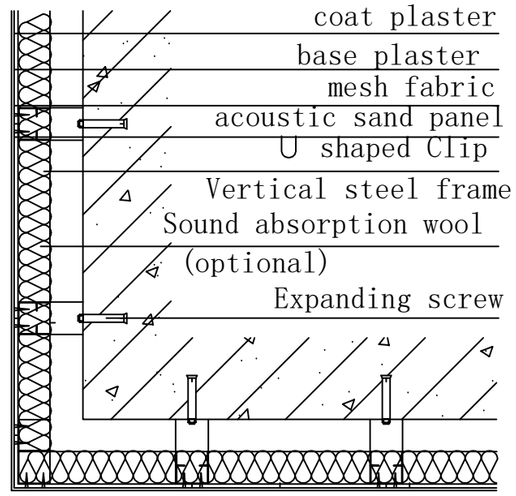
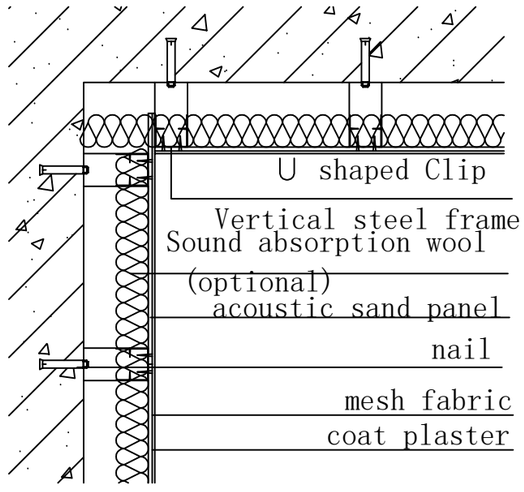


3 External corner



4 Internal corner

NOTE:
1、Acoustical sand panels should be point glued before connected to the frame
2、Each acoustical sand panel is point glued and then fixed by 6 self-threading screws

light steel frame acoustic wall						No.	PHSYB
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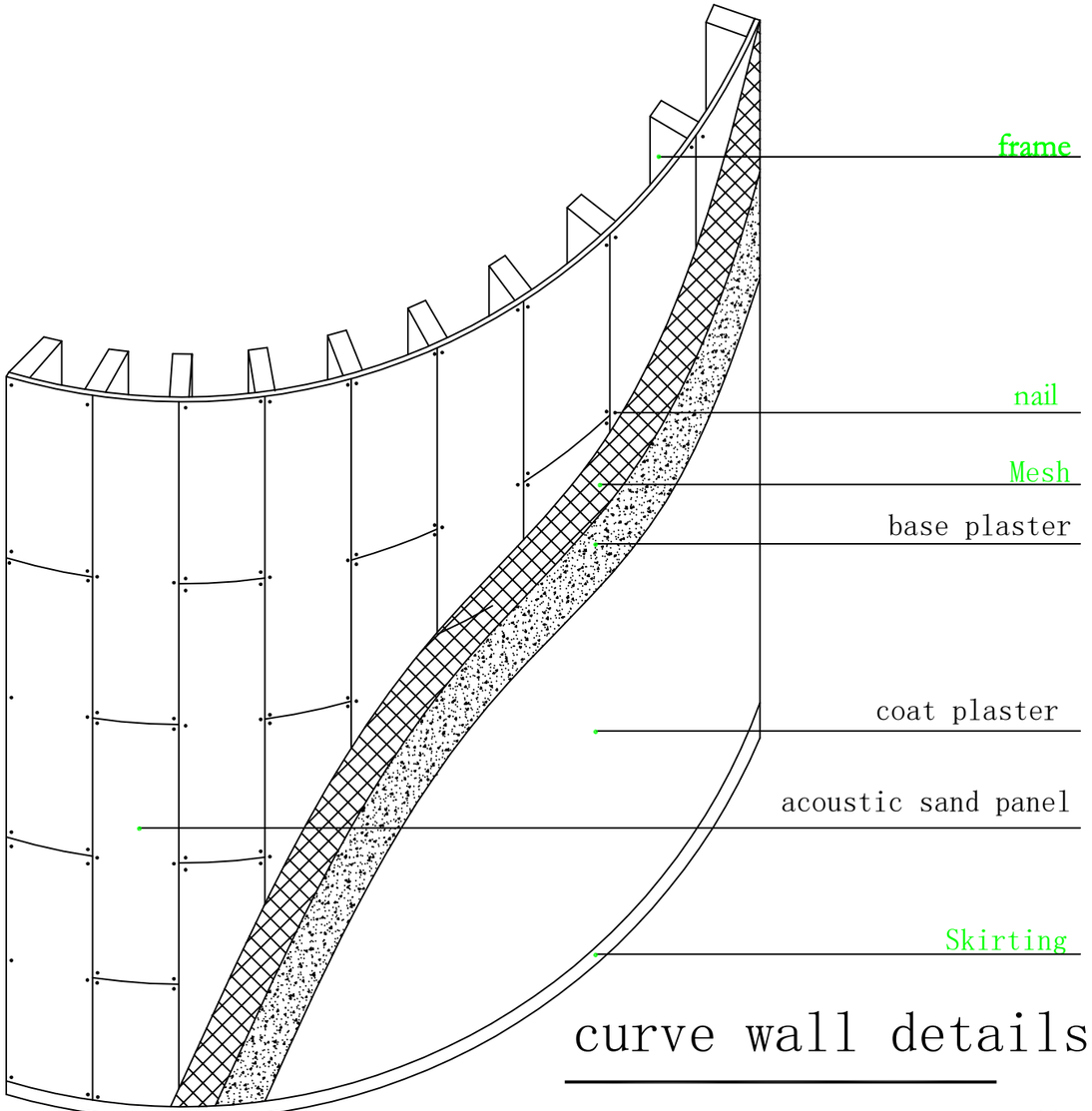
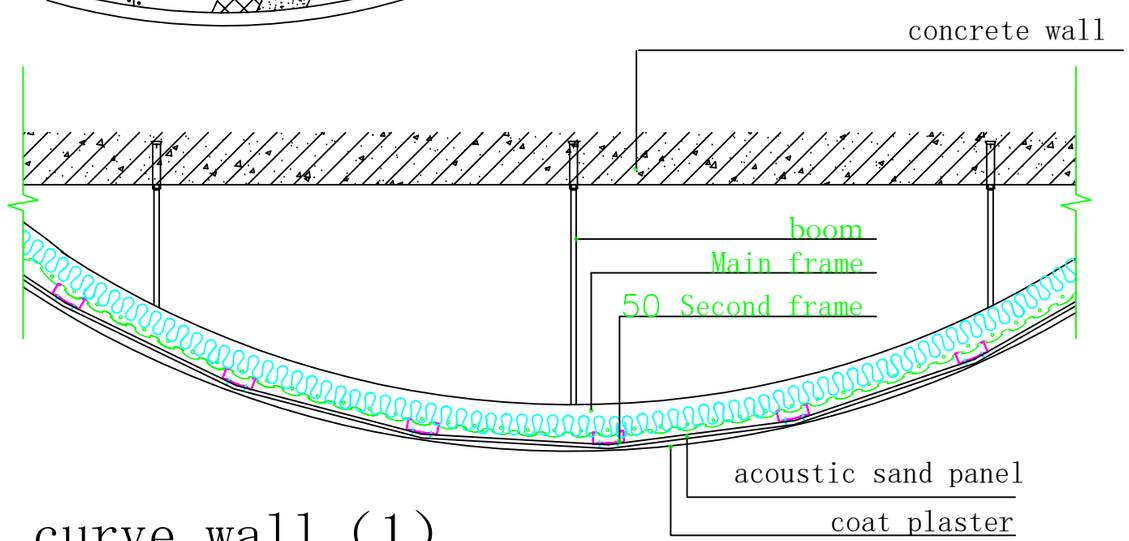
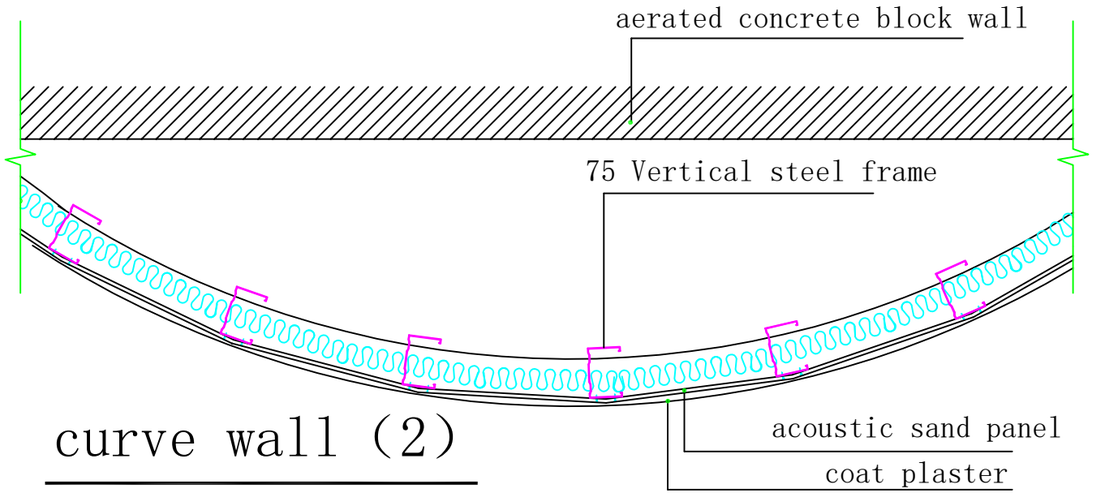


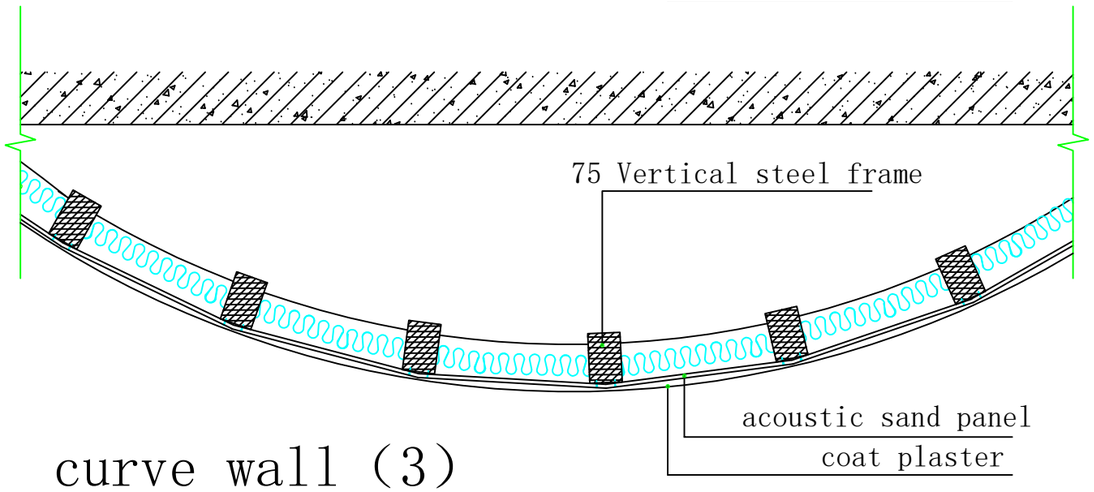
curve wall details



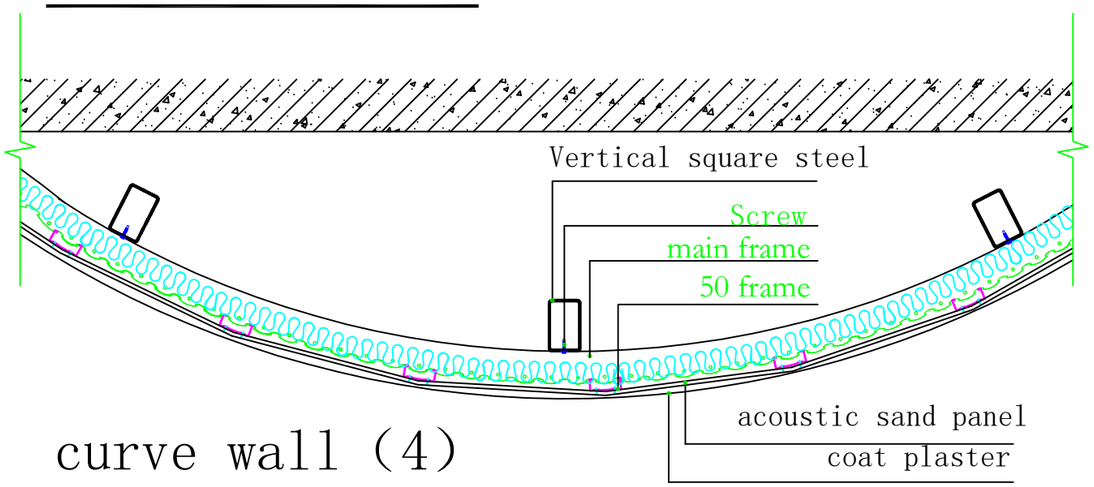
curve wall (1)



curve wall (2)



curve wall (3)



curve wall (4)

acoustic curve wall						No.	PHSYB
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