LIMITED LIABILITY COMPANY
ACOUSTIC GROUP

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July 17, 2023

Typical Method Statement for Design of 50/75/100 mm (AG.W-105/AG.W-106/AG.W-107) Soundproofing Framed Partition on double (independent) frame

TK-002-2023

Revision 2

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TK-002-2023

Typical Method Statement for Design of 50/75/100 mm (AG.W-105/AG.W-106/AG.W-107) Soundproofing Framed Partition on double (independent) frame

Letter	Weight	Scale

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Standard Method Statement TK-002-2023 was developed as a supplement to Engineering Solutions Album Soundproofing Structures of ASP series.

1. General Design Specifications

1.1. The structure of the 50/75/100 mm (AG.W-105/AG.W-106/AG.W-107) soundproofing framed partition on double (independent) frame is a multi-layered structure on a double (independent) thin-wall steel frame made of galvanized PS 50/50; PS 75/50; PS 100/50 type steel sections (studs) and PN 50/40; PN 75/40; PN 100/40 type steel sections (channels). The structure is sheathed on both sides with a single layer of Gyproc AKU-line/AKU-line PRO* gypsum boards, 12.5 mm thick, and Soundline-dB acoustic triplex, 16.5 mm thick. The air space of the partition is filled with special Shumanet-BM/Shumanet-ECO/Shumanet-SK Neo sound-absorbing plates.

1.2. The structure of the 50/75/100 mm soundproofing framed partition on double (independent) frame is used in rooms with dry, normal and moisture conditions specified in Table 2 of this Method Statement according to SP 50.13330.2012.

* For application in moist rooms, Gyproc AKU-line PRO gypsum board should be used as a finish layer.

Figure 1. Image of 50/75/100 mm soundproofing framed partition on double (independent) frame.

1.3. The features of the structure include:

- Fire specifications of special sound-absorbing plates – NG
- fire specifications of Soundline - dB – G1, V1, D1, T1 acoustic triplex boards
- fire specifications of Gyproc AKU-line/AKU-line PRO gypsum boards – G2, V2, D2, T2/G1, V1, D1, T1
- Fire rating of a structure – EI 120.

Table 1. Design features

Structure name	Structure code	Thickness, mm	Air-borne sound insulation index ΔRw, dB*	Maximum structure height, m
Double (independent) frame partition 2x50 mm	AG.W-105	168	67	4.5
Double (independent) frame partition 2x75 mm	AG.W-106	218	72	6
Double (independent) frame partition 2x100 mm	AG.W-107	268	75	6.5
* - Soundproofing measurements are made for the case when all tested structures are supported by a super-massive base (>1000 kg/m2), which is also equivalent to resting on split soundproofing floor structures with ΔLnw ≥ 32 dB				

Table 2. Indoor conditions

Regimes	Room air humidity, %, at temperature		
	Up to 12°C	12°C to 24°C	Over 24°C
Dry	Up to 60	Up to 50	Up to 40
Normal	Over 60 to 75	Over 50 to 60	Over 40 to 50
Humid	Over 75	Over 60 to 75	Over 50 to 60
Wet	-	Over 75	Over 60

2. Scope of Application

2.1. This Method Statement applies to installation of 50/75/100 mm (AG.W-105/AG.W-106/AG.W-107) soundproofing frame partition structure on double (independent) frame used for construction and renovation of residential, public, industrial buildings and facilities. It is characterized by high air-borne sound insulation values and radiated low solid-borne sound, and complies with the requirements of SP 51.13330.2011 - updated SNiP -23-03-2003 Noise Protection.

2.2. The scope of work covered by the Method Statement includes:

- construction of a frame using steel section PS 50/50; PS 75/50; PS 100/50 (studs) and PN 50/40; PN 75/40; PN 100/40 (channels).
- filling the framed space with special Shumanet-BM/Shumanet-ECO/Shumanet-SK Neo sound-absorbing plates
- sheathing with Soundline-dB acoustic triplex boards (inner layer)
- finish cladding with Gyproc AKU-line/AKU-line PRO gypsum boards.

2.3. Construction and finish work using structural elements of the 50/75/100 mm soundproofing framed partition on double (independent) frame shall be performed according to the installation method for dry and normal moisture conditions and temperatures not less than +10°C.

3. Transportation and Storage

3.1. Steel sections shall be transported by all modes of transport in covered vehicles in accordance with the rules for the transportation of goods applicable to the particular mode of transportation.

3.2. During transportation, handling and storage of the steel sections, their protection from damage, contamination and moisture must be ensured. During material handling operations, safety rules established by GOST 12.3.009-76 shall be observed.

3.3. Steel sections shall be stored in closed dry rooms in conditions that prevent their exposure to rain and groundwater. Steel sections can be stored in stacks with a maximum height of 2 m.

3.4. Soundline-dB acoustic triplex shall be transported by all means of transport in covered vehicles in accordance with the rules for the transportation of goods, in force for this type of transport. Shipping pallets with panels should be placed in a single tier (42 pcs./pallet).

3.5. During transportation in open railroad or road vehicles, the packs shall be protected against moisture.

3.6. Soundline-dB acoustic triplex shall be stored in rooms with a dry and normal humidity, in a horizontal position on pallets with a maximum height of three tiers (1 tier - 42 pcs./pallet).

3.7. During handling, transportation, storage and other operations, no impacts on the boards are allowed.

3.8. During transportation, handling and storage of Vibrostack-M/ULTRACOUSTIC-LENTA F100 vibration insulating tape, protection from impacts, damage, contamination and moisture shall be ensured. During handling operations, safety rules established by GOST 12.3.009- 76 shall be observed.

3.9. Vibrostack-M/ULTRACOUSTIC-LENTA F100 vibration insulating tape shall be transported in vertical position with a maximum height of 15 (fifteen) rows.

3.10. Vibroseal sealant shall be transported by all modes of transport in covered vehicles in accordance with the rules for the transportation of goods applicable to this mode of transport.

3.11. Free movement of the Vibroseal sealant during transportation shall be prevented.

3.12. During transportation, handling and storage of the Vibroseal sealant, protection from damage, contamination and moisture shall be ensured. The storage and transportation temperature should be within the range of +5°C to +25°C. During handling operations, the safety rules established by GOST 12.3.009-76 shall be observed.

3.13. Vibroseal sealant shall be stored in dry rooms in conditions that prevent its exposure to rain and groundwater. Vibroseal sealant can be stored in closed carton boxes, in stacks no more than 2 m high.

3.14. Shumanet-BM, Shumanet-ECO and Shumanet-SK Neo plates shall be transported by all modes of transport in covered vehicles in accordance with the rules for the transportation of goods applicable to this mode of transport.

3.15. During transportation and storage, Shumanet-BM, Shumanet-ECO и Shumanet-SK Neo plates shall be laid flat. The stacking height shall not exceed 2 m.

3.16. Free movement of Shumanet-BM, Shumanet-ECO и Shumanet-SK Neo plates during transportation shall be prevented.

3.17. During transportation, handling and storage of Shumanet-BM, Shumanet-ECO и Shumanet-SK Neo plates, protection from damage, contamination and moisture shall be ensured. During material handling operations, safety rules established by GOST 12.3.009-76 shall be

observed.

3.18. Shumanet-BM, Shumanet-ECO и Shumanet-SK Neo plates shall be stored in packaging in dry rooms or under shelter away protected from rain and groundwater. During storage, Shumanet-BM, Shumanet-ECO и Shumanet-SK Neo plates should be laid on wooden pallets, boards or other padding materials without sagging.

3.19. Gyproc AKU-line/AKU-line PRO boards shall be transported by all means of transport in covered vehicles in accordance with the rules for the transportation of goods in force for this type of transport. Pallets with panels shall be transported in a single tier (48 pcs./pallet).

3.20. During transportation in open railroad or road vehicles, the packs shall be protected against moisture.

3.21. Gyproc AKU-line/AKU-line PRO boards shall be stored in rooms with a dry and normal humidity, in a horizontal position on pallets with a maximum height of three tiers (1 tier - 48 pcs./pallet).

3.22. During handling, transportation, storage and other operations, no impacts on the boards are allowed.

4. Structural solutions for 50/75/100 mm double independent frame soundproofing partitions

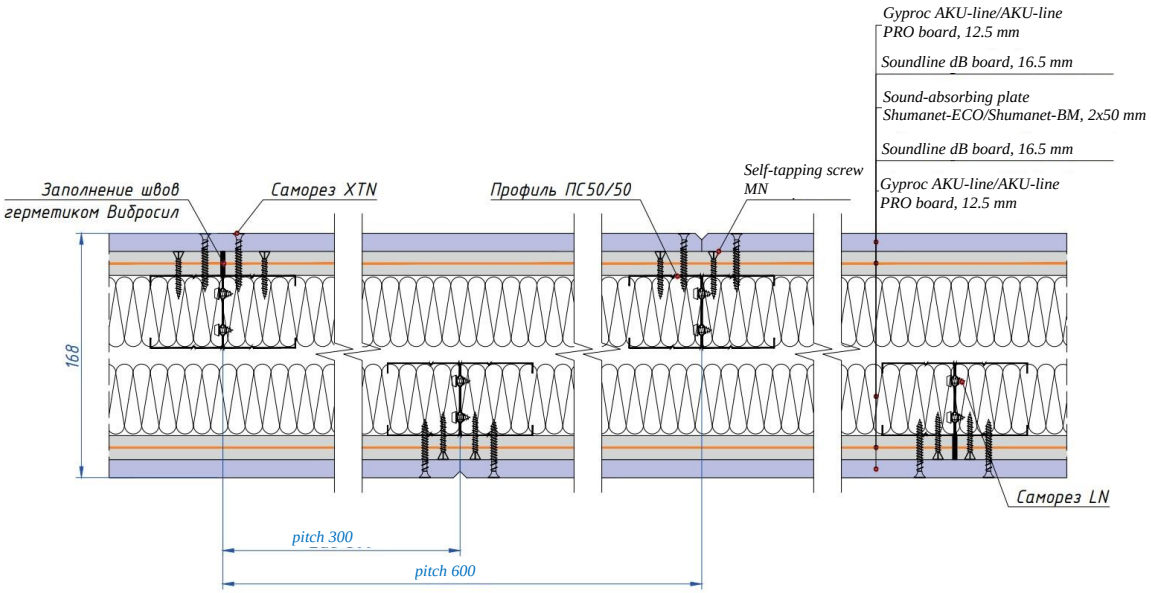

Figure 2. Structure of soundproofing framed partition on double (independent) frame made of PS 50/50 (AG.W-105) double steel section.

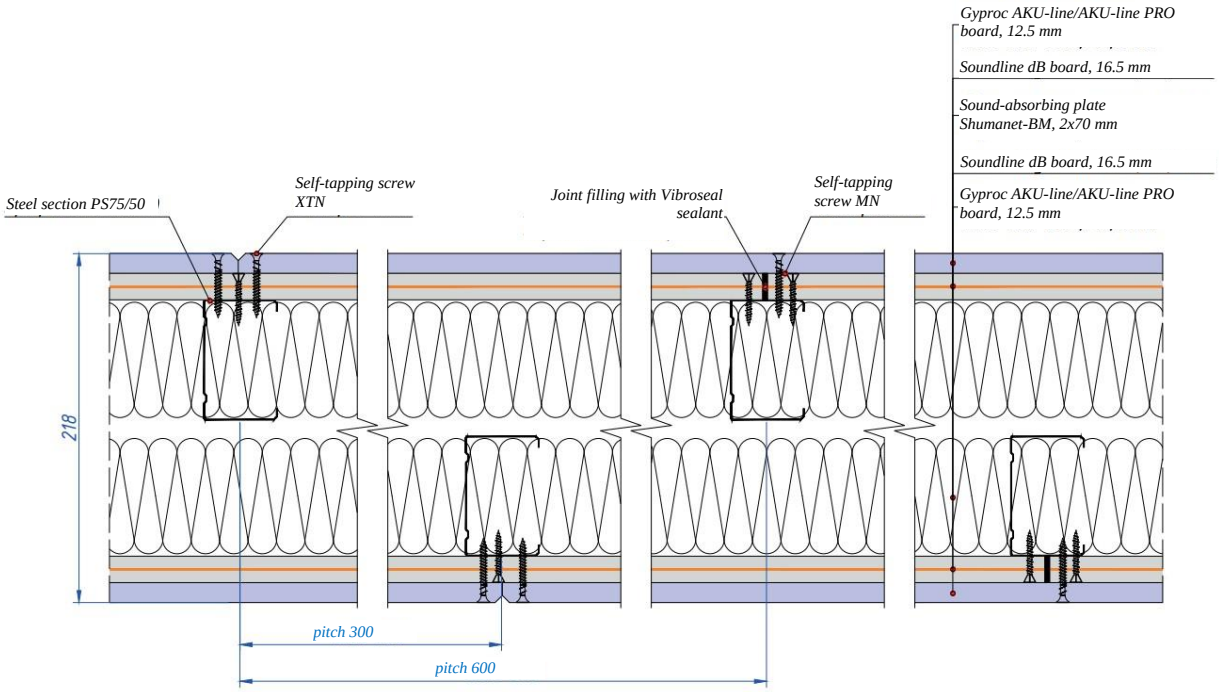

Figure 3. Soundproofing frame partition on double (independent) frame made of PS 75/50 (AG.W-106) steel section.

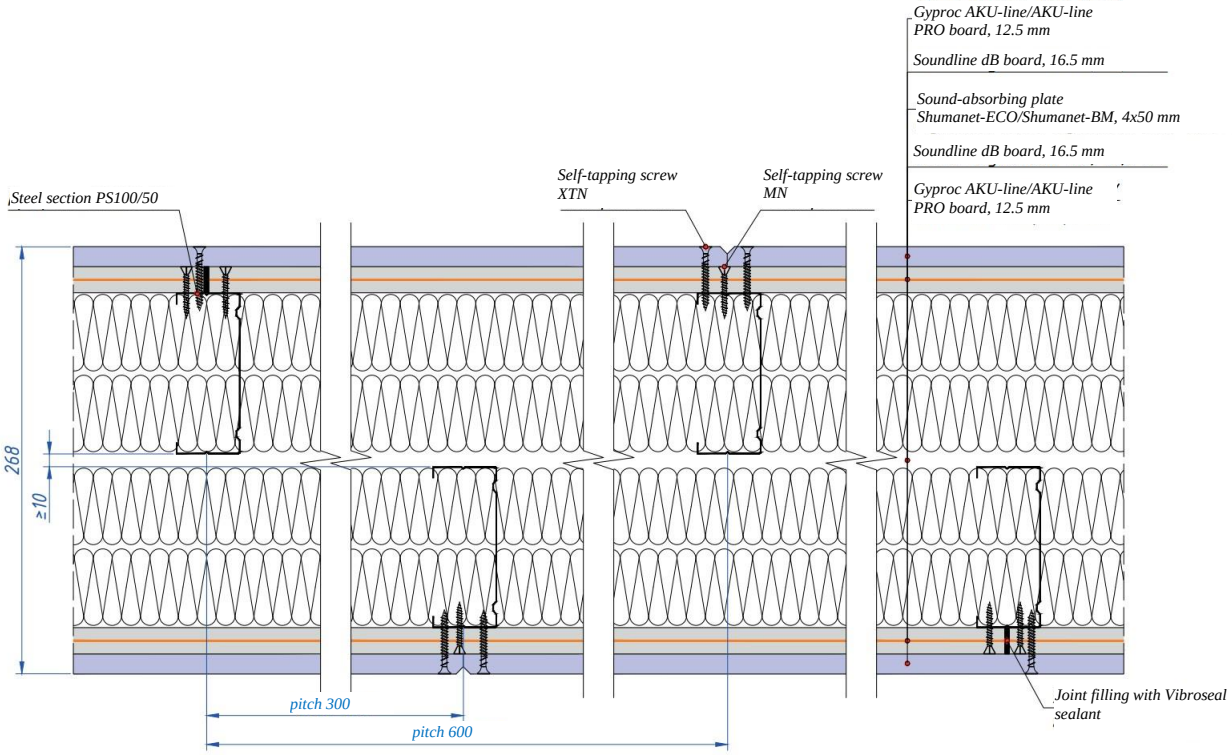

Figure 4. Structure of soundproofing framed partition on double (independent) frame made of PS 100/50 (AG.W-107) steel section.

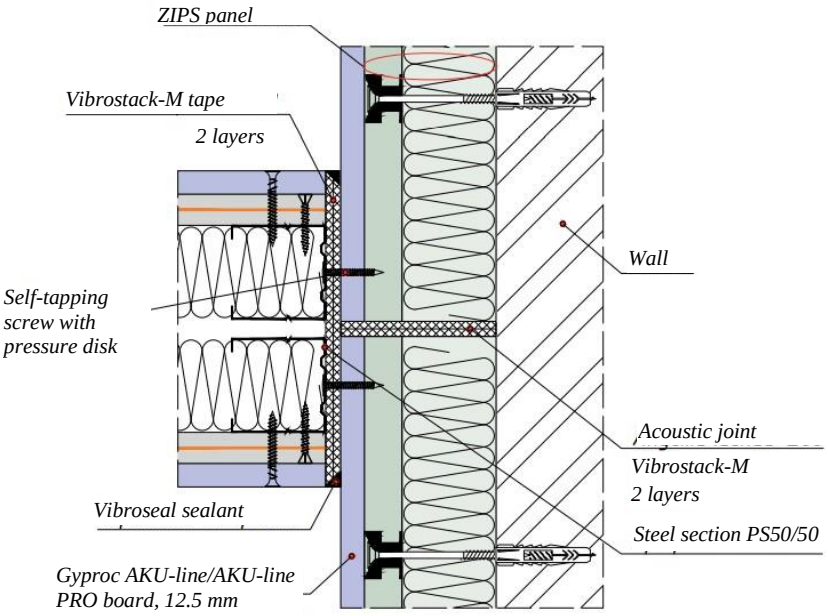

Figure 5. Connection of double-frame soundproofing partition to ZIPS panel system.

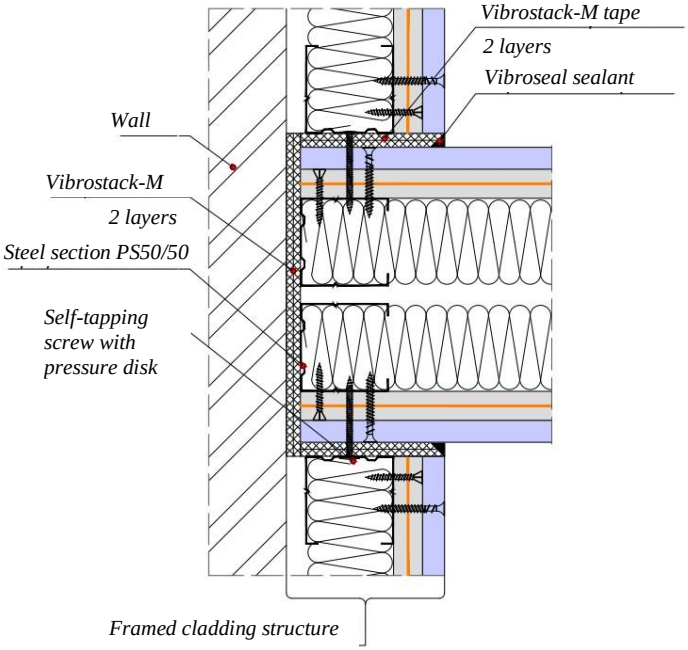

Figure 6. Connection of soundproofing cladding to double-frame soundproofing partition.

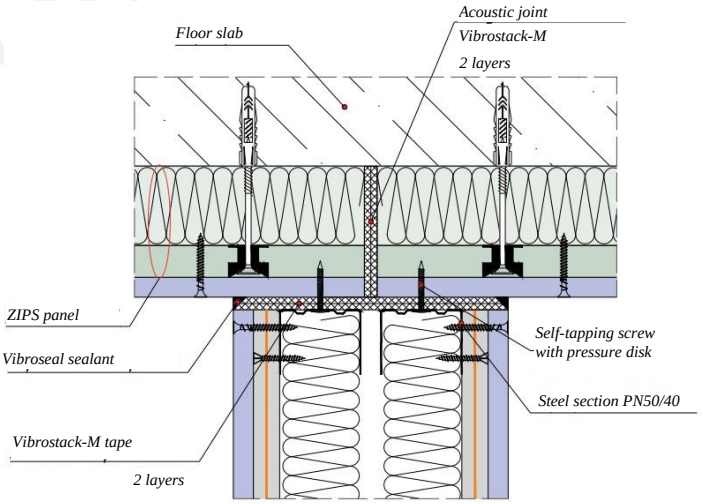

Figure 7. Connection of double-frame soundproofing partition to ZIPS panel system on a floor slab.

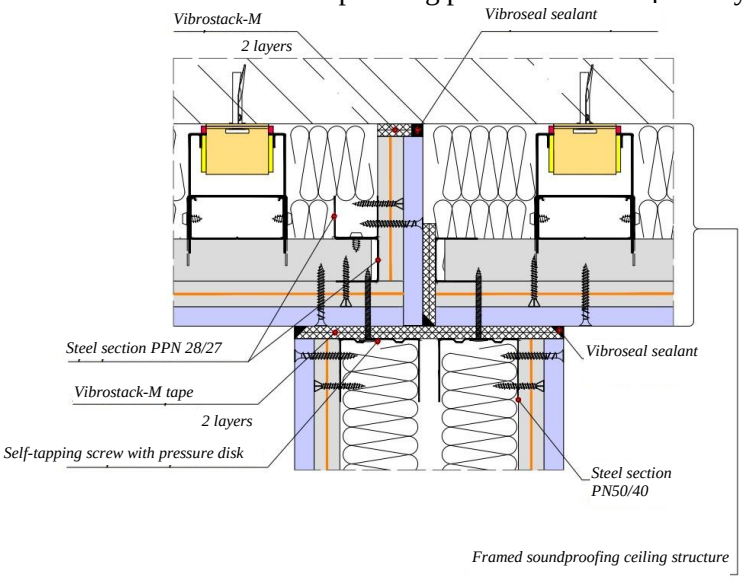

Figure 8. Connection of double-frame soundproofing partition to framed soundproofing ceiling.

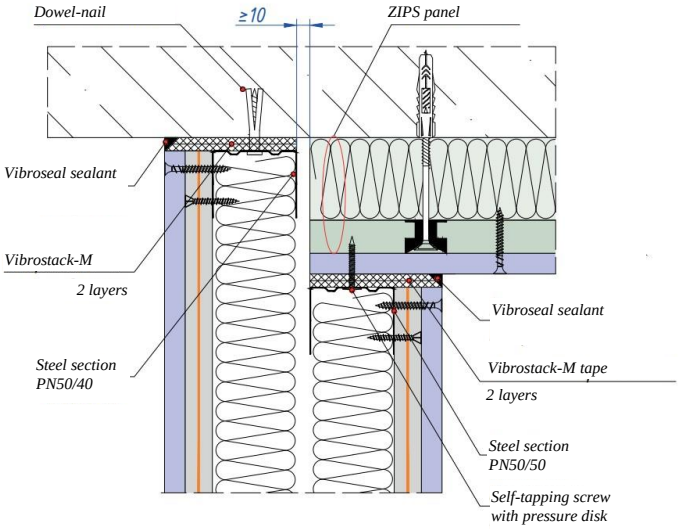

Figure 9. Connection of double-frame soundproofing partition to ZIPS panel system on a floor slab on one side of the partition.

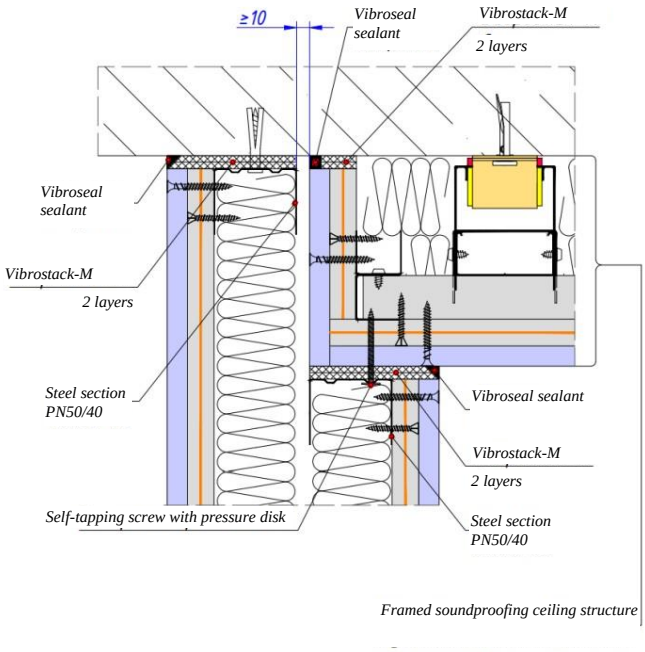

Figure 10. Connection of double-frame soundproofing partition to framed soundproofing ceiling on one side of the partition.

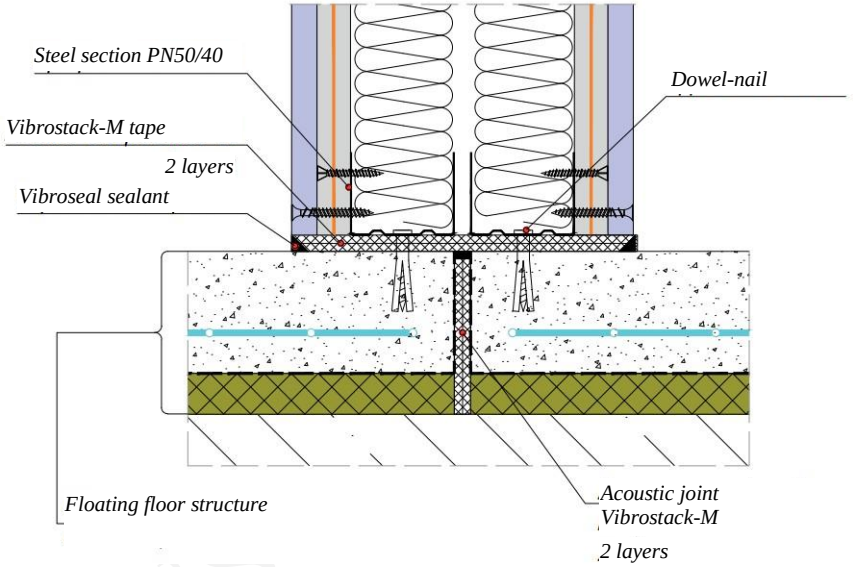

Figure 11. Connection of double-frame soundproofing partition to floating floor structure.

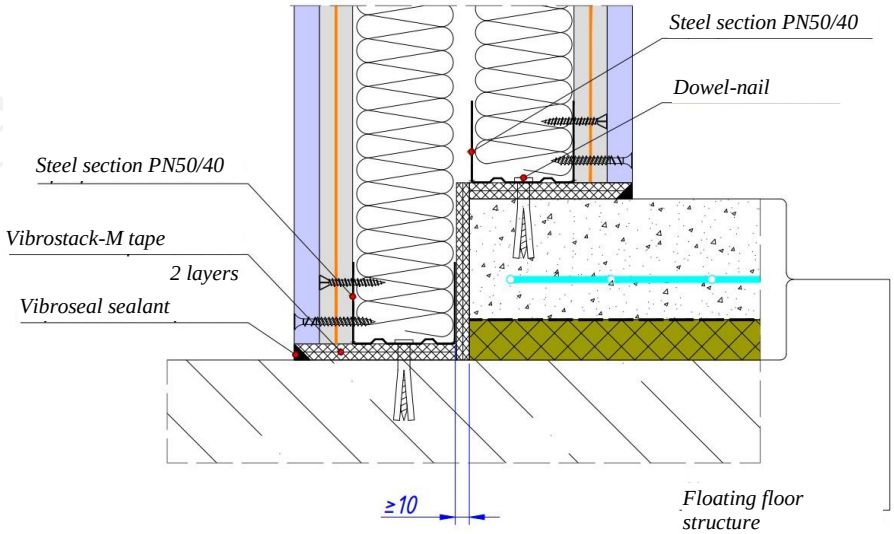

Figure 12. Connection of double-frame soundproofing partition to floating floor structure on one side of the partition.

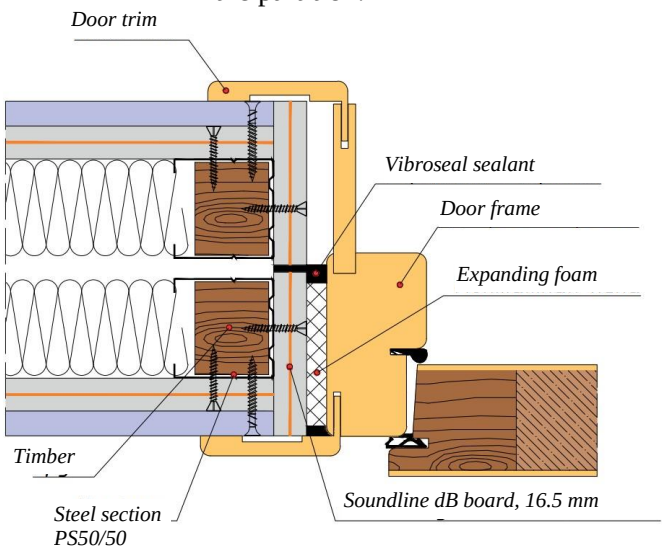

Figure 13. Door opening in double-frame soundproofing partition.

5. Installation Procedure

5.1. Apply marking of the partition according to the design. Mark the location of the partition on the floor using a chalked string or laser axis marker, and then transfer the partition location marking to the ceiling using an plummet or laser level. It is recommended to mark the locations of studs, door openings, thickness and type of gypsum boards on the floor.

5.2. The soundproofing partition frame elements shall adjoin the enclosures through two layers of Vibrostack-M vibration insulating tape or through one layer of ULTRACOUSTIC-LENTA F100. The tape shall be attached and fixed on the wall, ceiling and floor with Vibroseal sealant. Vibrostack-M tape should be fixed to itself using Vibroseal sealant as well. Vibrostack-M/ULTRACOUSTIC-LENTA F100 vibration insulating tape shall always be placed underneath the ends of gypsum fiber boards and gypsum boards used in the design.

Figure 14. Applying Vibroseal sealant on Vibrostack-M vibration insulating tape.

5.3. According to the marking, install and fix the channels to the floor and ceiling by dowels at a maximum spacing of 1000 mm separately for each frame. Minimum distance between the guides of two independent frames is 10 mm.

5.4. Using a plummet, Install studs into the channels with the required pitch, but not more than 600 mm (300, 400 mm). Steel sections are connected with each other using a crimper or self-tapping screws. Studs of the first frame are installed with a pitch of 300 mm (200, 150 mm) relative to the studs of the second frame (Figure 15). When cladding partitions with ceramic tiles, the pitch of frame posts shall not be more than 400 mm. Back-to-back stud sections (PS 50/50) connected by 3.5x11 mm self-drilling screws (LN self-tapping screws or equivalents) are installed in 2 pcs. with a pitch of 300 mm in a 50 mm independent double frame soundproofing partition (Figure 16). The height of a stud in a room shall be 10 mm less than the height between the upper and lower channels in normal conditions, and 20 mm less for seismic conditions.

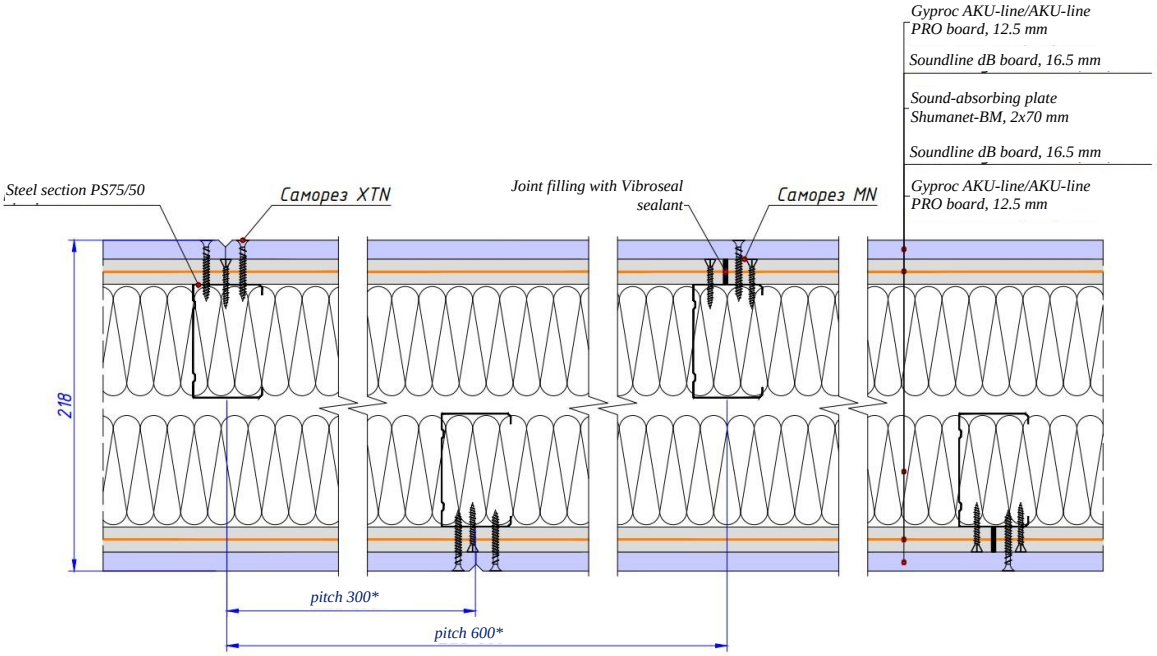

Figure 15. Location of studs in double independent frame soundproofing partition structure.

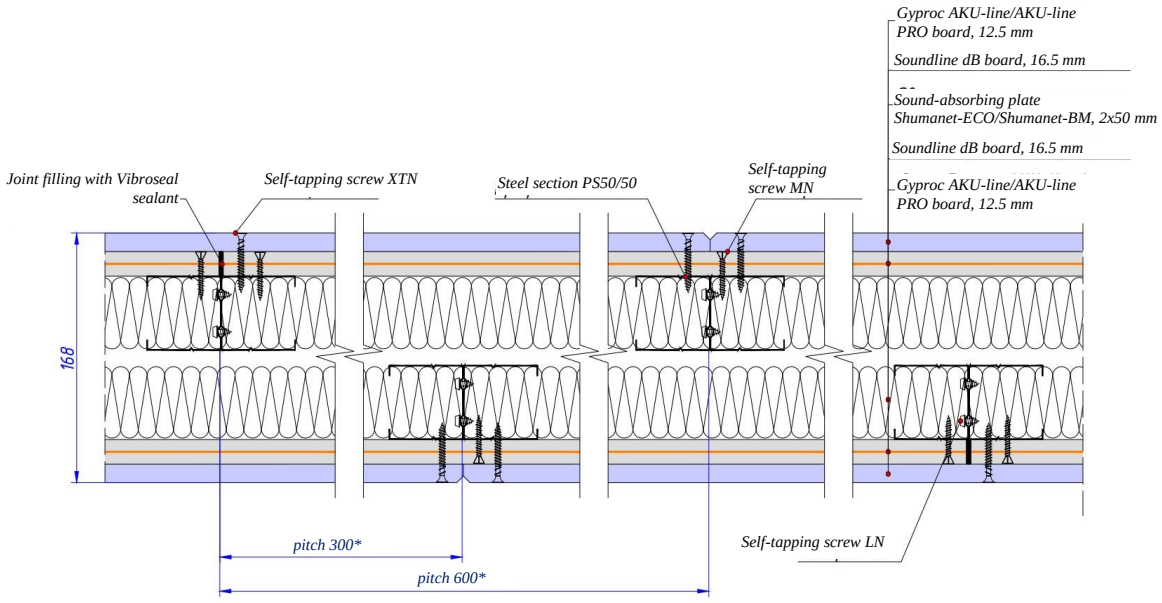

Figure 16. Location of studs in double independent frame soundproofing partition structure made of PS 50/50 steel section.

5.5. If necessary, steel frame studs can be connected along the length by means of an overlap or the butt-jointing method using an additional steel section. When joining by means of an overlap, the overlap length shall be at least 10 widths of the steel section a (a=50/75/100). When using an additional steel section, its length shall be at least 20 widths of the steel section a (a=50/75/100).

5.6. Door frames shall be installed simultaneously with the partition frame. Studs reinforced with wooden beams shall be mounted on both sides of the door frame, together with a header above the opening and the intermediate studs.

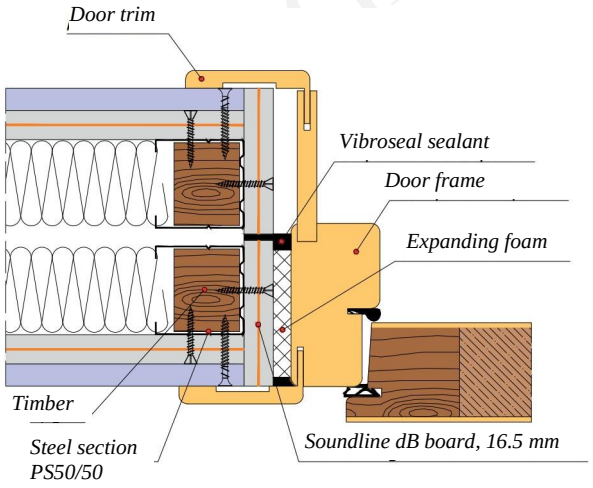

Figure 17. Door opening in the structure of soundproofing framed partition on double (independent) frame.

5.7. Pull electric wiring through holes in the walls. Place cables perpendicularly to studs, passing them through precut holes in such a way as to avoid damage to the cables by sharp edges of the cut steel of the frame or by screws when attaching the sheathing sheets. Utilities can also be routed in the space between two independent frames Never route cables inside along the studs of the frame.

5.8. Embedded parts (to secure stationary equipment and interior elements) shall be fixed to frame studs (option 1) or to PPN 28/27 that is fixed to the stud (option 2). To attach inspection doors, additional frame elements should be installed and secured to the main studs. For embedded parts, 12-18 mm thick plywood sheets or 18 mm thick OSB shall be used.

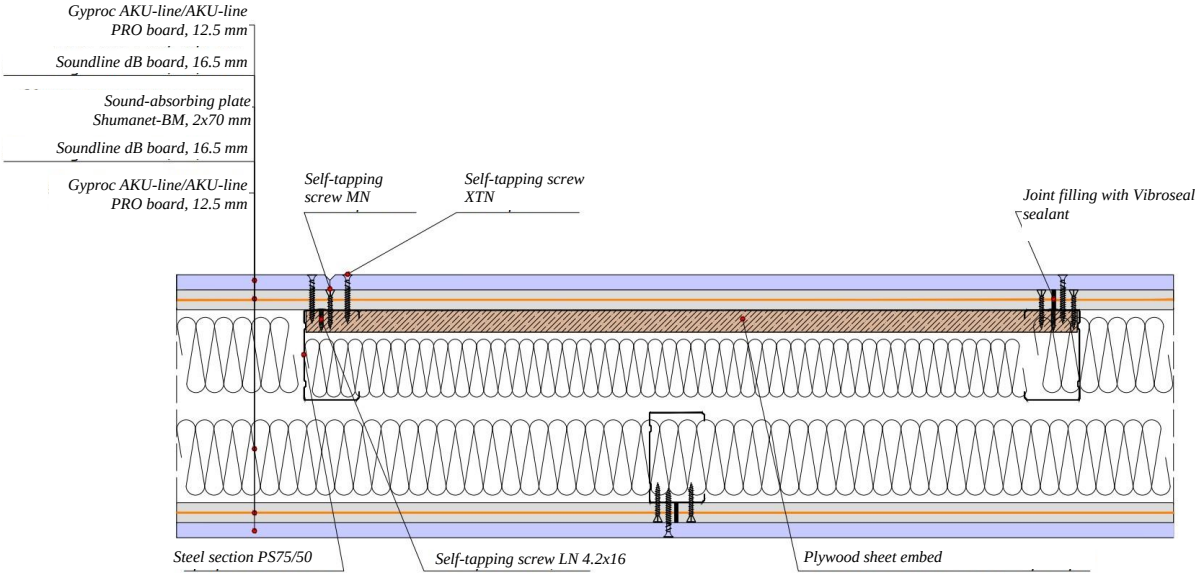

Figure 18. Installation of embeds in soundproofing framed partition on double (independent) frame (option 1).

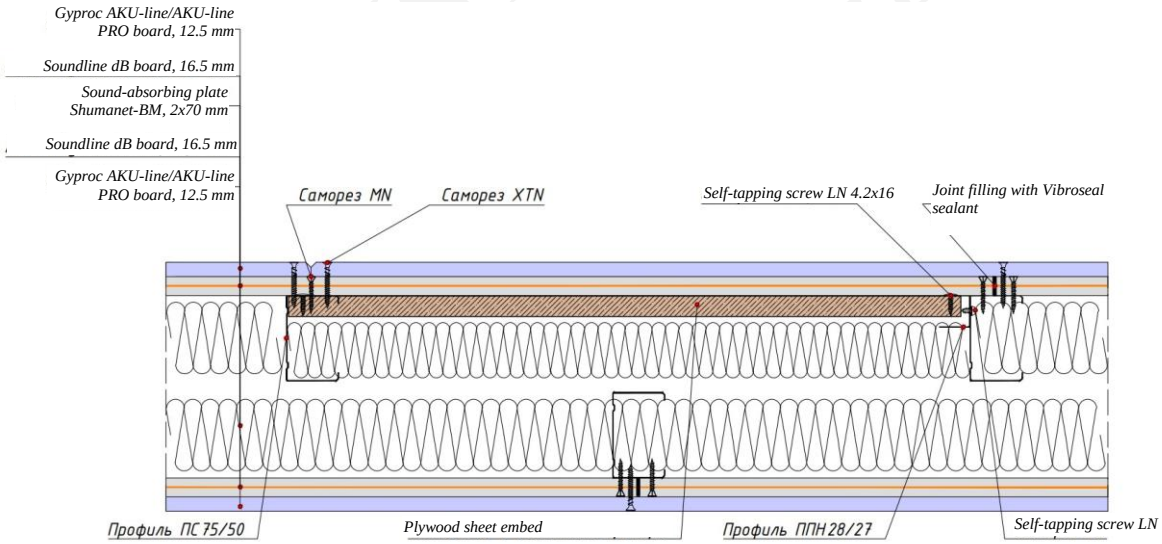

Figure 19. Installation of embeds in soundproofing framed partition on double (independent) frame (option 2).

5.9. Install and secure 16.5 mm thick Soundline-dB acoustic triplex boards on one side of the frame using 3.9x30 mm self-tapping screws for gypsum plasterboards (MN self-tapping screw or equivalent). Attach the boards to steel sections with a pitch of 500 mm (Figure 20). The direction of installation is indicated on the sticker in the upper left corner of Soundline-dB acoustic triplex boards.

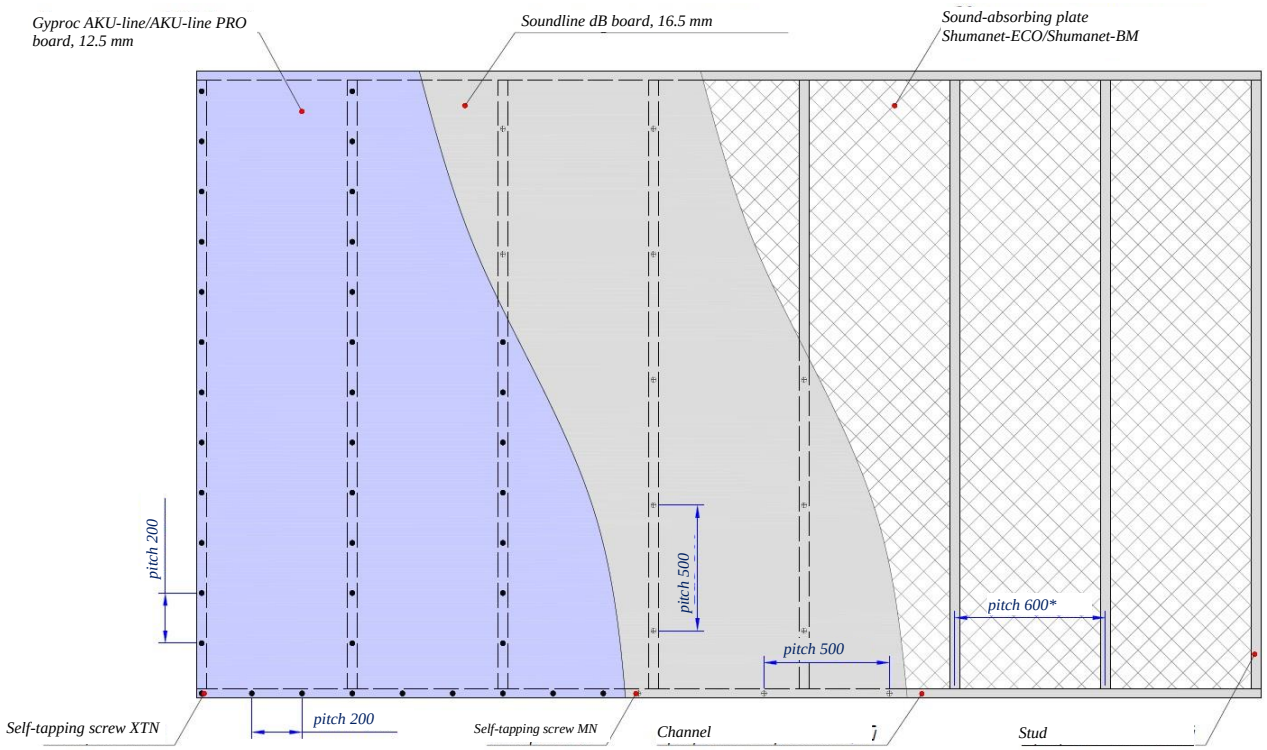

Figure 20. Soundproofing framed partition structure.

5.10. Fastening self-tapping screws shall penetrate Soundline-dB acoustic triplex boards at a normal angle and, further, section flange to at least 10 mm, screw heads shall be sunk in the gypsum fiber board surface to approximately 1 mm.

5.11. Soundline-dB acoustic triplex boards shall be mounted with a joint disarrangement at least 250 mm. The use of cut boards for sheathing the next row is recommended.

5.12. Joints between Soundline-dB acoustic triplex boards shall be filled with Vibroseal vibroacoustic sealant.

5.13. Install special Shumanet-BM/Shumanet-ECO/Shumanet-SK Neo sound-absorbing plates between frame studs.

5.14. Install and secure Soundline-dB acoustic triplex boards on the other side of the frame according to Item 5.9-5.12 of this Method Statement.

5.15. The structure of soundproofing framed partition on double (independent) frame is sheathed on each side with the finish layer of 12.5 mm thick Gyproc AKU-line/AKU-line PRO gypsum boards. The ends of sheets shall join the adjoining surfaces also via 2 layers of Vibrostack-M vibration insulating tape or via one layer of ULTRACOUSTIC-LENTA F100 according to Item 5.2 of this Method Statement.

5.16. When mounting Gyproc AKU-line/AKU-line PRO boards, 3.9x41 mm self-tapping screws shall be used (XTN self-tapping screw or equivalent). The pitch for attaching self-tapping screws to steel section shall be 200 mm (Figure 20). Horizontal joints of boards in adjacent rows shall be displaced vertically by at least 250 mm. Vertical joints relative to Soundline-dB acoustic triplex boards shall be displaced to the stud pitch. Self-tapping screws shall be at least 15 mm away from the short edge of sheathing sheets and at least 10 mm away from the long edge (Figure 21).

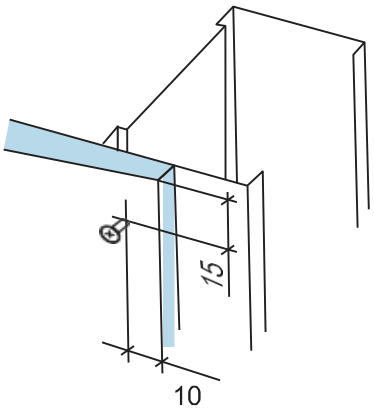

Figure 21. Fixing gypsum boards/gypsum plasterboards to steel section.

Figure 22. Finish layer of Gyproc AKU-line/AKU-line PRO.

5.17. The excessive protruding Vibrostack-M/ULTRACOUSTIC-LENTA F100 tape is cut flush with the finish layer of Gyproc AKU-line/AKU-line PRO boards. The joint shall be filled with Vibroseal vibroacoustic silicone sealant. For a high-quality joint, the use of a masking tape glued to surfaces forming an angle is recommended.

Figure 23. Filling the joints with Vibroseal sealant.

5.18. When passing through the soundproofing framed partition structure, pipes and other utilities shall be wrapped with two layers of Vibrostack-M vibration insulating tape or one layer of ULTRACOUSTIC-LENTA F100. The joint should be filled with Vibroseal sealant.

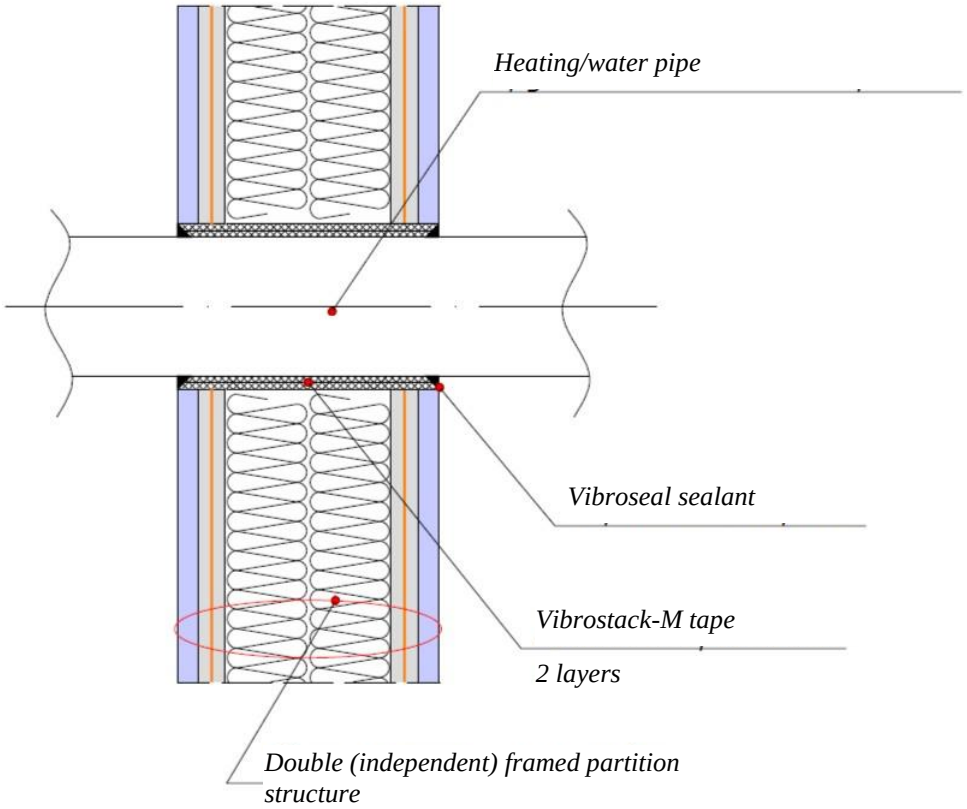

Figure 24. Diagram of heating/water pipe routing through double-frame partition structure.

5.19. When installing electric sockets and switches into the soundproofing structure, use surface-mounted socket boxes or special Ultracoustic soundproofing socket boxes.

5.20. Ultracoustic soundproofing socket boxes shall be mounted into a soundproofing structure in accordance with the following installation sequence:

- mark the rear part of the socket box on the first sheathing layer and cut out a hole with a jigsaw
- the socket box location shall not coincide with steel sections
- cut a hole for electric cable in the socket box housing
- attach the socket box with 3.9x30 mm self-tapping screws for gypsum plasterboards (MN self-tapping screw or equivalent) to the first layer of the soundproofing structure sheathing
- fill the hole drilled in the socket box for the electric cable, with Vibroseal sealant
- the finish layer of 12.5 mm thick Gyproc AKU-line/AKU-line PRO gypsum boards is secured to the first sheathing sheet, and a hole is made corresponding to the overall dimensions of the socket box face.

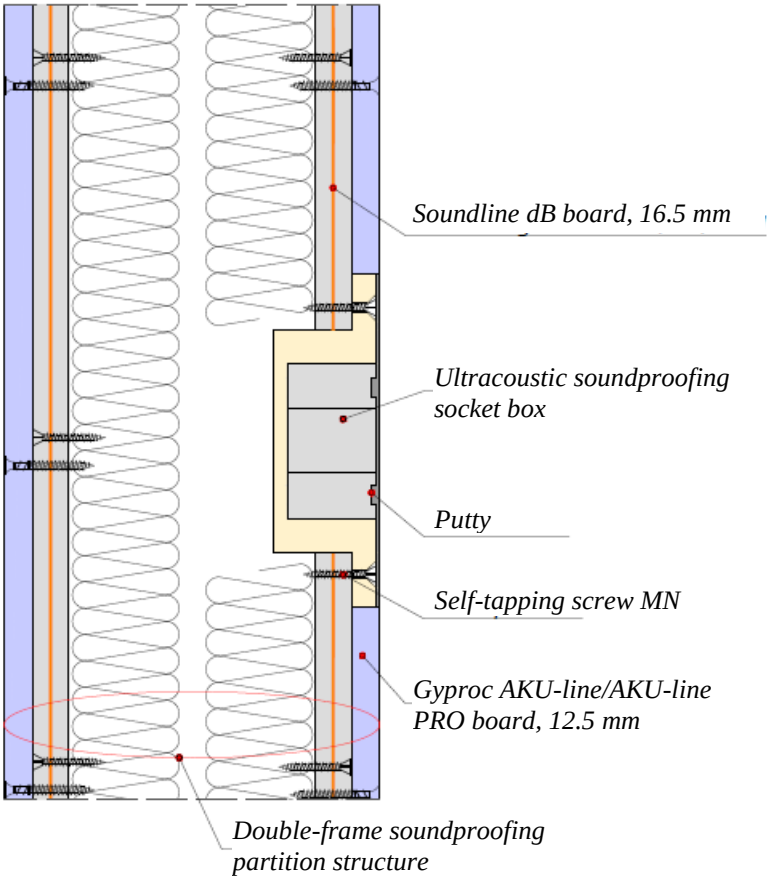

Figure 25. Mounting the wiring accessories in the soundproofing framed partition structures using Ultracoustic soundproofing socket boxes.

6. Allowable loads when mounting items on the 50/75/100 mm soundproofing framed partition on double (independent) frame

6.1. Load up to 35 kg per running meter of the framed partition can be fastened at any point of the structure using specialized fasteners (dowels) without frame reinforcement.

6.2. To fasten a load of 35 to 70 kg per running meter embeds shall be additionally provided in the structures of framed partitions to transfer the load directly to the frame.

6.3. To fasten a load of 70 to 150 kg per running meter both embeds and appropriate reinforcement of the frame partition approved by the frame system manufacturer shall be provided.

7. Hand tools

Table 3. List of required hand tools.

Name	Figure	Purpose
Chalk line		Marking the design position of the structure
Laser level (geodetic level)		Marking the design position of the structure
Putty knife		Grouting of joints and self-tapping screw heads
Drill driver		Drilling holes in the wall/ceiling/Soundline-dB board
Drywall carrying tool		Carrying gypsum boards and Soundline-dB
Crimper		Joining studs and channels
Tin shears		Cutting the steel sections
Cotton wool cutting knife		Cutting the Shumanet-BM/Shumanet-ECO/Shumanet-SK Neo sound-absorbing plates

Name	Figure	Purpose
Utility knife		Cutting of Vibrostack-M/ULTRACOUSTIC-LENTA F100 tape, sheet cutting
Tape measure		Size measurements
Aluminum leveling board		Measuring control, material cutting control
Power jigsaw		Sheet cutting
Caulking gun		Sealant application

8. Workmanship

8.1. The quality and reliability of the soundproofing structure depends on the physical characteristics of the materials, as well as observance of the installation procedure and further operation.

8.2. The structure shall be mounted in a heated room where wet processes have been completed.

8.3. When mounting the cladding with Soundline-dB acoustic triplex boards, due to production tolerances, gaps up to 4 mm can be formed in joints that shall be filled with Vibroseal vibroacoustic sealant.

8.4. Soundproofing works are concealed type of work, therefore, each completed stage shall be accepted and recorded in a certificate indicating the quality and certifying the absence of defects.

8.5. The scope of operations and quality controls is given in Table 4.

Table 4

Work stages	Controlled operations	Inspection (method, scope)	Documentation
Preparatory work	Check: - availability of an inspection certificate for previously performed work	Visual	Concealed Work Inspection Certificate, General Work Log
	- compliance of the surface with quality requirements	Visual, measurement	Concealed Work Inspection Certificate
	- availability of material quality document.	Visual	Certificate (Quality Certificate)
Installation	Inspect: - marking of attachment points for channels	Technical inspection (measurement)	General work log
	- availability of Vibrostack-M or ULTRACOUSTIC-LENTA F100 tape in places where the soundproofing structure adjoins the enclosures and utilities	Visual	
	- installation pitch of PS 50/50; PS 75/50; PS 100/50 studs	Measurement	
	- filling the joints between Soundline-dB acoustic triplex boards	Visual	
	- horizontal joint disarrangement when installing Soundline-dB acoustic triplex boards	Visual, measurement	
	- pitch for attaching Soundline-dB acoustic triplex to studs PS 50/50; PS 75/50; PS 100/50	Measurement	

Work stages	Controlled operations	Inspection (method, scope)	Documentation
	- pitch for attaching Gyproc AKU-line/AKU-line PRO gypsum boards to Soundline-dB panels and PS 50/50; PS 75/50; PS 100/50 studs	Measurement	
	- size of the cut parts of Soundline-dB acoustic triplex boards and Gyproc AKU-line/AKU-line PRO gypsum boards.	Measurement	
Acceptance of the work	Check: - compliance of the mounting points of the soundproofing structure with the design condition	Visual	General work log, work acceptance certificate
	- mounted structure quality.		

Notes:

1 Control and measuring tools: ruler, tape measure, leveling board.

2 Incoming and in-process inspection should be carried out by: foreman (construction superintendent), engineer – during the work.

3 Acceptance inspection should be carried out by: quality control employees, foreman (construction superintendent), and customer's inspectors.

8.6. The in-process quality control scheme is shown in Table 5. Table 5

Controlled operations	Requirements, tolerances	Inspection methods and tools	Inspector and date	Documentation
Properties of materials	Compliance with regulatory requirements and design	Visual	Construction superintendent	Quality document, design
Position marking	As per design	Measurement	Construction superintendent	Total
Installation of structures				Work log
Mounting of steel frame	Channels offset from layout axes: < 3 mm	Measurement	Foreman (construction	General work log

Controlled operations	Requirements, tolerances	Inspection methods and tools	Inspector and date	Documentation
	Distance between stud centerlines: ±2 mm		superintendent) during the work	
	Distance between mounting parts of the channels to the supporting structures: ±5 mm			
Filling the cladding with sound-absorbing materials	Filling - at least 70%	Visually	Foreman (construction superintendent) during the work	General work log
Sheathing the frame with gypsum boards and gypsum-fiber boards	Minimum amount of overlap of the sheathing sheet on a stud: 10 mm	Measurement	Foreman (construction superintendent) during the work	General work log
	Joint size between adjoining sheets: Gypsum board - 1-2 mm Soundline dB – up to 4 mm			
	Screw or screw nail head sinking into the frame sheathing: 0.5-1.0 mm			
	Gap between adjacent sheets along the joint: 1 mm			
	Local vertical or horizontal deviation not more than 9 mm within 0.5 sq. m.	Measurement, with a two-meter rail or leveling board installed in the center of the protruding part		
	Vertical	Measurement,		
	or horizontal deviations not more than 7 mm per 3 m.	with a two-meter rail or leveling board		

Controlled operations	Requirements, tolerances	Inspection methods and tools	Inspector and date	Documentation
Making an acoustic joint between adjoining structures	Joint size along the perimeter of the soundproofing partition: ≤ 15 mm	Measurement	Foreman (construction superintendent) during the work	General work log
Availability of rigid connections to enclosures, utilities	None	Visually	Foreman (construction superintendent) during the work	General work log

9. Finishing the structure surfaces using gypsum boards

9.1. Before finishing the surfaces of walls made of gypsum boards, construction and installation work shall be completed including finishing related to 'wet' processes (plastering, cement screeding, etc.).

9.2. Finishing work shall be performed at temperatures not less than 10°C and a relative air humidity not more than 60% according to the requirements of 7.1 SP 71.13330.2017.

9.3. To seal the joints between gypsum boards, use a dry putty mixture based on gypsum binder with special admixtures ensuring the extension of setting times and the increase of the water holding capacity, or a putty mixture based on a polymeric binder. Bending strength - at least 1.5 MPa, compressive strength - 2 MPa.

9.4. Puttying joints between gypsum boards includes:

- dedusting all sheet joints
- applying the first putty layer on the joint between gypsum boards with a width of at least 100 mm using a putty knife
- pressing the reinforcing tape (paper perforated) with a putty knife into the applied putty in the center of the joint
- after the first layer of putty has dried, apply a covering putty layer across the entire seam width with a wide putty knife (200-300 mm).

9.5. After puttying the joints and screw attachment points, treat the surface using a manual grinding device and remove dust.

9.6. Treat the surfaces of structures operated in rooms with moist conditions with a waterproofing compound.

9.7. The surface of sheathing made of gypsum boards are suitable for any type of finish: paint, wallpaper, ceramic tiles, decorative plastering.

9.8. It is recommended to paint using oil, water-based, resin, polyurethane paints containing polymer plasticizers, etc. The use of lime-based or liquid glass-based paints for painting is not recommended. Prior to high-quality painting, finishing puttying and grinding shall be performed on the entire surface of the sheathing.

9.9. After intermediate painting revealing different surface hues due to the availability

of spots, etc., perform final painting of the sheathing surface.

9.10. Wallpapering of the gypsum board surface shall be performed on a well-dried primed base.

9.11. When cladding the gypsum board sheathing with ceramic tiles or mosaic, additional requirements to surface smoothness and sheathing strength are applied.

9.12. Puttying and finishing shall be limited by the seam area only, and the entire surface of gypsum board sheathing clad with tiles shall be pre-treated with a primer that shall only be applied with a brush or paintbrush. Never use spraying or a roller for application. Pay special attention to the thoroughness of priming the cut edges of gypsum boards and pipe intersections, the holes for which shall be made with a 10 mm allowance and sealed with silicone compounds. In rooms with high temperature and humidity conditions, provide waterproofing of the floor and walls using coating waterproofing mastics and reinforcing corner tapes.

9.13. Tile cladding with the use of a special adhesive is recommended. In rooms with high temperature and humidity conditions, use a special adhesive to bind tiles on waterproofing mastics. The adhesive is applied with a toothed spatula.

9.14. It is recommended to seal the joints between tiles using special joint fillers, and with joints between the walls and between the walls and floor shall be sealed with sealants.

9.15. As for soundproofing, it is recommended to cover joints along the perimeter of the structure with finish elements (corners, skirting boards, etc.) not making rigid joints between two adjoining structures (existing and soundproofing).

10. **Material resources**

10.4 The necessary basic materials per 1 m^2 of structure are specified in Table 5. The consumption rates are given based on partition sizes H=2.75 m; L=4.00 m; S=11 m^2. The design pitch of the studs is 600 mm.

Table 6

Name	UoM	Partition thickness, mm		
		168	218	268
Frame, filling, fasteners				
Gyproc-Standart PN 50/40	m	1.4	-	-
Gyproc-Standart PN 75/40		-	1.4	-
Gyproc-Standart PN 100/40		-	-	1.4
Gyproc-Standart PS 50/50		8.0	-	-
Gyproc-Standart PS 75/50		-	4.0	-
Gyproc-Standart PS 100/50		-	-	4.0
Vibrostack-M100 tape (30 m roll)	m	5.0	-	-
ULTRACOUSTIC-LENTA F100 tape (15 m roll)	m	2.5	5.0	5.0
Vibrostack-M150 tape (30 m roll)	m	-	5.0	5.0
Dowel-nail	pcs.	3.2		
Sound-absorbing plate Shumanet-BM/Shumanet-ECO/Shumanet-SK Neo (1200x600x50/1250x600x50 mm board)	sq. m	2.0	-	4.0
Shumanet-BM sound-absorbing plate (1200x600x70 mm board)		-	2.0	-

Name	UoM	Partition thickness, mm		
		168	218	268
Sheathing				
Soundline-dB panel (1200x1200x16.5 mm)	sq. m	2.0		
Gyproc AKU-line/AKU-line PRO board (1200x2500x12.5/1200x2000x12.5 mm)		2.0		
Self-tapping screws for gypsum plasterboards 3.9x30 (MN self-tapping screw or equivalent)	pcs.	20		
Self-tapping screws for gypsum board 3.9x41 (XTN self-tapping screw or equivalent)	pcs.	40		
Metal self-drilling screws 3.5x11 (MN self-tapping screws or equivalent)	pcs.	20	-	-
Fixing edge layers, sealing the joints				
Vibroseal vibroacoustic sealant (Tube 290 ml)	pcs.	0.9		

11. **The need for personal protective equipment and overalls for installation of the framed soundproofing partition**

11.4. The necessary personal protective equipment is shown in Table 7. Table 7

Name	Specification	UoM	Qty
Overalls, hand and foot protection	GOST 12.4.103-83	pcs.	based on team size
Goggles	GOST 12.4.253-2013	pcs.	based on team size
Face mask	GOST 12.4.296-2015	pcs.	based on team size

12. **Safety Rules**

12.1. Only persons not younger than 18 years of age may be admitted to work after completing an introductory (general) safety briefing. Every worker shall undergo a medical examination before starting the work.

12.2. Work areas, workplaces and passages during the dark hours of the day shall be illuminated in accordance with GOST 12.1.046-2014. The illumination shall be uniform, without the glare of devices on the workers. No work in unlit areas shall be performed.

12.3. Workplaces and access ways shall be kept clean and free of debris in a timely manner.

13. **Basic Fire Safety Guidelines**

13.1. During construction and installation works, fire safety at the work site and at workplaces should be ensured in accordance with the requirements of the Fire Safety Regulations in the Russian Federation, approved by Russian Federation Government Resolution No. 1479 dated 06 September 2020.

13.2. Persons violating fire safety regulations will bear criminal, administrative, disciplinary or other liability in accordance with the applicable law.

13.3. A person from among the engineering and technical personnel of the company should be appointed by an order as the person responsible for fire safety at the construction site.

13.4. All workers engaged in production shall be allowed to work only after completing fire safety training and additional training in preventing and extinguishing potential fires.

13.5. Workplaces shall have signs with telephone number for calling the fire department and the evacuation plan for people in the event of a fire.

13.6. Fire-fighting posts equipped with fire extinguishers, sand boxes and toolboxes shall be installed at the work site, and warning posters shall be displayed. All equipment shall be in good condition.

13.7. Never start fires, use open flames, or smoke in the area where soundproofing materials are installed and stored.

13.8. Smoking is permitted only in specially designated areas equipped for this purpose.

13.9. The power mains should always be kept in good condition. After the work, turn off the electrical switches of all units and working lighting, leaving only the emergency lighting

and working equipment involved in a continuous cycle with the electrician on duty.

13.10. Never block driveways, passages, approaches to the locations of fire-fighting equipment, gates, and fire alarms.

13.11. For heating mobile (collapsible) buildings, factory-made steam and water heaters and electric heaters shall be used.

13.12. Clothes and shoes should be dried in rooms with central water heating specially adapted for this purpose, or using oil heaters.

13.13. Never dry wiping and other materials on heating devices. Oily overalls and rags, containers of flammable substances shall be stored in closed boxes and removed after completion of the work.

13.14. Never store fuel and oil supplies or empty containers in the construction site outside of fuel and oil storage facilities.

13.15. Washing of machines and mechanisms with fuel is permitted only in rooms specially designated for this purpose.

13.16. Spilled fuel and oil should be covered with sand, which should then be removed.

13.17. Workers and engineering and technical personnel engaged in production shall:

- comply with fire safety requirements in production, as well as comply with fire safety regulations
- take precautions when using fire hazardous substances, materials, and equipment
- in case of fire, report it to the fire department and take rescue measures.