LIMITED LIABILITY COMPANY
ACOUSTIC GROUP

APPROVED BY
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July 17, 2023

Standard Method Statement for Structure Installation using ZIPS Panels (AG.Z-201/AG.Z-202/AG.Z-203/AG.Z-204/AG.Z-205/AG.Z-206) (TU 23.62.10-017-28789041-2020)

TK-003-2023

Revision 2

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Standard Method Statement TK-003-2023 was developed as a supplement to Engineering Solutions Album 'Soundproofing Structures' of ASP series.

1. General Specifications of ZIPS System

1.1. ZIPS soundproofing system consists of sandwich panels 25, 40, 42, 70 or 120 mm thick, Gyproc AKU-line/AKU-line PRO finishing facing sheets 12.5 mm thick, Vibrostack-M/ULTRAKUSTIK-LENTA F100 tape, Vibroseal sealant and a (AG.Z-201/AG.Z-202/AG.Z-203/AG.Z-204/AG.Z-205/AG.Z- 206) mounting kit.

1.2. ZIPS soundproofing system is used in rooms with dry and normal 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.

1.3. ZIPS panels are sandwich panels consisting of a gypsum fiber tongue-and-groove element and a mineral fiber slab, containing eight vibration insulating joints for fastening panels to the surface.

Figure 1. Image of ZIPS-Module framed soundproofing cladding.

1.4. The features of the structure include:

- panel fire hazard indices – G1, V1, D1, T1;
- fire specifications of Gyproc AKU-line/AKU-line PRO gypsum boards – G2, V2, D2, T2/G1, V1, D1, T1
- index of additional air-borne sound insulation to 21 dB (depending on the panel model);
- The maximum height of the cladding structures using ZIPS panels without height gaps is 6 m.

Table 1. Design features

Structure name	Structure code	Panel thickness, mm	System thickness, mm	Additional air-borne sound insulation index ΔRw, dB*
Soundproofing system Wall-mounted ZIPS-Vector	AG.Z-201	40	53	12 - 14
Soundproofing system Wall-mounted ZIPS-Module	AG.Z-202	70	83	16 - 18
ZIPS-III-Ultra soundproofing system, wall-mounted	AG.Z-203	42	55	16 - 18
Soundproofing system Wall-mounted ZIPS-Z4	AG.Z-204	42	55 - 105	16 - 19
Soundproofing system Wall-mounted ZIPS-Cinema	AG.Z-205	120	133	19 - 21
Soundproofing system Wall-mounted ZIPS-Slim	AG.Z-206	25	38	11**
The measurements were made in the absence of indirect noise transmission paths on the base brick wall with air-borne sound insulation index Rw = 50-51 dB. * -All ZIPS systems are based on a ceiling slab without a soundproofing floor structure. **- The measurements were made in the absence of indirect noise transmission paths on the base aerated concrete wall with air-borne sound insulation index Rw = 44 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 structure installation using (AG.Z-201/AG.Z-202/AG.Z-203/AG.Z- 204/AG.Z-205) soundproofing panels designed to increase the soundproofing of single-layer building structures (gypsum, brick, concrete walls, partitions and slabs) during construction and renovation of residential, public, industrial buildings and facilities.

2.2. ZIPS-Slim (AG.Z-206) soundproofing panels are designed to increase soundproofing of single-layer wall structures (foam-concrete and aerated concrete) during construction and reconstruction of residential, public, production buildings and structures.

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

- surface preparation for installation;
- installation of ZIPS soundproofing panels
- finish cladding with Gyproc AKU-line/AKU-line PRO gypsum boards.

2.4. Construction and finish work using ZIPS panels 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. ZIPS panels should be transported by all means of transport in covered vehicles in accordance with the rules for the carriage of goods, in force for this type of transport.

3.2. Panels should be laid flat during transportation and storage. The panels must not be moved freely during transportation.

3.3. During transportation, handling and storage of the panels, 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.

3.4. Panels shall be stored packaged, in dry rooms in accordance with fire safety rules in conditions preventing their contact with atmospheric precipitation and groundwater. To ensure safety of ZIPS panels, they should be transported and stored on factory pallets.

3.5. 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).

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

3.7. 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).

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

3.9. 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 material handling operations, safety rules established by GOST 12.3.009-76 shall be observed.

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

3.11. 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.

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

3.13. 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.

3.14. 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.

Table 3. Transportation and storage of ZIPS panels on factory pallets

Model name	**Pallet size, LxW, mm**	**Total number of panels on a pallet, pcs.**	**Number of panels in a stack, pcs.**
ZIPS-Vector	1900x1300	90	30
ZIPS-Module	1900x1300	45	15
ZIPS-Cinema	1900x1300	30	10
ZIPS-III-Ultra	1300x1300	60	30
ZIPS-Z4	1900x1300	75	25
ZIPS-Slim	1900x1300	90	30

4. Structural solutions using ZIPS soundproofing panels

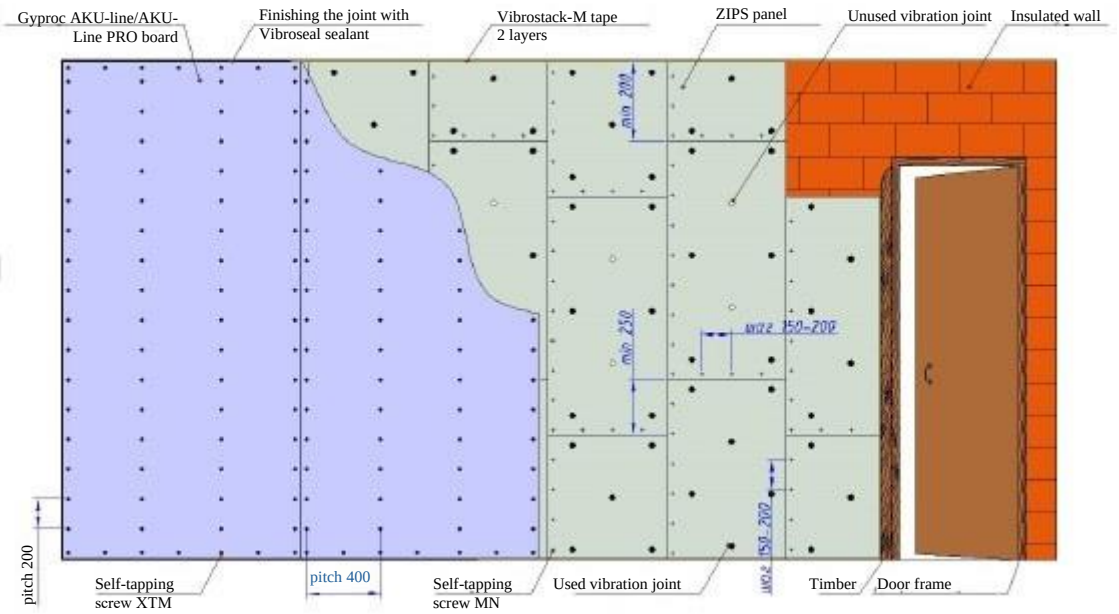

Figure 2. ZIPS Frameless System Installation Diagram

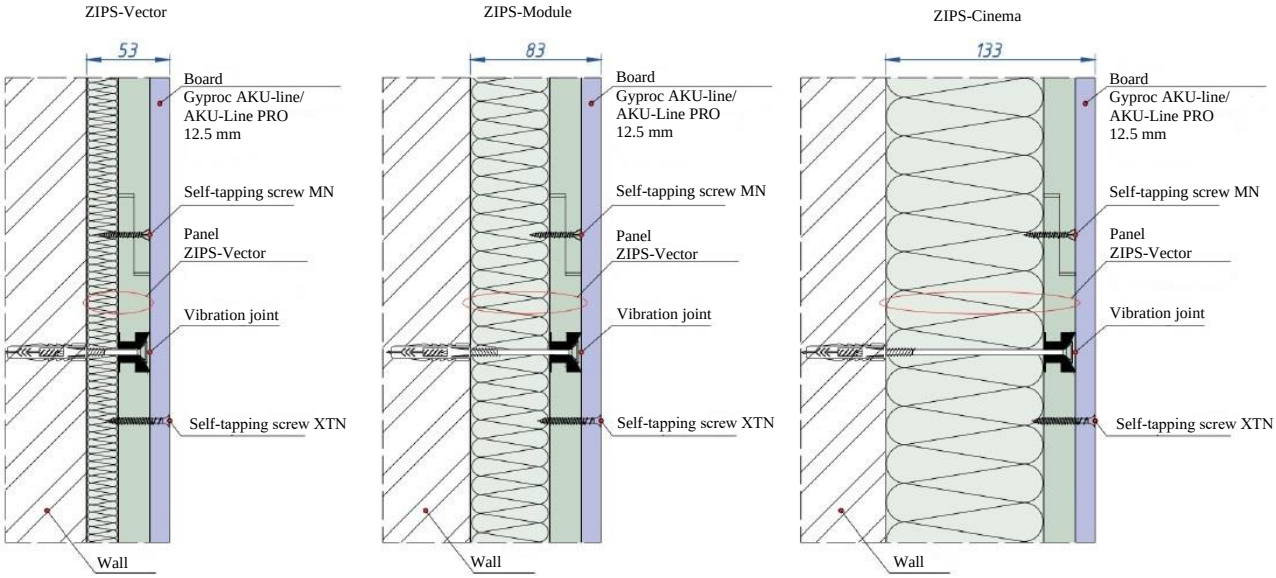

Figure 3. Cladding structures using ZIPS second-generation frameless panel system (AG.Z-201/AG.Z-202/AG.Z-205).

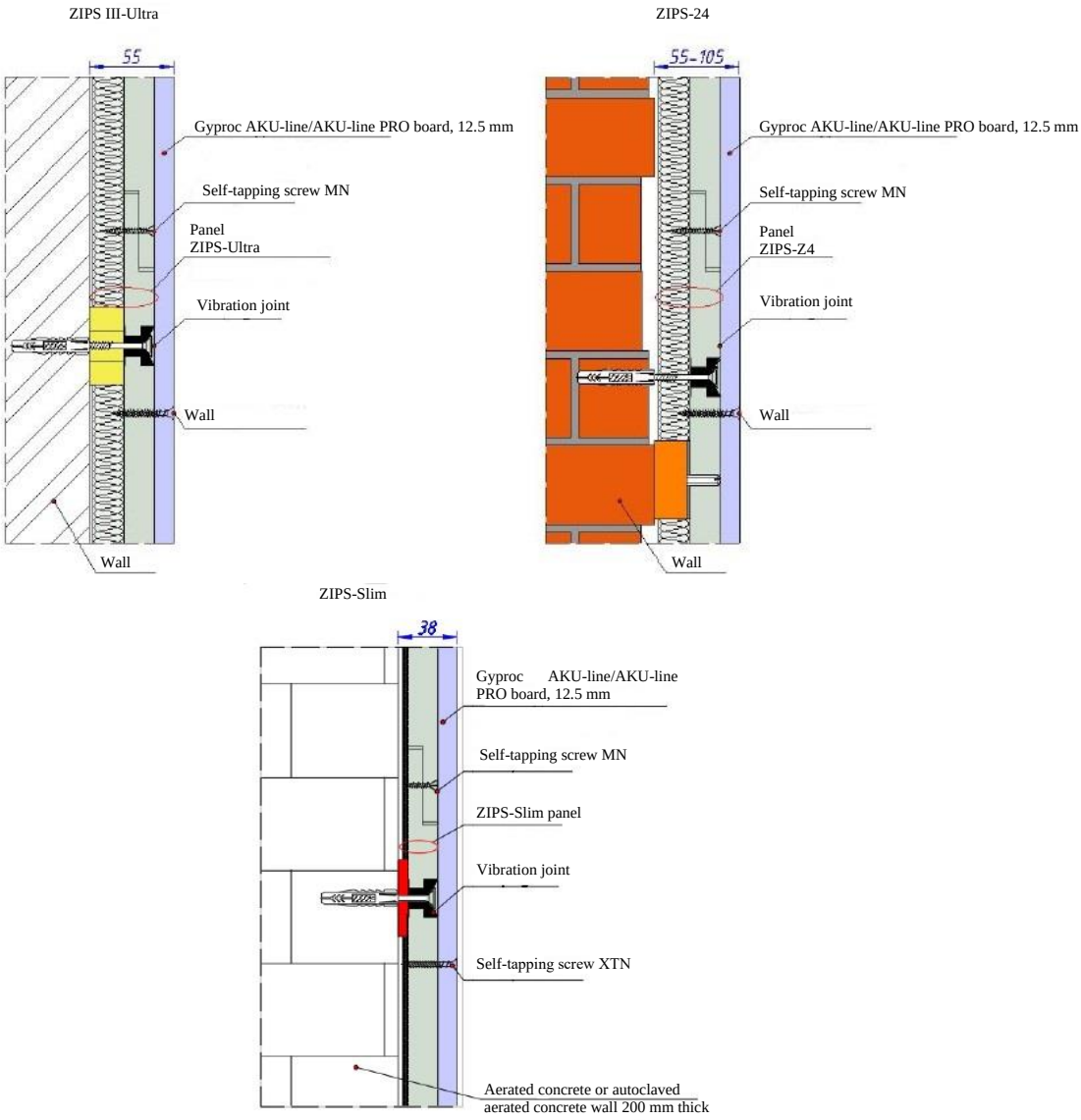

Figure 4. Cladding structures using ZIPS third- and fourth-generation frameless panel system (AG.Z-203/AG.Z-204/AG.Z-206).

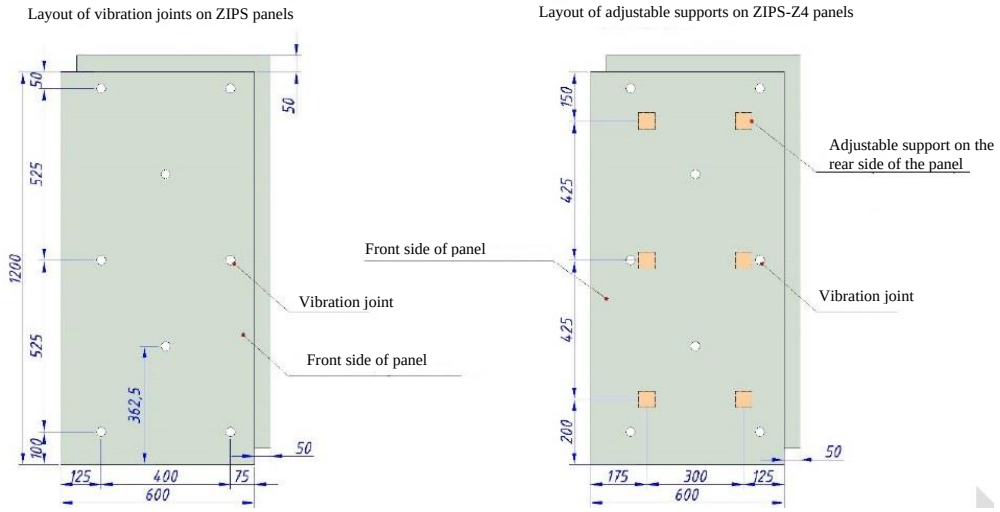

Figure 5. Layout of vibration joints on ZIPS panels

Filling with elastic compound

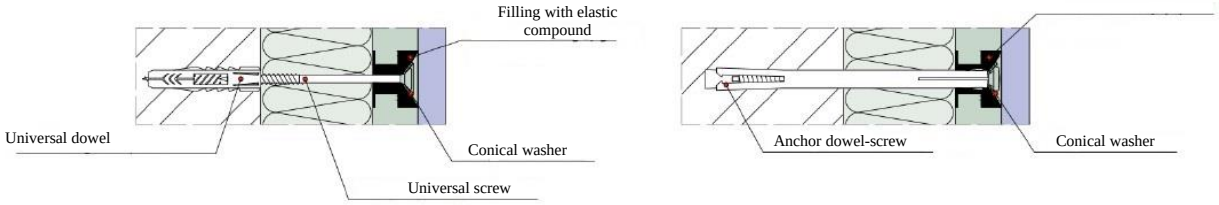

Figure 6. Panel fixing diagram using universal dowels and metal anchors.

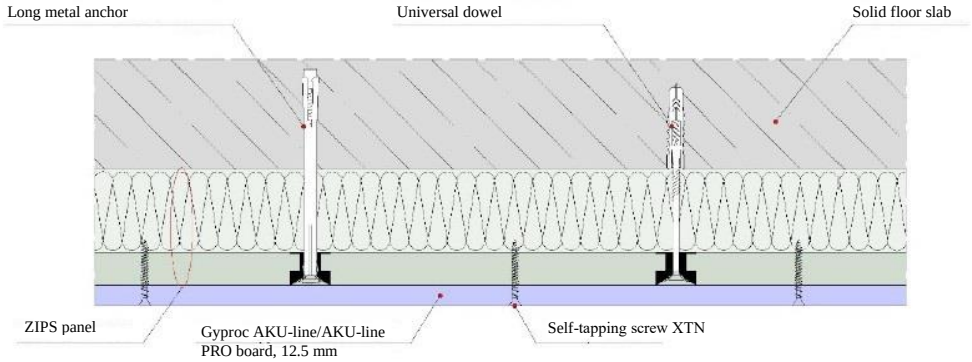

Figure 7. Installing ZIPS panel system on the solid floor slab.

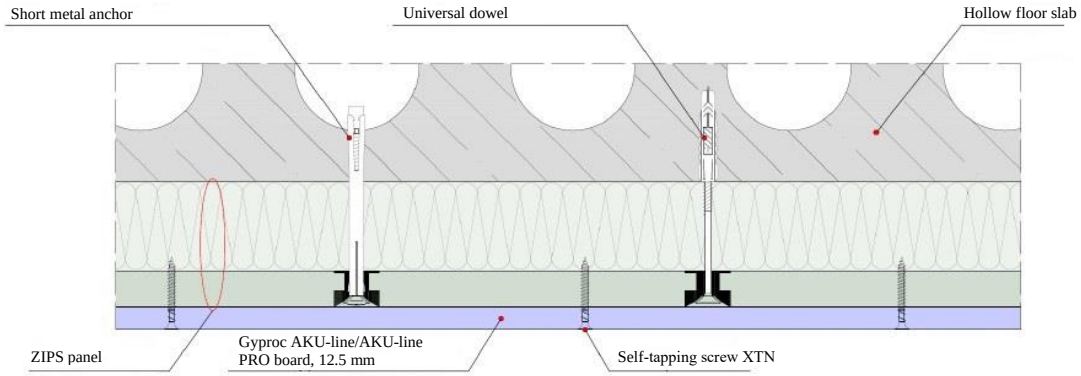

Figure 8. Installing ZIPS panel system on the hollow ceiling slab.

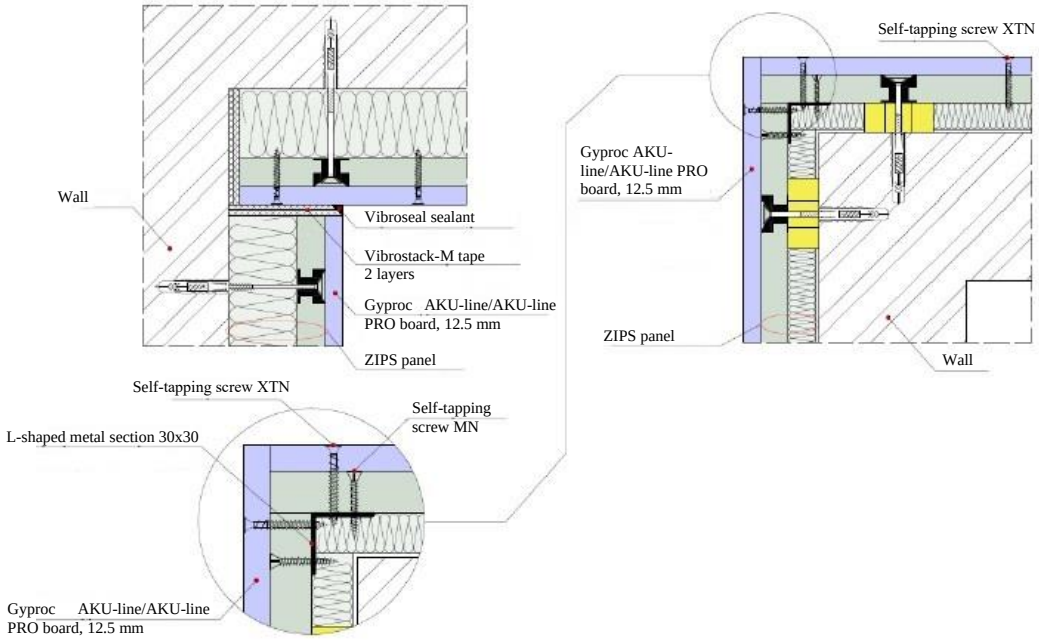

Figure 9. Decorating the inner and outer corners with ZIPS panel system.

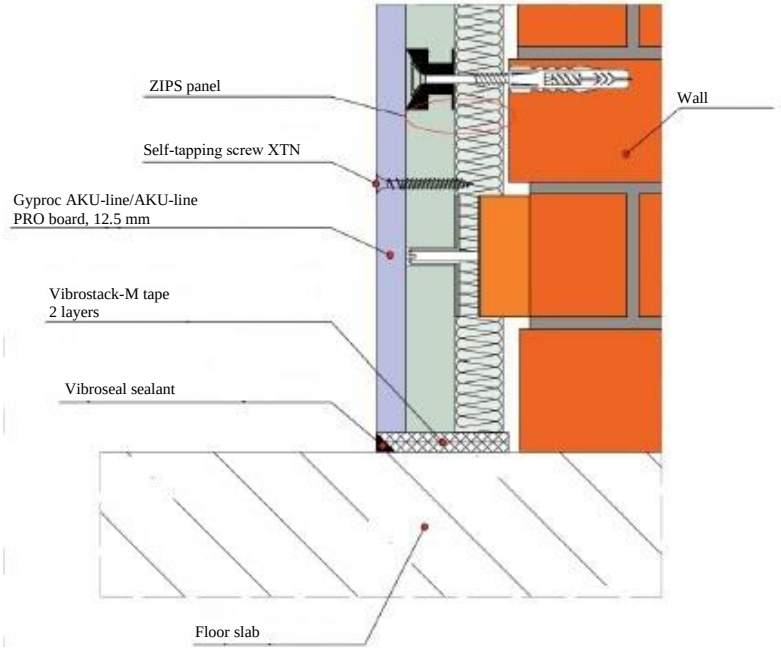

Figure 10. Joining ZIPS panel system to the slab.

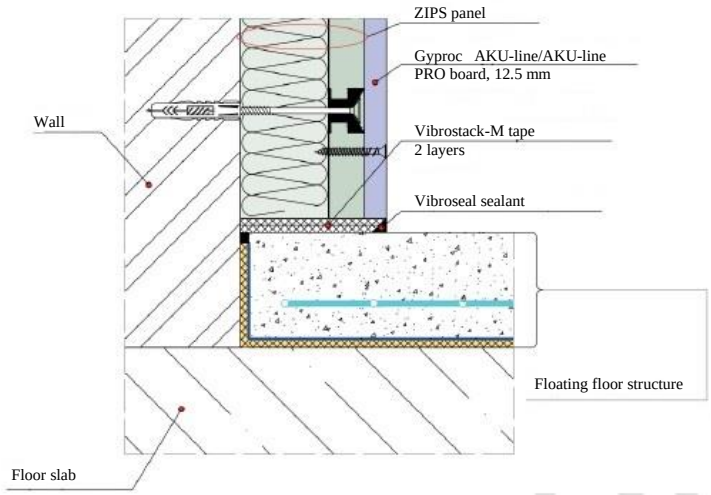

Figure 11. Joining ZIPS panel system to the floating floor structure.

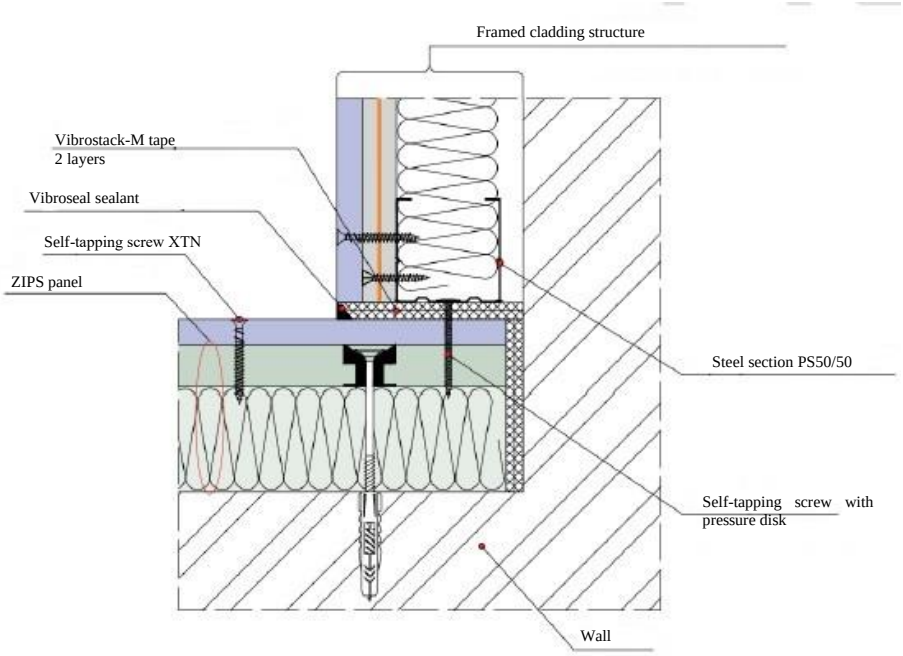

Figure 12. Corner adjoining of ZIPS panel system to the frame cladding structure.

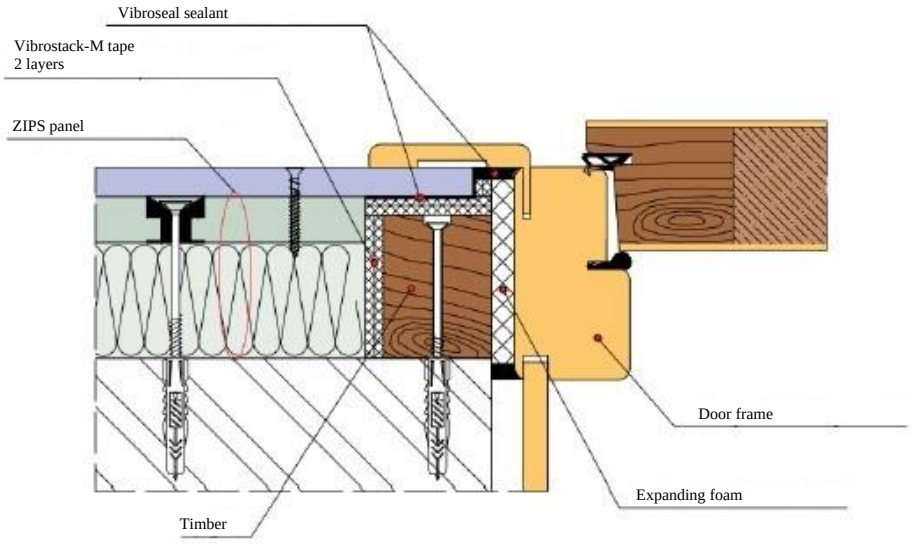

Figure 13. Joining ZIPS panel system to the door opening.

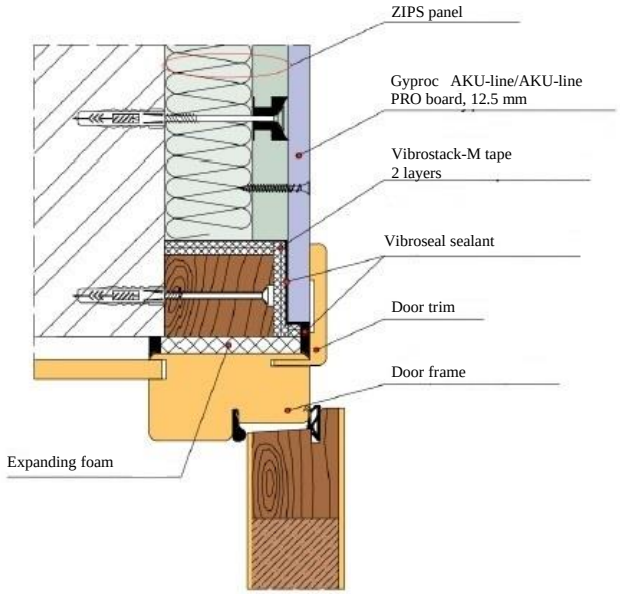

Figure 14. Completing a horizontal door jamb.

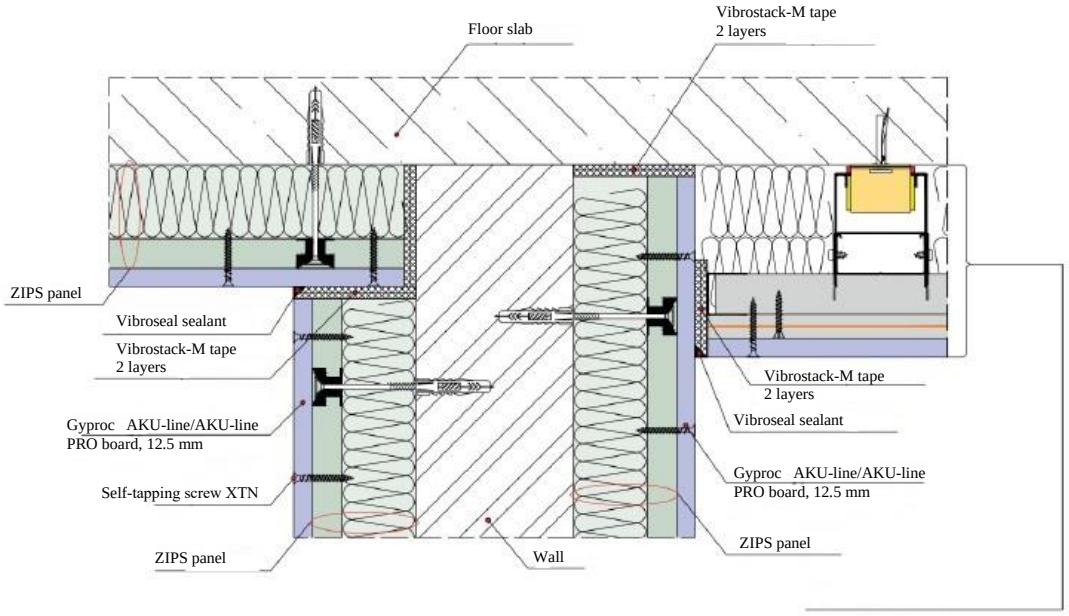

Figure 15. Corner adjoining of ZIPS panel system to ZIPS panel system/framed soundproofing ceiling on the slab.

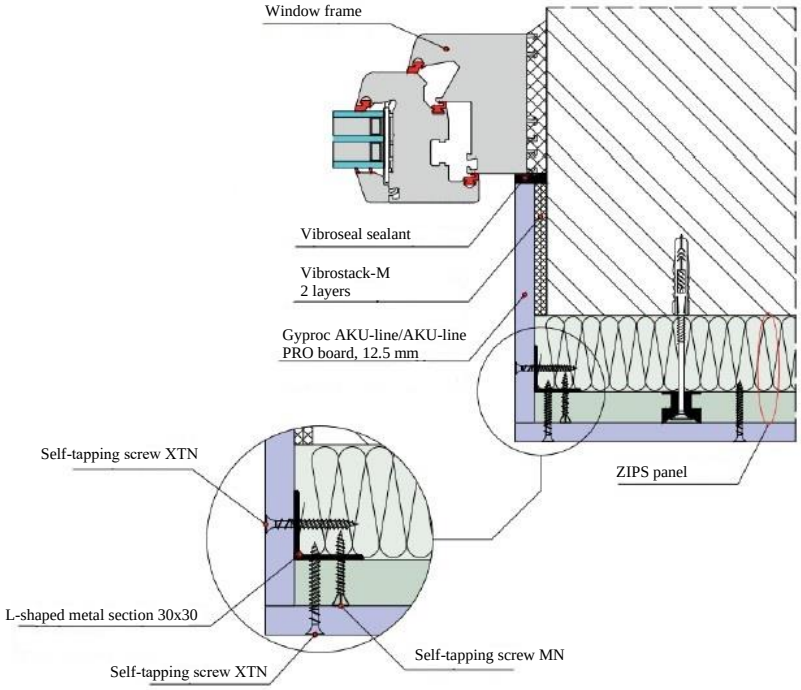

Figure 16. Completing a vertical window jamb.

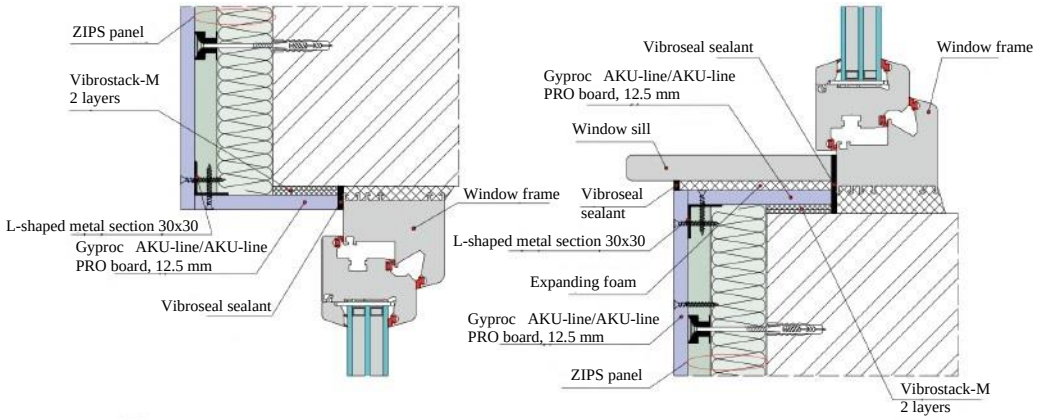

Figure 17. Completing an upper vertical window jamb and ZIPS panel system adjoining to the windowsill.

5. Surface Preparation

5.1. The panels should be installed on room enclosures (walls and columns) made of reinforced concrete, blocks or brick, as well as hollow or monolithic floor slabs.

5.2. Surfaces subject to cladding with ZIPS panels should comply with requirements for ordinary plaster according to Table 7.4 of SP 71.13330.2017. To ensure compliance with these requirements, leveling of the surfaces with plaster compounds is recommended. In this case, the installed soundproofing panels are subject to requirements according to Table 5 of the Method Statement.

5.3. When installing ZIPS panels on a surface not complying with the requirements of Table 7.4 of SP 71.13330.2017 for ordinary plaster, smoothness requirements do not apply to finished surface.

5.4. ZIPS-Z4 panels have a function of leveling an uneven surface up to 50 mm without plaster. If installation surfaces include irregularities, drops, obstructions up to 50 mm, the installed ZIPS-Z4 soundproofing panels are subject to the requirements of Table 5 of the Method Statement.

5.5. Prior to starting the installation of ZIPS-Z4 panels using a laser axle builder, create a plane at a distance of 100-150 mm from the wall/slab. Then, find a minimum distance from the insulated surface to the laser beam, and substract 43 mm (the thickness of a Z4 panel) from this value. The value obtained is the distance from the laser plane to the surface of installed ZIPS panels, which should be controlled by a template (ruler) along the entire area of the clad wall during installation.

Note – It is not recommended to install the panel system on a structure less than 80 mm thick and having a density of less than 600 kg/m^3. ZIPS-Slim panels are not designed to be installed on floor slabs.

6. Installation technology

6.1. The enclosing structures (floor, walls, ceiling) should adjoin panel system elements through two layers of Vibrostack-M vibration insulating tape or through one layer of ULTRAKUSTIK-LENTA F100. The tape is glued and bonded with Vibroseal sealant. Vibrostack-M/ULTRAKUSTIK-LENTA F100 tape shall also be placed underneath the ends of gypsum boards used in the structure.

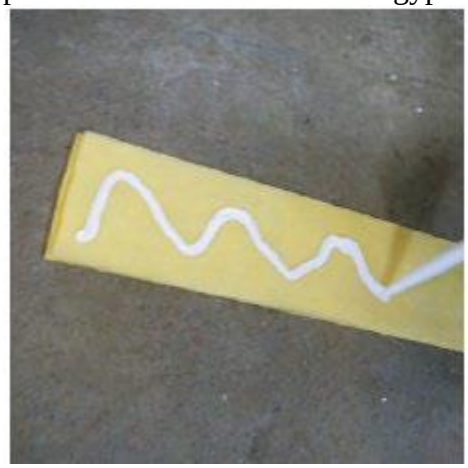

Figure 18. Applying Vibroseal sealant on Vibrostack-M vibration insulating tape.

6.2. Installation of ZIPS sandwich panels is to be carried out from left to right, from bottom to top (Figure 19). Two ridges are cut off at the first left bottom panel - the left and bottom ridges, and only the left ridge - at the second left top panel. The displacement of transverse joints of panels from adjacent rows should be at least 250 mm.

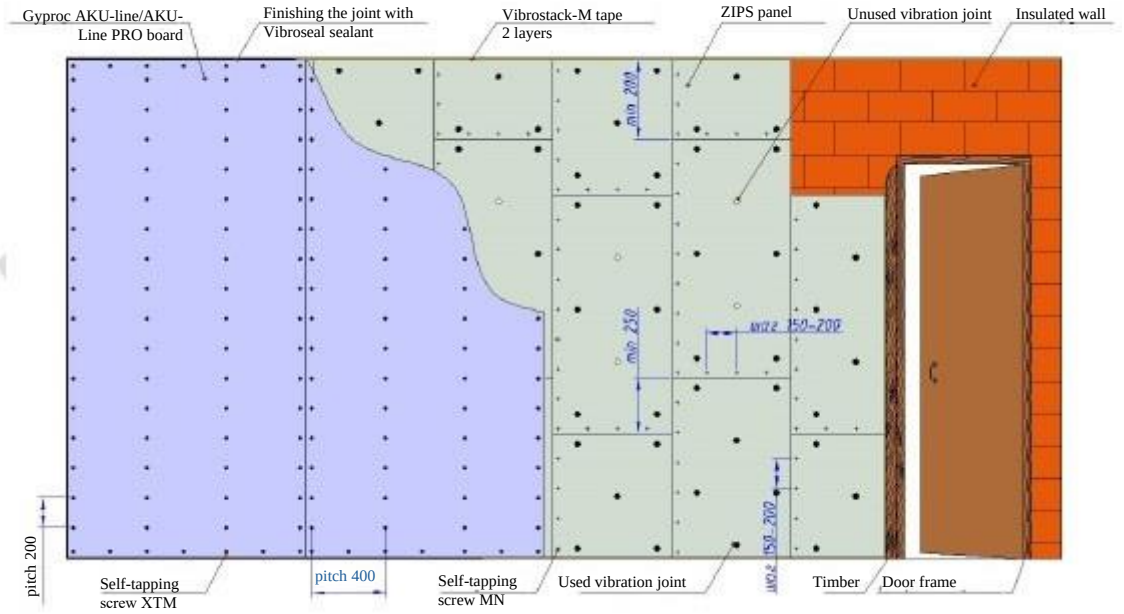

Figure 19. ZIPS Frameless System Installation Diagram

6.3. Sandwich panels are joined together by means of a tongue-and-groove connection. The ends of the sandwich panels adjoin to/support all adjacent enclosing structures (walls, floor and ceiling) through two layers of elastic spacer made of Vibrostack-M material, or through one layer of ULTRAKUSTIK-LENTA F100. The cladding layer of Gyproc AKU-line/AKU-line PRO boards should also adhere to all adjacent surfaces (floor, walls, ceiling) through two layers of Vibrostack-M elastic spacer, or through one layer of ULTRAKUSTIK-LENTA F100. For this purpose, the elastic spacer is glued with a release of 20-30 mm relative to the front surface of the mounted sandwich panels.

6.4. Sandwich panels are fixed with screw nails to the protected surface only through the vibration insulating attachment points existing in the panels. Use screw nails with plastic dowels and anchors Ø 8 mm to mount the panels. The mounting kit includes a universal dowel for monolithic and heterogeneous (hollow) walls and slabs, and anchors for solid and heterogeneous (hollow) slabs.

6.5. After the panel is attached to the wall or the ceiling board, drill holes in the wall or ceiling slab with a long masonry drill Ø 8 mm directly through the vibration insulating attachment points existing in the panel. The depth of holes should be at least 60 mm.

6.6. Without removing the ZIPS panel from the wall/ceiling board surface, insert plastic dowels with screw nails and washers into the holes made. Then, they are driven all the way with a hammer, and screw nails are tightened with an electric screw driver.

Figure 20. Attaching ZIPS panel via vibration joint.

6.7. When mounting the ZIPS-Z4 panels, the screw nails must be tightened, leaving a gap of 3-4 mm between its head and the surface of the vibration assembly for the possibility of further adjustment of the offset by vibration insulating supports. The adjustment process should be carried out in relation to the plane previously marked with a laser axle builder. If the height difference in the

protected surface is ≤ 20 mm, use a panel with standard supports. In places where the a space between insulation and insulated surface is more than 20 mm, glue 10 mm thick ST-supports included in the mounting kit (maximum 3 pcs per one support) additionally on adjustable supports. Each mounting kit contains 6 ST-supports.

6.8. Anchor dowel-screw used for mounting of ZIPS panels on the ceiling, as well as when mounting ZIPS-CINEMA panels on the wall, is inserted through the ZIPS panel into a drilled hole Ø 8 mm and is screwed with pressure using an electric screw driver. Concurrently a special conical washer M8 is also installed under the screw head.

6.9. **IMPORTANT!** The heads of screws or anchor screws must be sunk, but not more than 1 - 2 mm from the plane of the front side of the panel.

6.10. Tongue-and-groove joints of sandwich panels are fastened together with 30 mm long self-tapping screws for gypsum plasterboards (MN self-tapping screws or equivalents). The distance between the self-tapping screws must be 150-200 mm.

Note – Tongue-and-groove joints of ZIPS-Slim panels are fastened together with 3.9x19 mm long self-tapping screws for gypsum plasterboards.

6.11. Features in using fasteners

When mounting on a ceiling slab, a sandwich panel must additionally be fixed with metal anchor screws Ø 8 mm through any two of the eight existing attachment points. ZIPS-Vector, ZIPS-III-Ultra, ZIPS-Z4, ZIPS-Slim and ZIPS-Module sandwich panels are mounted to the walls on plastic dowels only. A special conical washer is used between the head of the screw and the vibration insulating attachment point: for universal screws - with an inner diameter of Ø 5 mm (M5) and for metal anchor screws - with an inner diameter of Ø 8 mm (M8).

When mounting the ZIPS-CINEMA panel system on the wall, the panels are also to be fixed with metal anchor screws Ø 8 mm through any two of the eight existing attachment points.

If the wall panel completely fits the surface to be protected, mount the sandwich panels using only six attachment points, the central attachment points are not used (except ZIPS-Cinema panels). If the wall panel is to be cut, all available attachment points, but not less than two, are used.

The mounting kit for installing sandwich panels on the ceiling contains two types of anchor screws - standard (the length of which is 50 mm more than the sandwich panel thickness, 40 mm for ZIPS-Module) and shortened. Shortened anchor screws are used for fastening to hollow intermediate floor slabs.

IMPORTANT: ZIPS-Slim sandwich panels are not installed on floor or ceiling structures.

6.12. Notes:

The minimum size of a cut panel suitable for installation is 200 mm. The cut fragment must have at least 2 vibration assemblies and 2 adjustable supports for ZIPS-Z4 panels.

The marked panels are cut with an electric jig saw. For ZIPS-Z4 panels, if the cutting line falls on installation points of the adjustable supports, it is necessary to dismantle the supports and re-glue them to the necessary fragment with a distance of at least 50 mm from the cut edge. The hole for the adjusting screw is made with a drill with a diameter of 7 mm. The cut fragments larger than 400 x 600 mm, must have at least 4 supports.

Figure 21. Cutting the ZIPS panels.

If the panels of the last row are not cut based on the actual size of the wall, it is permissible to insert ridges cut from the first row of panels into the grooves and fix them with self-tapping screws for gypsum plasterboards 3.9x30 mm (MN self-tapping screws or equivalent; self-tapping screws for gypsum plasterboards 3.9x19 mm for ZIPS-Slim) in pre-drilled holes.

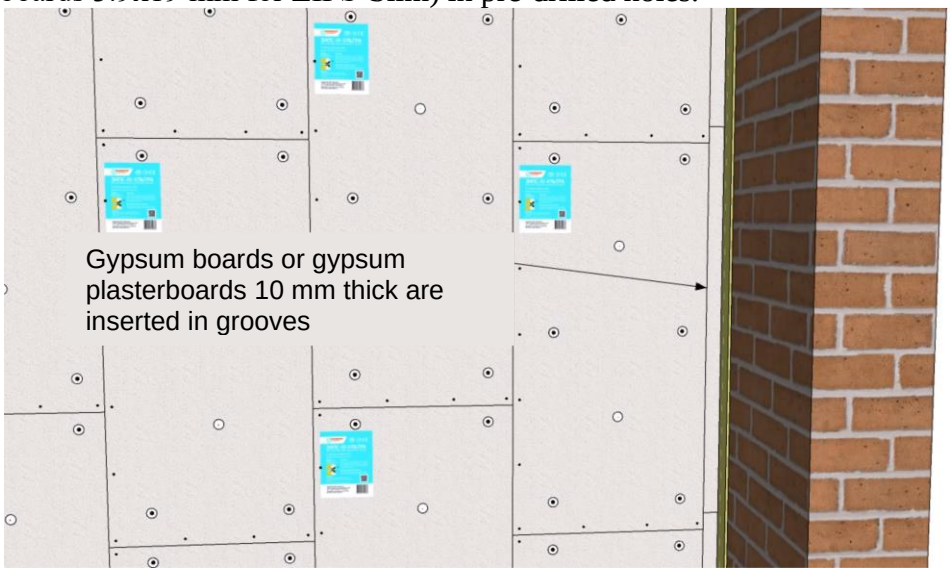

Figure 22. Filling the last row grooves.

Installation of panels on lightweight partitions is possible with blocks density of at least 600 kg/m^3. It is allowed to fasten panels to solid tongue-and-groove blocks with screws without using a plastic dowel and pre-drilling the holes. For foam-concrete and hollow tongue-and-groove blocks, it is recommended to drill holes with a drill with a diameter of 7 mm without impact.

6.13. A finishing layer of Gyproc AKU-line/AKU-line PRO gypsum boards 12.5 mm thick are fixed directly to the sandwich panels. The sheets shall join the all side surfaces (floor, walls, ceiling) also via two layers of Vibrostack-M vibration insulating tape or via one layer of ULTRAKUSTIK-LENTA F100 according to Item 6.1 of this Method Statement. When mounting Gyproc AKU-line/AKU-line PRO boards, 3.9x41 mm self-tapping screws shall be used (XTN self-tapping screw or equivalent; self-tapping screws 3.9x30 m for ZIPS-Slim system). Self-tapping screw vertical pitch – 200 mm, horizontal pitch – 400 mm.

6.14. **IMPORTANT!** When fixing Gyproc AKU-line/AKU-line PRO boards with XTN self-tapping screws (or equivalents), prevent the self-tapping screws from getting into the vibration insulating assemblies of sandwich panels. Failure to comply with this requirement may lead to a significant reduction in the sound insulation of the ZIPS panel system.

Figure 23. Finish layer of Gyproc AKU-line/AKU-line PRO.

6.15. The excessive protruding Vibrostack-M/ULTRACOUSTIC-LENTA F100 tape is cut flush with the finish layer of Gyproc AKU-line/AKU-line PRO boards. Seams are 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. The surface is additionally leveled, where necessary, for finishing.

Figure 24. Filling the joints with Vibroseal sealant.

6.16. If there are expansion joints in the walls/slabs on which the frameless soundproofing cladding will be installed, provide expansion joints in the ZIPS panel system.

6.17. An expansion joint is provided by making a vertical gap between sandwich panels, which is filled with Vibrostack-M vibration insulating tape laid in three layers, or ULTRAKUSTIK-LENTA F100 tape laid in two layers, and Vibroseal vibroacoustic sealant. Three layers of Vibrostack-M/ULTRAKUSTIK-LENTA F100 vibration insulating tape are bonded together using Vibroseal vibroacoustic sealant.

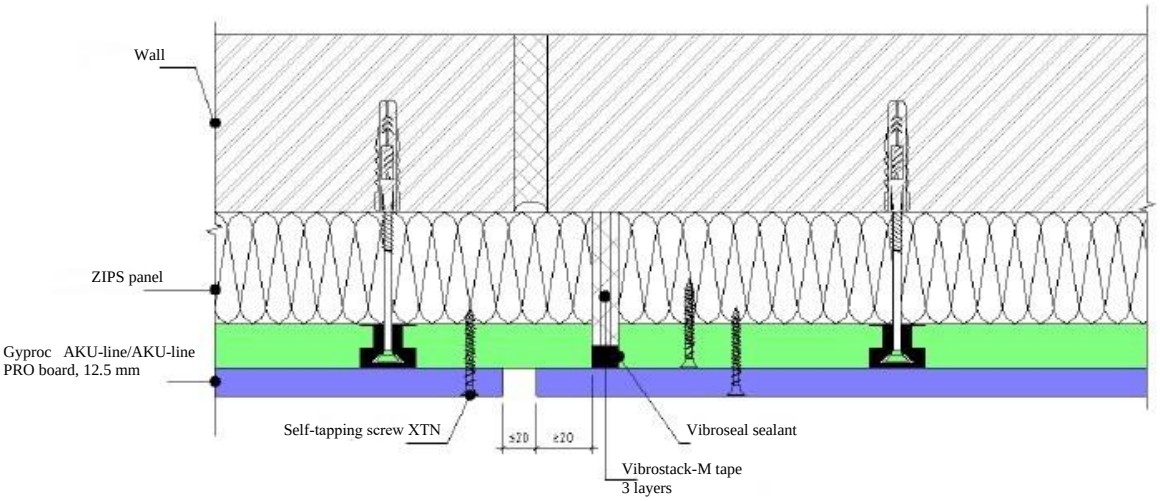

Figure 25. Providing an expansion joint when installing ZIPS panel system.

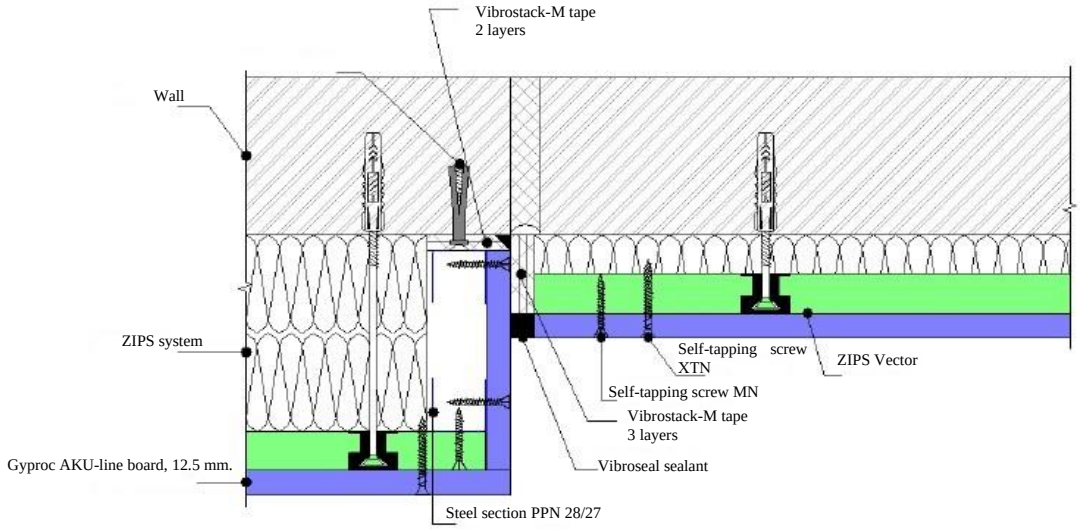

Figure 26. Providing an expansion joint when installing ZIPS panel systems of different thicknesses.

6.18. When installing ZIPS panel system to a height of over 6 m, an expansion joint is recommended.

6.19. The expansion joint is provided by making a horizontal gap between sandwich panels, which is filled with a wooden bar with a cross-section of at least 50x40 mm. Joining ZIPS panels to the bar is provided through Vibrostack-M vibration insulating tape laid in two layers, or ULTRAKUSTIK-LENTA F100 tape laid in 1 layer, and joint closure with Vibroseal vibroacoustic sealant. Two layers of Vibrostack-M vibration insulating tape are bonded together using Vibroseal vibroacoustic sealant.

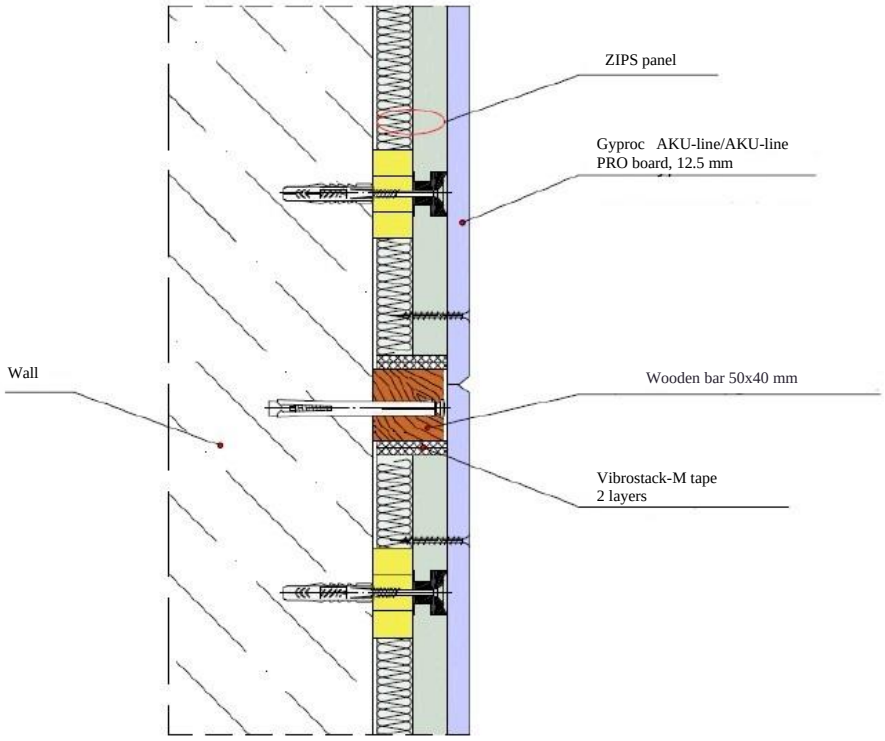

Figure 27. Providing an expansion joint when installing ZIPS panel systems on walls over 6 m high.

6.20. It is recommended to lay all utilities passing along the wall/ceiling in conduits made in the insulated structure or plaster layer.

6.21. In exceptional cases, utilities can be optionally laid inside the ZIPS soundproofing frameless system, observing the following conditions:

- the utilities are fixed on the wall/ceiling, and grooves for passage of the utilities are cut in the mineral wool layer of the sandwich panel;
- it is important that the utilities are laid in the mineral wool layer, not contacting the gypsum plasterboard layer of the ZIPS sandwich panel made of a gypsum plasterboard tongue-and-groove sheet.
- depending on the model of the sandwich panels, utilities with the following diameters can be laid:
  - for panels: ZIPS-III-Ultra, ZIPS-Vector and ZIPS-Z4 max 18 mm;
  - for panels: ZIPS-Module and ZIPS-Cinema max 45 mm;
  - for panels: For ZIPS-Slim, utilities should be laid in a conduit in the existing wall

6.22. When passing through the frameless soundproofing ZIPS system structure, pipes and other utilities shall be wrapped with two layers of Vibrostack-M vibration insulating tape or one layer of ULTRAKUSTIK-LENTA F100. The joints should be filled with Vibroseal sealant.

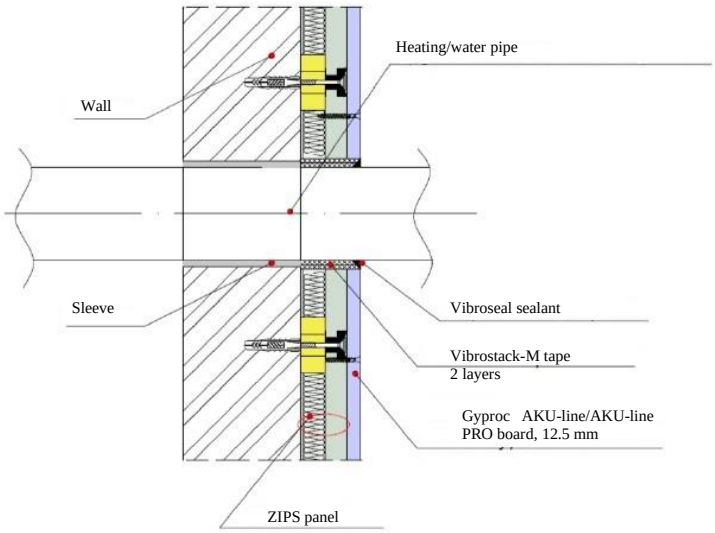

Figure 28. Heating/water pipe routing through frameless soundproofing ZIPS system structure.

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

6.24. Ultrakustik 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:
- 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; 3.9x19 mm self-tapping screws for gypsum plasterboards for ZIPS-Slim system) 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.

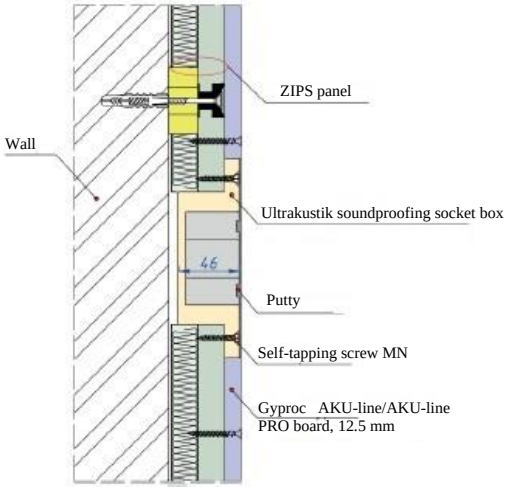

Figure 29. Installing the wiring accessories in ZIPS frameless system structures using Ultrakustik soundproofing socket boxes.

Remark

When installing ULTRAKUSTIK socket boxes in the ZIPS-Slim system, additionally provide a recess in the existing wall with a depth of at least 15 mm.

7. allowable loads when installing objects on the structure using ZIPS panels

7.1. Load up to 50 kg per running meter of the ZIPS wall panel system can be fastened at any point using self-tapping screws for a gypsum board, self-tapping screws with a press washer, or using specialized dowels for gypsum board structures. At the same time, the maximum load on the running meter of the ZIPS-CINEMA panel system is 35 kg.

7.2. Load up to 6 kg per running meter of the ZIPS ceiling panel system can be fastened at any point using self-tapping screws for a gypsum board, self-tapping screws with a press washer, or using specialized dowels for gypsum plasterboard structures. Fastening a load in excess of that specified on the ZIPS-CINEMA system is not allowed.

7.3. Load up to 12 kg per square meter of ZIPS ceiling panel system is fastened in a similar way based on at least 3 attachment points per 1 square meter.

7.4. Load over 12 kg per square meter of ZIPS ceiling panel system is mounted directly to the floor slab using vibration insulating hangers Vibroflex of type 1, 2 or 4.

7.5. All available attachment points must be used in the places where the attachable equipment is supposed to be fixed during installation to the ZIPS panels.

8. Hand tools

Table 4. List of required hand tools.

Name	Figure	Purpose
Laser level (geodetic level)		Level control when adjusting ZIPS-Z4 panels
Putty knife		Grouting of joints and self-tapping screw heads
Pneumatic hammer		Drilling holes in the wall/ceiling
Drill driver		Drilling holes in the wall/ceiling through vibration joints, tightening self-tapping screws
Drywall carrying tool		Gypsum board transfer
Hammer		Driving a dowel screw into a drilled hole in the wall/ceiling through a vibration joint
Heat-insulating slab cutting knife		Sound-absorbing layer cutting
Utility knife		Cutting Vibrostack-M/ULTRAKUSTIK-LENTA F100 tape, cutting sheets

Tape measure		Size measurements
Aluminum leveling board		Measuring control, material cutting control
Power jigsaw		Sheet cutting
Caulking gun		Sealant application

9. Workmanship

9.1. 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.

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

9.3. The use of panels with traces of damage to vibration insulating joints is prohibited.

9.4. When installing the ZIPS panels, due to production tolerances, gaps up to 5 mm can be formed in the joints of tongue-and-groove elements, which shall be filled with Vibroseal vibroacoustic sealant as required.

9.5. When installing ZIPS panels, due to production tolerances, non-tight adjoining of mineral wool boards can occur, which does not effect the soundproofing performance of the structure and does not require any additional manipulations.

9.6. 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.

9.7. The scope of operations and quality controls is given in Table 5.

Table 5

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: - availability of Vibrostack-M or ULTRAKUSTIK-LENTA F100 tape in places where the soundproofing structure adjoins the enclosures and utilities	Visual	General work log
	- availability of at least two vibration joints on the cut-out section on the panel;	Visual	
	- fixing panels via vibration joints;	Visual	
	- use of fasteners;	Visual	
	- use of metal anchor screws during ceiling mounting;	Visual	
	- tongue-and-groove connection quality;	Visual	
	- use of Vibroseal sealant.	Visual	
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
	- quality of installed structure		

Notes:
Control and measuring tools: ruler, tape measure, leveling board.
Incoming and in-process inspection should be carried out by: foreman (construction superintendent), engineer – during the work.
Acceptance inspection should be carried out by: quality control employees, foreman (construction superintendent), and customer's inspectors.

9.8. The in-process quality control scheme is shown in Table 6.

Table 6

Controlled operations	Requirements, tolerances	Inspection methods and tools	Inspector and date	Documentation
Surface quality compliance	Clause 5 of this method statement	Measurement	Construction superintendent	Concealed Work Inspection Certificate
Properties of materials	Compliance with regulatory requirements and design	Visual	Construction superintendent	Quality document, design
Marking of structure installation points	As per design	Measurement	Construction superintendent	General work log
Fastener installation control	Ref. this flow chart	Visual	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
Obtained surface quality compliance	Vertical or horizontal deviation not more than 6 mm per 3 m.	Measurement, with a two-meter rail or leveling board	Foreman (construction superintendent) during the work	General work log

10. Finishing the structure surfaces using gypsum boards

10.1. 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.).

10.2. 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.

10.3. To seal the joints between gypsum boards, use a dry putty mixture based on gypsum binder according to GOST 125-2018 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.

10.4. 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 drying of the first putty layer, application of a covering putty layer across the entire seam width with a wide putty knife (200-300 mm).

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

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

10.7. The surface of sheathing made of gypsum boards are suitable for any type of finish:

paint, wallpaper, ceramic tiles, decorative plastering.

10.8. 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.

10.9. After intermediate painting revealing different surface hues due to the availability of spots, etc., perform final painting of the sheathing surface.

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

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

10.12. 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.

10.13. 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.

10.14. 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.

10.15. 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).

11. Material and technical resources

11.1. The necessary basic materials per 1 m^2 of structure are specified in Table 7. The standard rates are given based on cladding sizes H=2.75 m; L=4.00 m; S=11 m^2.

Table 7

Name	**UoM**	**Solution thickness, mm**					
		Vector	**III-Ultra**	**Z-4**	**Module**	**Cinema**	**Slim**
		53	**55**	**55-105**	**83**	**133**	**38**
Lining elements							
ZIPS panel (1200x600 mm)	pcs.	1.5					
Vibrostack-M100 tape (30 m roll)	m	2.5				-	1.25
Vibrostack-150 tape (30 m roll)	m	-				2.5	-
Band ULTRAKUSTIK-LENTA F100 (15 m roll)	m	1.25				2.5	0.63
Sheathing							
Gyproc AKU-line/AKU-line PRO panel (1200x2500x12.5/1200x2000x12.5 mm)	sq. m	1					
Fixing edge layers, sealing the joints							
Vibroseal vibroacoustic sealant (Tube 290 ml)	pcs.	0.4					

12. The need for personal protective equipment and overalls for installation of the structure using ZIPS panels

12.1. The necessary personal protective equipment is listed in Table 8.

Table 8

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

13. Safety precautions

13.1. 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.

13.2. 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.

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

14. Basic fire safety instructions

14.1. 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.

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

14.3. 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.

14.4. 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.

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

14.6. 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.

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

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

14.9. 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.

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

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

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

14.13. 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.

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

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

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

14.17. 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.