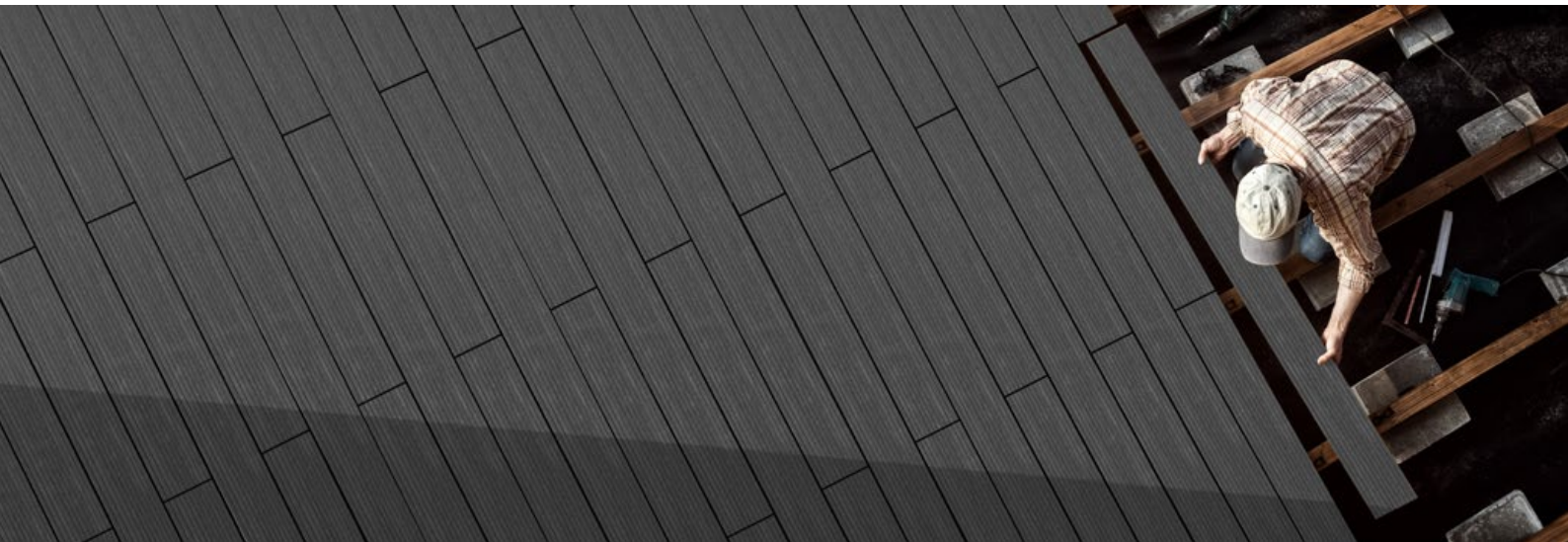




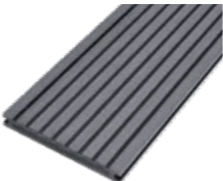











GAMRAT TERRACE BOARD



**INSTALATION
AND MAINTENANCE
INSTRUCTIONS**

MATERIALS

The offer includes the following basic materials:

NAZWA	RYSUNEK	WYMIAR (mm)
FULL TERRACE BOARD (composite profile)		20 x 160 x 3000 or 20 x 160 x 4000 or lengths on order
TERRACE BOARD (composite profile)		25 x 160 x 3000 or 25 x 160 x 4000 or lengths on order
JOIST (composite profile)		30 x 50 x 3000
JOIST (aluminum profile)		36 x 24 x 4000
HIGH JOIST (aluminum profile)		39 x 50 x 4000
WPC FINISHING STRIP „L” SHAPE (ANODIZED)		35 x 35 x 3600
COMPOSITE FINISHING PROFILE (composite profile)		60 x 6 x 3000
WPC FINISHING STRIP „L” SHAPE		35 x 60 x 3000
MOUNTING CLIPS	 starting clips  starting clips  screw  mounting clips	Kit for 2 m ² 32 pcs of mounting clips 3 pcs of start clips
		Kit for 10 m ² 160 pcs of mounting clips 15 pcs of start clips

NAZWA	RYSUNEK	WYMIAR (mm)
MOUNTING CLIPS 6 mm		Kit for 2 m ² 32 pcs Kit for 10 m ² 160 pcs
GAMRAT WPC ABS PLASTIC CLIPS WITH SCREW		Kit for 2 m ² 32 pcs Kit for 10 m ² 160 szt.
TORX SCREW		27 x 3,8
TORX T15 50 mm		-

GAMRAT composite profiles are high quality materials containing selected wood flour and plastic (PVC) with the necessary additives. These elements are used exclusively for the construction of terraces and cannot be used for other construction purposes without having a project made by persons authorized to do so.

GAMRAT also offers different kinds of elements for levelling or obtaining a proper decline of a terrace by raising it to the required height.

Colouring

In the first period of using composite profiles under the influence of external conditions, they are subject to seasoning. The colour stabilizes after a few months reaching its final saturation.

Due to the content of wood fibres, individual composite profiles, especially those from different production batches, may differ in colour. The colours and surface finishes may be different for different deliveries. It does not affect their durability and it is not a defect of the product. Before starting installation works, examine visually composite profiles against their appearance and defects. To achieve a natural effect, composite boards should be mixed before mounting, bearing in mind the direction of brushing.

Substrate preparation

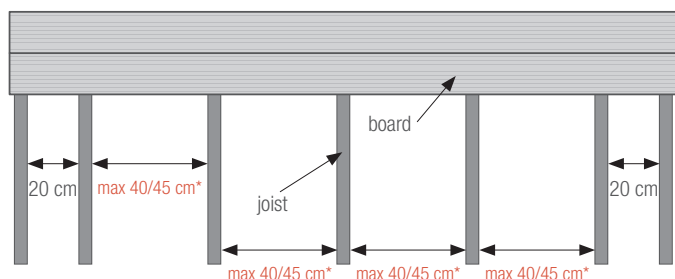
Terraces, stairs, communication paths made of composite profiles Gamrat is mounted on a previously prepared substrate, the execution of which should be in accordance with the applicable knowledge and building codes. A preparation project is very often necessary substrate to maintain the maximum safety of future users. The execution of the substrate is solely your responsibility contractors and the information provided below serves only as material informative.

This instruction has been prepared for standard plank lengths and joists of 3 meters.

The most common solutions include:

- 1) Concrete substrate, reinforced concrete;
- 2) Substrate on the ground;
- 3) Substrate on a balcony or inverted roof structure with waterproofing.

In any case, regardless of the type of substrate and the joist used for the construction of terrace boards, joist spacing which the directly mounted boards will rest on, must be equal to maximum 40 or 45 cm * „in the light” (for WPC Gamrat joists). At the same time, it is necessary to ensure that the board is fastened with clips as much as possible every 50 cm, which is automatically included in the joists of the system Gamrat WPC. At the beginning and end of the planks to provide extra stabilization and proper work, the first row of joists should be compacted and this distance should be 20 cm „in the light”. The structure should be closed with a frame within the terrace outline.



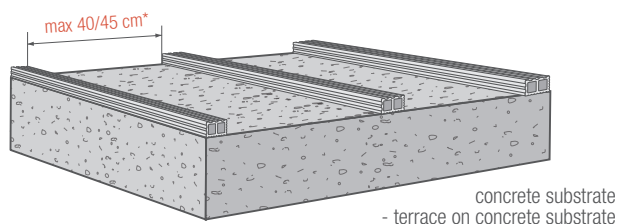
spacing of joists

- *40 cm - full board
- *45 cm - chamber board

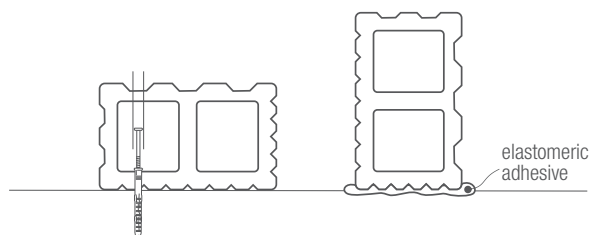
1) CONCRETE SUBSTRATE, REINFORCED CONCRETE:

- The terrace is mounted on composite joists attached to the substrate.

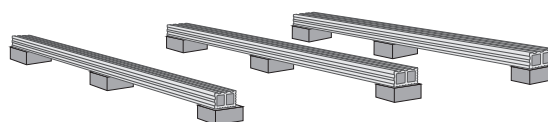
Lay joists on a concrete slab (do not embed them in the concrete), fixing with concrete dowels or elastomeric adhesive. It is allowed to install joists arranged vertically using an elastomeric adhesive (only on flat surfaces, adjacent on the entire length of the joist to the ground).



- *40 cm - full board
- *45 cm - chamber board



Joists can be laid also on a steel, wooden or aluminium structure, or on plastic brackets. The maximum distance between the support points of composite joists is 35 cm. All these types of supports must be permanently attached to the substrate. The composite joist must be attached (drilled, using a dowel or using carpentry joints 90°). The substrate must be flat and stable with a slope of minimum of 1% from the walls of the building to the outside. Such a terrace slope influences the optimal drainage of water from the terrace surface.

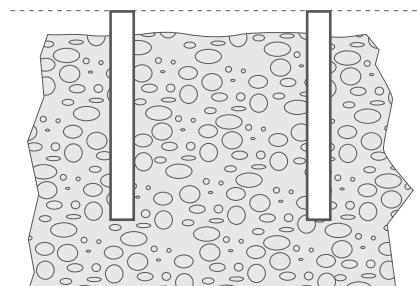


joists on concrete cubes

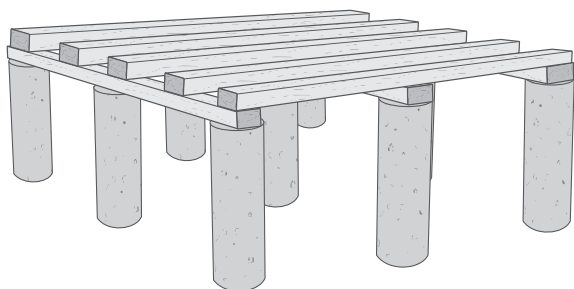
2a) SUBSTRATE ON GROUND:

- The terrace is installed on concrete foundations with a wooden or metal structure with a higher load capacity than the WPC joist.

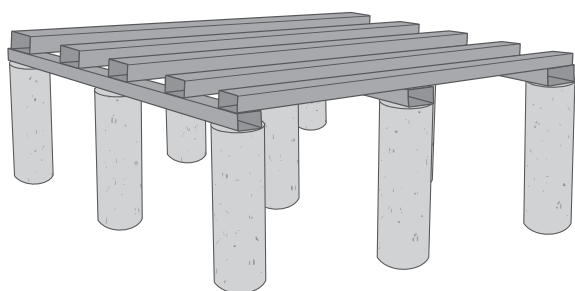
In this case, drill holes to a depth below the ground frost depth. Depending on the region, this depth is approx. 1.0 m - 1.2 m. It is advisable to put wire reinforcement into the holes and pour them with concrete. Position concrete forms, e.g. cardboard forms, centrally in relation to the holes and above the ground up to the height of the planned terrace (taking into account the joist and board thickness), all to be done providing a recommended terrace slope (min. 1%), and pour it with concrete. The distances between individual piers/support points of the joists depend on the type of material used, from which the structure will be made. Typically, a wooden or metal joist profile is used so that the distance between the concrete piers could be about 1 m.



substrate on ground
- terrace on concrete supports



substrate on ground
- terrace on concrete supports and wooden structure

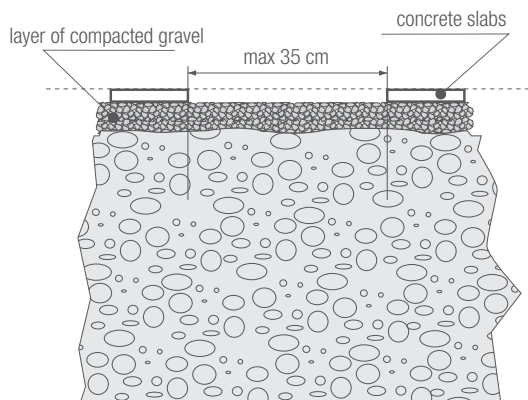


substrate on ground
- terrace on concrete supports and metal structure

2b) SUBSTRATE ON GROUND:
• Terrace installed on concrete slabs.

In order to prepare the substrate in such a way, you shall remove a layer of soil to a depth of approx. 20 - 30 cm, and bring gravel in this place. Compact the whole area to prevent further settling of stones. You shall lay concrete slabs on the so prepared substrate at such a distance from each other so that the free space between the support points of joists shall not exceed 35 cm.

On such prepared subfloor, concrete slabs should be placed at such a distance from each other that the free space between joist support points should not exceed 35 cm in the case of a WPC joist and accordingly more in the case of a joist material with higher bearing capacity than the composite joist. The joists must be permanently attached to the concrete slabs. The weight of concrete slabs must be large enough to ensure adequate stability and maintenance of the structure. **In this case you shall take into account the possibility of ground movement during the winter, which will impact on the terrace surface, for which GAMRAT Company assumes no responsibility.**

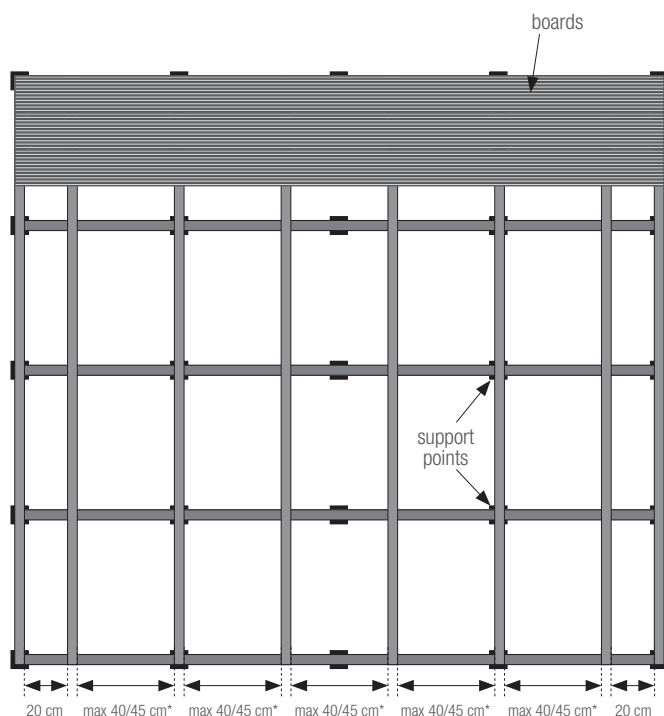


substrate on ground
- terrace on concrete slabs

3) SUBSTRATE ON A BALCONY OR STRUCTURE OF AN INVERTED ROOF WITH WATERPROOFING:

- Install the floating terrace on a metal grate.

In the case of floating terraces, where it is not possible break through the ground directly, which is where horizontal waterproofing is made, eg balconies, garages, etc. Boards must be stacked on a suitable self-supporting structure in the form of truss made of steel or aluminum joists on a suitable profile that will take on the work of the terrace and stiffen him. The first layer of joists on the lower or most often on the higher ones support points in the form of adjustable supports or concrete blocks, properly leveled. Next second cross layer of steel or aluminum joists with preservation max 40 or 45 cm* „in the light” spacing under the boards. in this case, first order compaction is especially important joists spaced at 20 cm. This is to provide extra stabilization and operation of the structure that is not permanently attached to the ground. We also remember about the requirement to fasten the board with clips every 50 cm

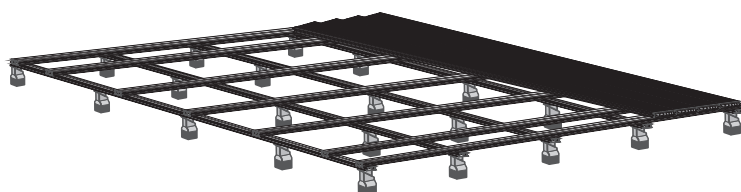


floating terrace on a metal truss

spacing of joists
*40 cm - full board
*45 cm - chamber board

Note:

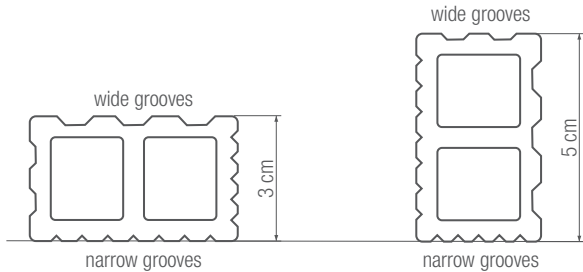
- During the preparation of the substrate, you shall pay attention to water freely flowing out of the terrace. This applies to both terraces made at the ground level and above the ground level. In order to facilitate water drainage, it is recommended to provide a slope of minimum of 1%, i.e.: 1 cm per 1 m, outwards from the building. This applies to both the terrace boards and the structure, on which the joists are fixed.



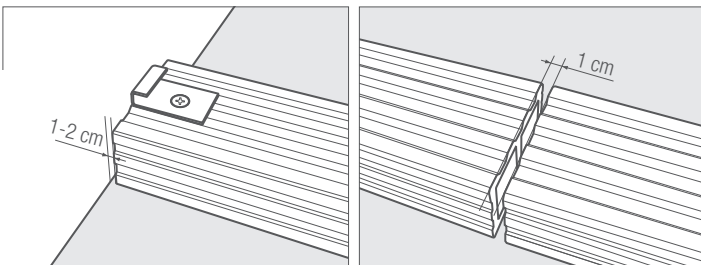
floating terrace on a metal truss laid on levelling plastic supports

1) HORIZONTAL AND VERTICAL POSITIONING OF JOISTS AND EXPANSIONS GAPS

Joists shall be laid parallel to each other (except for cutting terraces at an angle of 45°). It is allowed to lay joists in the horizontal position, which causes the terrace to be additionally raised by about 3 cm or in the vertical position, which causes the terrace to be additionally raised by about 5 cm (joist of dimensions 3 x 5 cm).



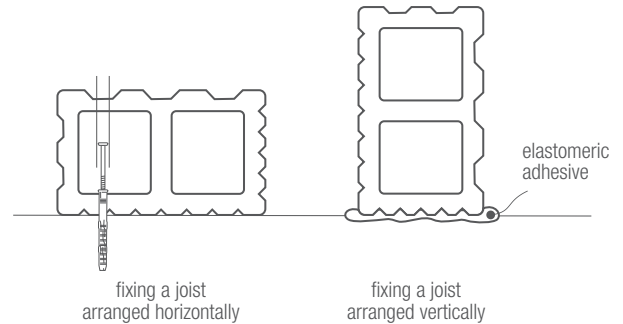
Laying should be done so that the joists lie flat and wide grooved up. These grooves are prepared so that the mounting clips fit in the grooves of the profile, which will be helpful in the further assembly stage. Be sure to leave between the wall and the joist 1-2 cm. To ensure good drainage of surface water under the terrace, a gap of 1 cm should be made at the frontal one joining joists. These expansion joints are essential for proper behavior of the elements during use and for free drainage of water under the boards.



2) FIXING JOISTS TO SUBSTRATE

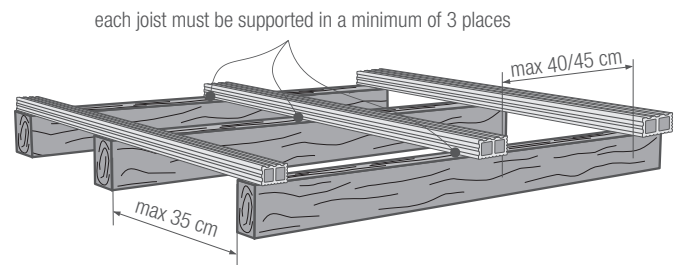
Joists shall be permanently fixed to the substrate with dowels (not included) or an elastomeric adhesive. To do this, drill a hole in the upper part of a joist using a drill bit of a diameter greater than the dowel head diameter. Then, through this hole, drill a hole in the joist bottom and the substrate using a cemented carbide drill bit with a diameter adapted to the dowel size. Through drilled holes, fasten the joist to the substrate with a dowel.

You can use the fast installation dowels, what significantly reduces the time of fastening joists. The maximum distance between the points of mechanical fastening the Gamrat joists is 50 cm. It is allowed to install joists vertically only on flat surfaces (to which a joist adheres on its entire length). Fix them with an elastomeric adhesive.



3) SPACING AND ARRANGEMENT OF JOISTS

The maximum distance between joists (places where the board is supported) shall not exceed 40/45 cm* in any place, and every single joist regardless of its length must be supported in a minimum of 3 places, the distance between which shall not exceed 35 cm.

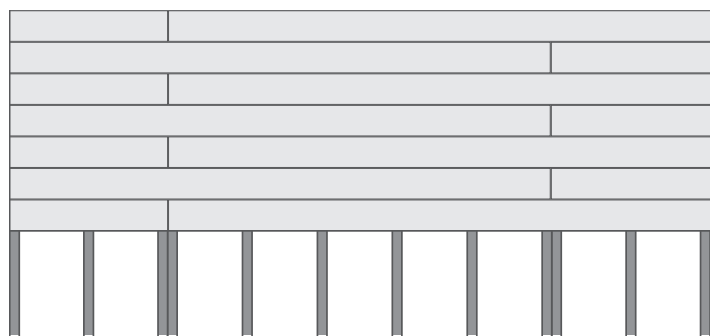


spacing of joists

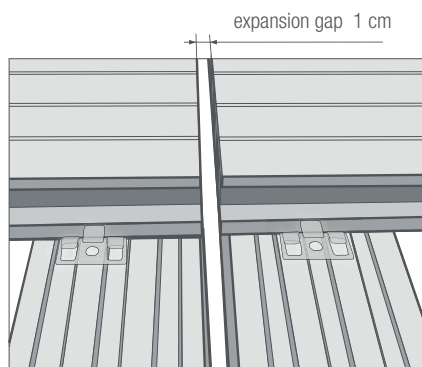
- *40 cm - full board
- *45 cm - chamber board

If it is necessary to join boards using a butt joint or to make a terrace with chamfered corners, you shall be sure to install an additional joist, so that the ends of each board are supported by a separate joist and are fastened with separate clips.

LAYING TERRACE BOARDS



arrangement of joists when using butt joints of boards - terrace with a staggered arrangement



boards joined using a butt joint and supported by two joists

* All mounting clips from the Gamrat WPC offer can be used interchangeably.

When performing non-standard joints, for example, corners at an angle of 45°, joist shall be placed under each board separately, so that the ends of boards are supported on a separate joist. Remember to leave a 1 cm gap between the boards and joists to allow free expansion of the material.

Notes:

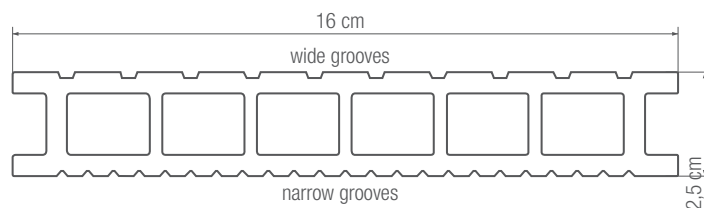
- Joists should not be placed vertically on point surfaces (e.g. concrete slabs, plastic supports, etc.).
- Installation of joists in a vertical arrangement is allowed only on flat surfaces (to which the joist adheres with its entire surface). We mount them with an elastomeric glue.
- It is also allowed to lay terrace boards directly on wooden, aluminum or galvanized steel profiles. In this case, follow the manufacturers' guidelines these profiles, because each manufacturer, depending on their dimensions and e.g. the wall thickness may prescribe other distances in between points of support. By default, however, it is assumed that points supports for the aluminum profile:
 - 30x30 mm and a wall thickness of 2.0 mm is 50 cm,
 - 30x50 mm and 2.0 mm wall thickness are 80 cm (when laying to a height of 50 mm).
- In the case of wooden joists, use appropriately prepared and impregnated elements made made of hard types of wood or exotic wood. The use of softwood joists (e.g. pine) will cause them to decay too early, which will lead to them to damage the terrace. In either case, Gamrat did not takes responsibility for the durability and stability of the entire structure.
- Remember that the maximum spacing between the joists (points board support), cannot exceed 40 or 45 cm * from the edges of adjacent joists (i.e. the clearance between the joists) and the distance between the clips must not exceed 50 cm.
 - *40 cm - full board, 45 cm - hollow board

- For a significant amount of traffic (e.g. : communication road for pedestrians, stairs) or the occurrence of significant concentrated forces on the terrace (e.g. placing heavier objects on the terrace) the distance between the support points of the joists and the distance between them should be properly thickened.
- To increase the support area of the joists and thus foam can be used to increase the stability of the entire structure polyurethane low-expansion, dosing it between the joist and the substrate on the longest possible length of the joists.

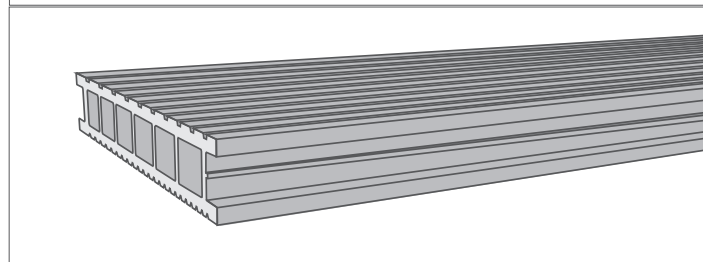
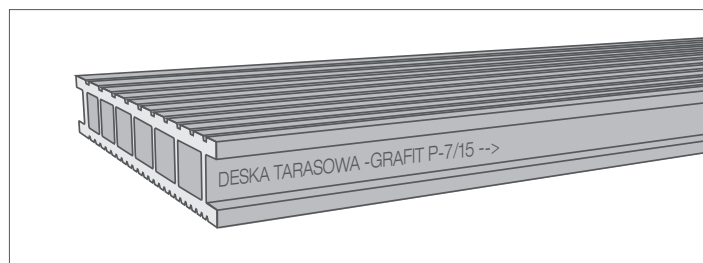
LAYING TERRACE BOARDS

1) TYPES OF GROOVES AND ARRANGEMENT OF BOARDS

The GAMRAT composite profile - a terrace board with a width of 16 cm is a two-sided product. One side has wide grooves while the other side has narrow grooves. Installation can be done by any side up according to your preferences.



To identify clearly product sides, one side of the board is printed. During installation, pay attention to have the printed side always on one side of the installed terrace. This ensures that the boards are installed with maintaining the same direction of brushing. This arrangement minimizes the possibility of differences in shades after the installation and during the use.



2) FASTENING BOARDS

Fastening boards to joists is done using the supplied mounting kit. The set includes screws, start clips – for installing the first board, and mounting clips – for fastening subsequent boards.

When using joists other than system joists, appropriate screws should be used to fasten boards with mounting clips. The screws attached to the kit are screws for a WPC joist. In the case of using wooden or metal joists, you need to obtain appropriate screws on your own.



start clip



screw



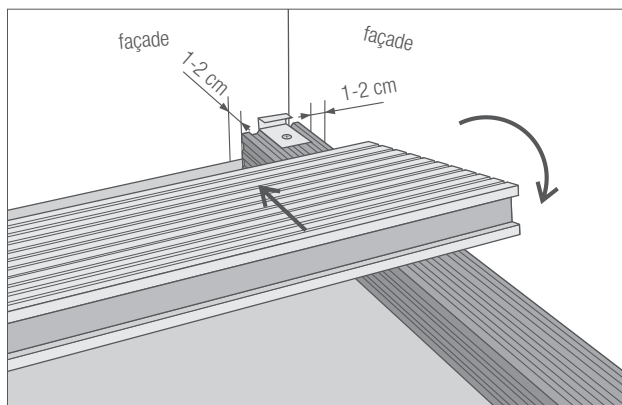
mounting clip 5 mm



mounting clip 6 mm

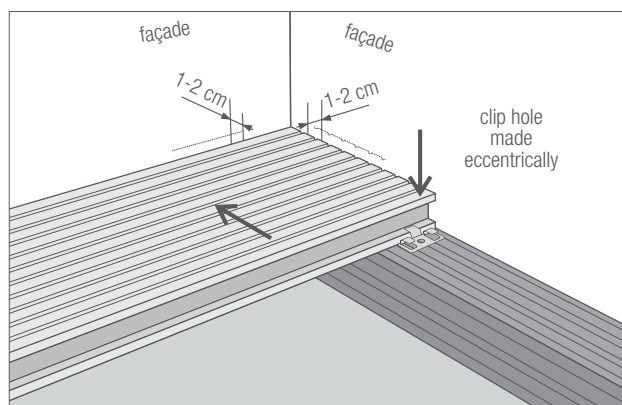
LAYING TERRACE BOARDS

Start installing a board from fastening start clips to the joist. You shall leave an expansion gap of min. 1-2 cm between the board and the wall.



installation of the first board with a start clip

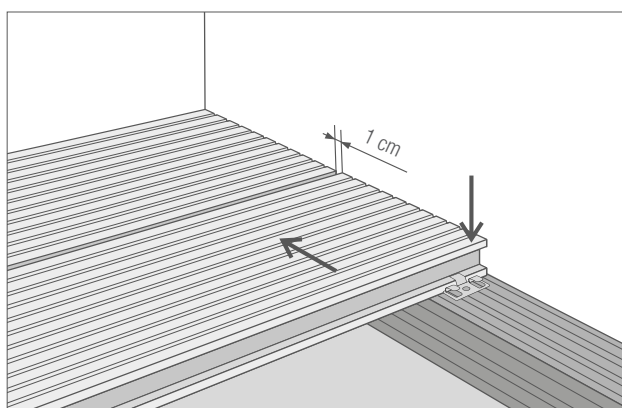
After fastening the start clips, place a board to have its lower tongue properly fixed by the start clip. Push the board into its place and screw in the second edge of the board using a mounting clip. It should be noted that in order to facilitate the installation, the hole in the clip is made as an eccentric one. This allows you to freely screw the clip in before placing the next board.



installation of the first board with a mounting clip

*** All mounting clips from the Gamrat WPC offer can be used interchangeably.**

Clips are designed so that there is an expansion gap of 0.5 cm between the subsequent boards.



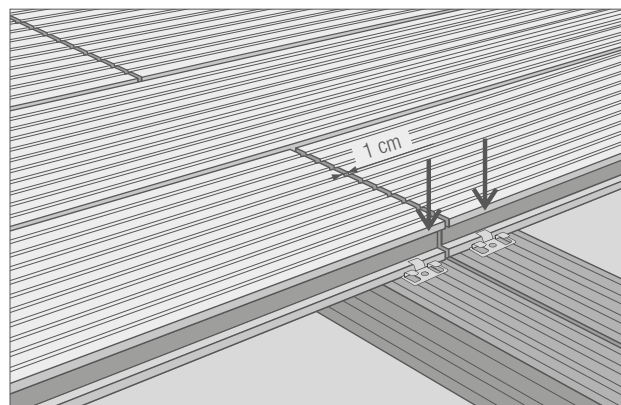
installation of a subsequent board with a mounting clip

*** All mounting clips from the Gamrat WPC offer can be used interchangeably.**

In the event of connecting boards using a butt joint, pay attention to that the expansion gap there between is 1 cm.

LAYING TERRACE BOARDS

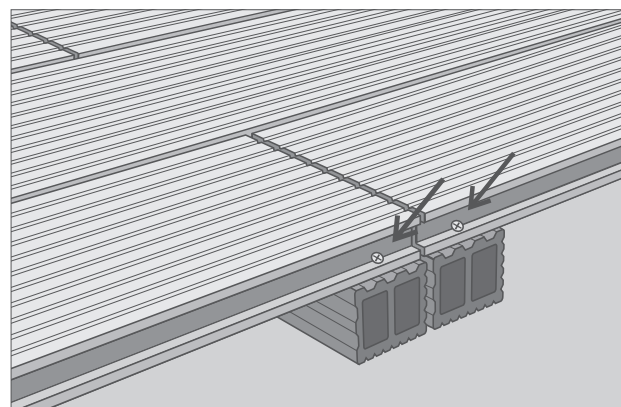
The ends of the boards must rest on separate joists and be secured by separate clips. For a better appearance, it is recommended to cut off approximately 10 mm from both ends of the board before its installation, as they are slightly rounded after brushing.



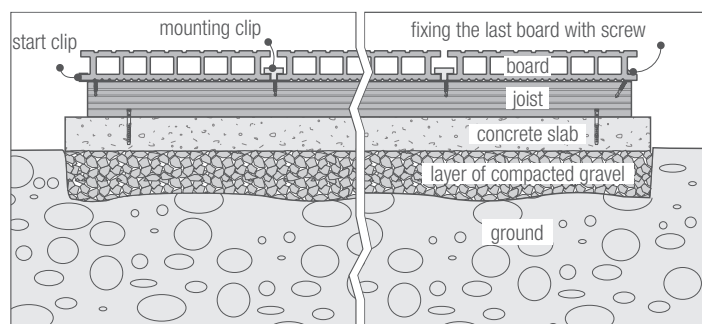
butt joint of boards on two separate joists (expansion gap 1 cm)

*** All mounting clips from the Gamrat WPC offer can be used interchangeably.**

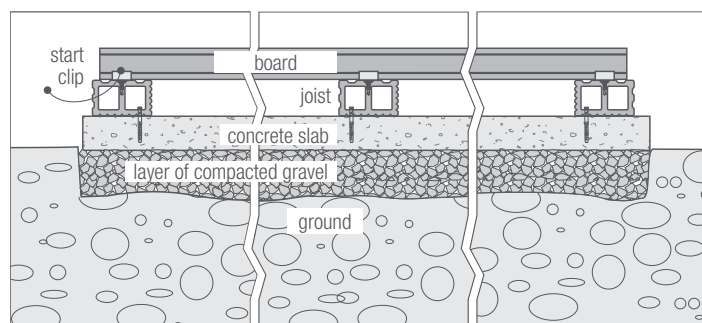
The installation of the last board shall be performed by screwing the screw at an angle through the bottom edge of the board to the joist. There is a possibility of cutting a board lengthwise, crosswise and at an angle. To do this, use widely available professional tools like for cutting wood planks.



installation of the last boards with screws screwed at an angle



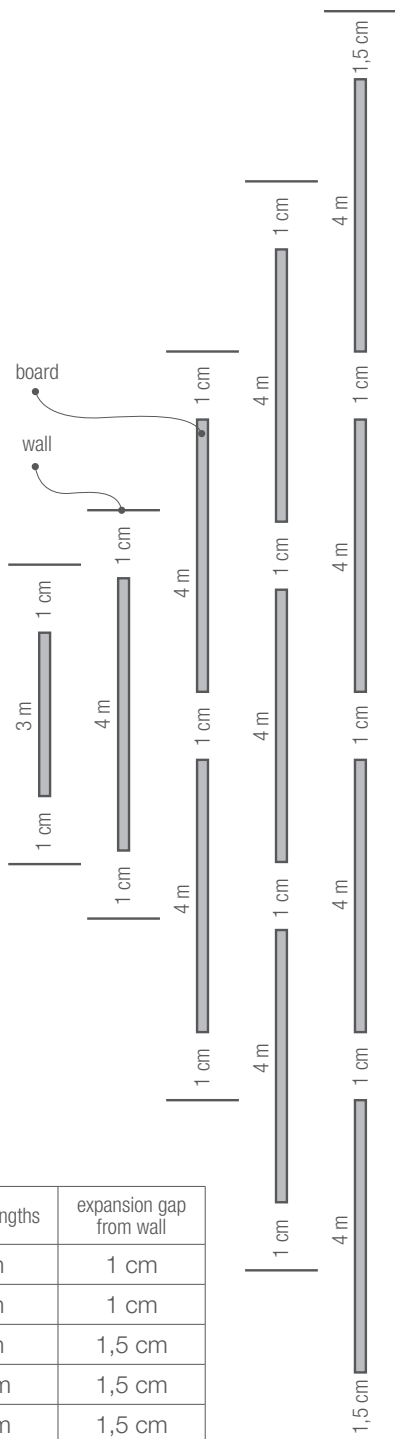
terrace view from the fronts of boards



terrace view from the sides of boards

Notes:

- You shall leave a minimum expansion gap, which depends on the sum of the lengths of the boards (on the length of the terrace). A minimum of 2 mm per 100 cm of the sum of the lengths of the boards.



number of boards	sum of lengths	expansion gap from wall
1 pcs	3 m	1 cm
1 pcs	4 m	1 cm
2 pcs	8 m	1,5 cm
3 pcs	12 m	1,5 cm
4 pcs	16 m	1,5 cm

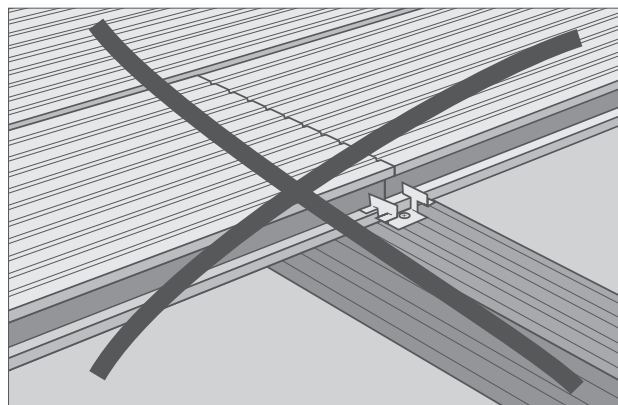
expansion gap between the board front edge and wall depends on the sum of the lengths of boards

The rule of thumb to be the sum of the expansion joints (including the gaps from the wall of the building, or other limitations of the edge of the terrace) was about 0.3 - 0.4% of the total length of the terrace, with them relatively evenly distributed.

The dilatation between the side of the board and the wall is dependent from the width of the terrace (the sum of the widths of the boards) and from there the length of the joists. It is defined by the same principles as in case of boards. It is counted in the same way as a frontal dilation: minimum 2 mm per 100 cm of the sum of the width of the boards

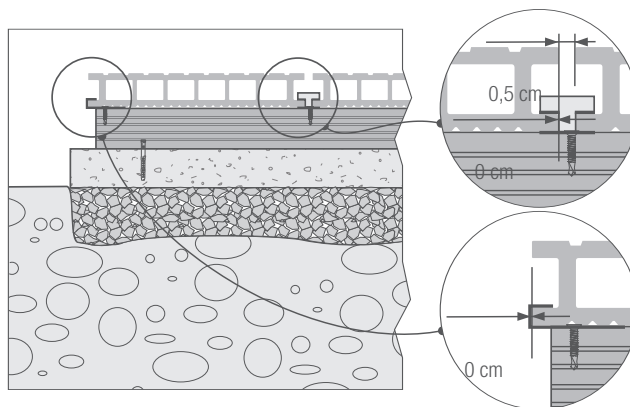
- When joists are joined using a butt joint, pay attention to leave a 0.5 cm expansion gap. The ends of the boards must rest on separate joists and be secured by separate clips.

In the case of butt joining the boards, make sure that there is an expansion gap of 1 cm between them. The ends of the boards must rest on separate joists and be fastened with separate clips.

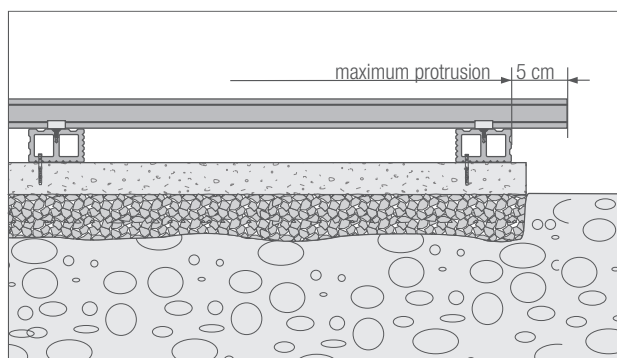


improperly made butt joint of 2 boards

- Fix clips to the joist using stainless steel self-drilling screws (they are included to the mounting kit with clips). When fixing a board in a clip, make sure it is pushed against stop. There shall be no free space between the board and the clip. This allows you to obtain a uniform expansion gap between the boards of 0.5 cm.



- Installation of the last board shall be made by screwing in the screw at an angle.
- The front of the board shall not protrude over the joist by more than 5 cm.
- During the period of use due to the working of the boards, the expansion joints between individual boards may vary, depending on the conditions of use and exposure.

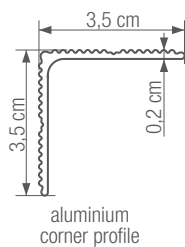
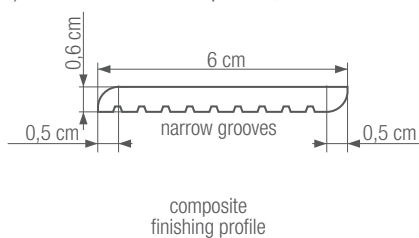


maximum protrusion of board over joist is 5 cm

TERRACE EDGE FINISHING

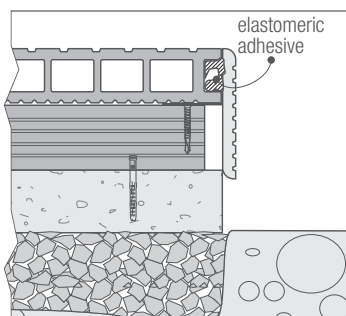
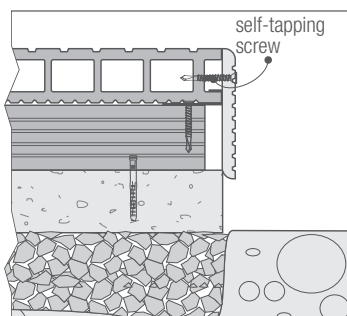
Terrace edge finishing is made using:

- 1) composite profiles;
- 2) aluminium corner profile;

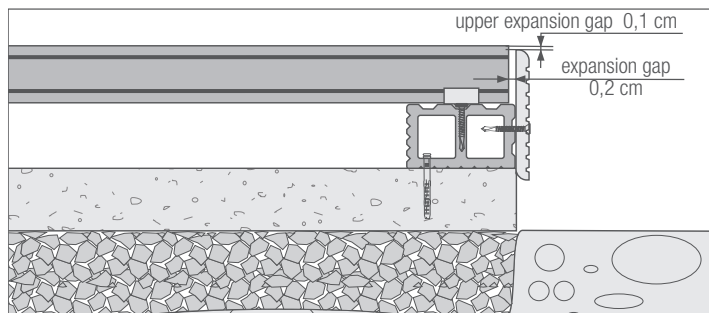


1) Finishing with a composite profile

At the corners of the terrace, cut the finishing profiles at an angle of 45°. Fix them using self-tapping screws or an elastomeric adhesive. The elliptical holes, used for the screws, are designed to provide the minimum possible movement.

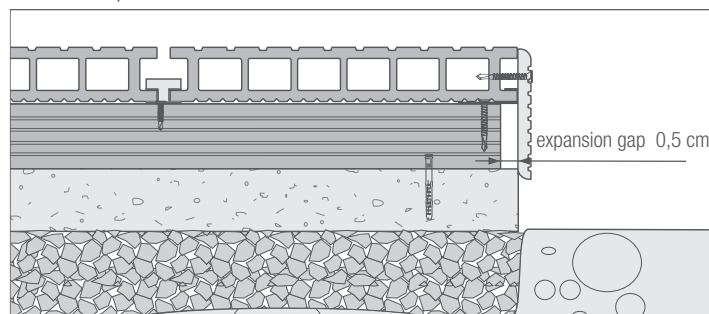


On the face of the board, fix the finishing profile to the side surface of the joist. Leave the expansion gap of 0.2 cm between the finishing profile and the front surface of the board. In addition, lower the profile by 0.1 cm from the upper surface of the board. The board elongates with increasing temperature and humidity and lack of this expansion gap may cause the profile to be torn off.



expansion gap 0.2 cm between composite finishing profile and board front surface

On the side of the board, fix the finishing profile to the side surface of the board. Leave the expansion gap of 0.5 cm between the finishing profile and the front surface of the joist. The joist elongates with increasing temperature and humidity and lack of this expansion gap may cause the profile to be torn off.

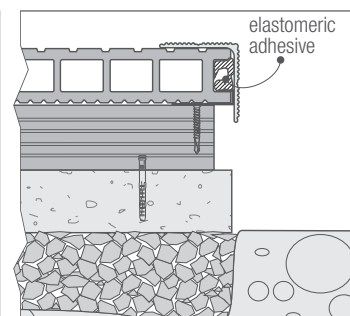
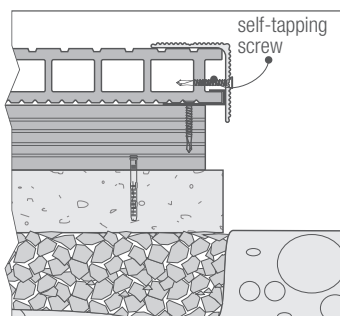


expansion gap 0.5 cm between composite finishing profile and joist front surface

2) Finishing with an aluminium corner profile

Installation of aluminium corner profiles is very similar to the composite finishing profiles.

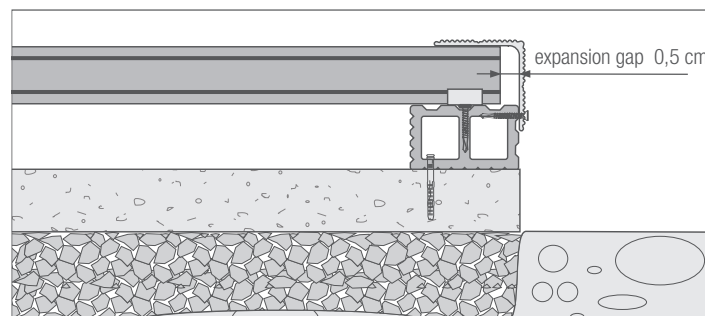
At the corners of the terrace, cut the corner profiles at an angle of 45°. Fix them using self-tapping screws or an elastomeric adhesive.



profile installation using self-tapping screws

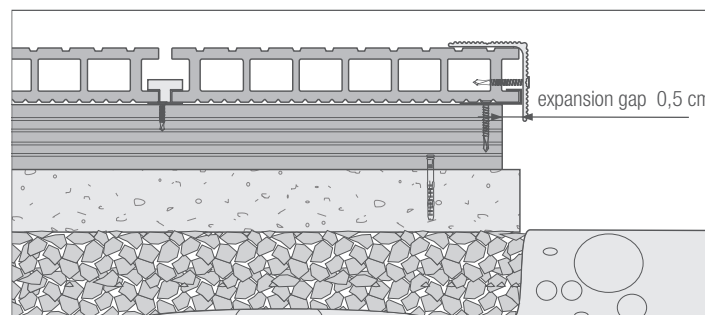
profile installation using elastomeric adhesive

On the face of the board, fix the corner profile to the side surface of the joist. Leave the expansion gap of 0.5 cm between the corner profile and the front surface of the board. The board elongates with increasing temperature and humidity and lack of this expansion gap may cause the profile to be torn off.



expansion gap 0.5 cm between aluminium corner profile and board front surface

On the side of the board, fix the corner profile to the side surface of the board. Leave the expansion gap of 0.5 cm between the corner profile and the front surface of the joist. The joist elongates with increasing temperature and humidity and lack of this expansion gap may cause the profile to be torn off.



expansion gap 0.5 cm between aluminium corner profile and joist front surface

STORAGE AND MAINTENANCE

- During storage, GAMRAT composite profiles (boards, joists and profiles) shall be protected from the weather (roofing, shelters).
- To avoid deformation of their shape, they shall be stored lying flat and stable.
- GAMRAT composite profiles (boards, joists and profiles) do not require maintenance, waterproofing and painting. They are resistant to water, do not rot, do not swell. In addition, they are resistant to weather conditions, low temperatures and pests (e.g. bark beetles, termites).
- Cleaning the composite boards is very easy and does not require any special measures. Ordinary household measures are adequate. The best cleaning results are obtained with high pressure water (at maximum of 100 bar), cleaning in the direction of board grooves.
- For cleaning, do not use solvents and cleaning machines.
- Stains of grease or oil must be removed as soon as possible, not allowing them to dry, using a basic detergent.
- In case of particularly strong soiling, use copper wire brush or sandpaper of fine granulation and clean in the direction of the board grooves. These activities shall be done very carefully so as not to damage or change the groove dimensioning.
- To ensure adequate water drainage and air flow, you shall clean the gaps between boards not allowing them to clog.
- The composite wood material is very easy to maintain, but it is worth to make maintenance regularly.
- Sweeping the terrace can prevent the formation of mould. You shall also remember to periodically sweep the area under flower pots and boxes to prevent absorbing moisture and getting dirty.
- A composite board when exposed to UV rays and water is subject to a natural process of changing its colour. This has no effect on its life and is not a product defect and does not constitute grounds for a complaint.
- We recommend sprinkling the surfaces of terrace boards that have become icing with expanded clay due to safety reasons.
- In the case of using other anti-icing agents for GAMRAT composite boards, each time the manufacturer of these boards should be consulted.

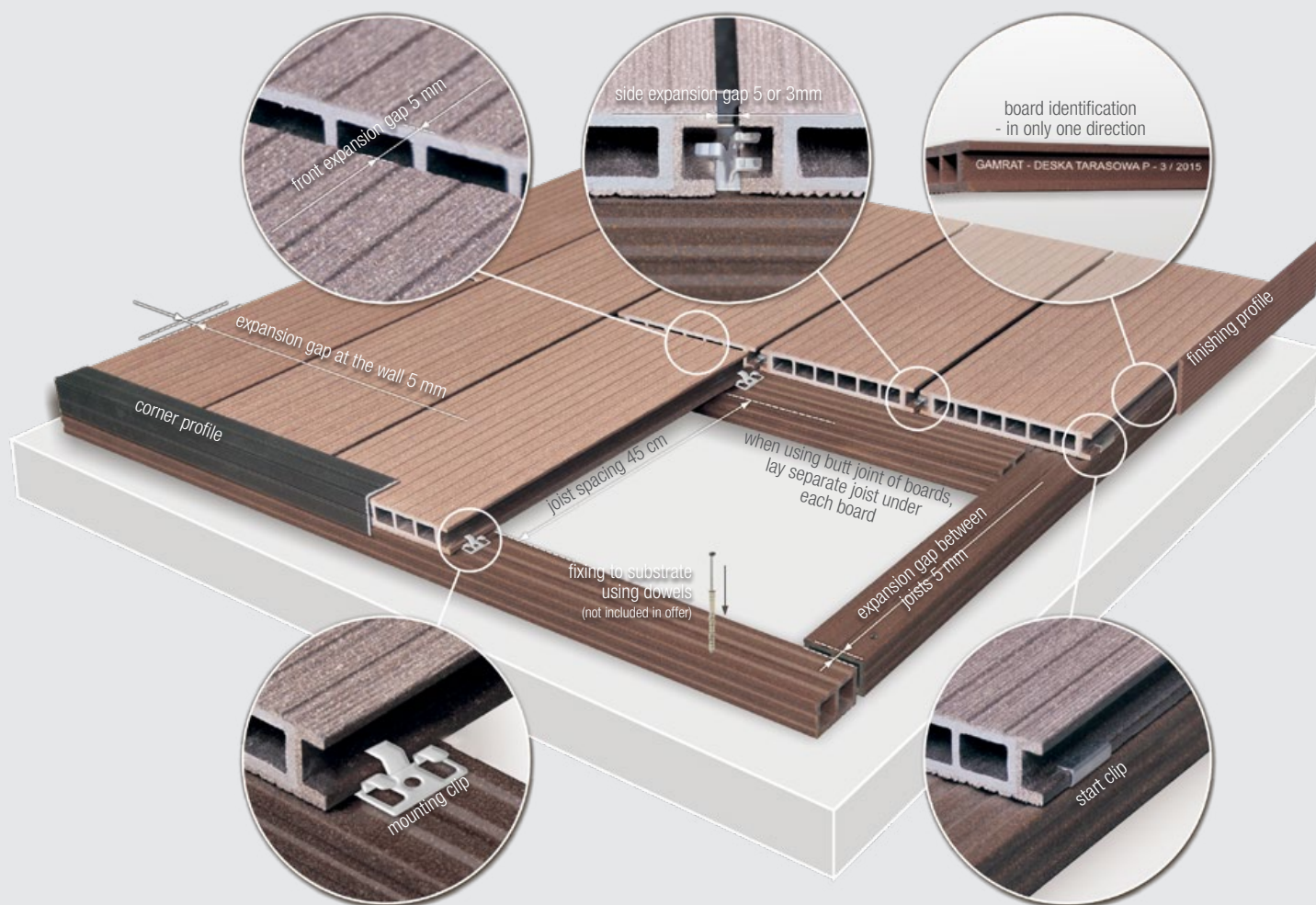
FINAL REMARKS

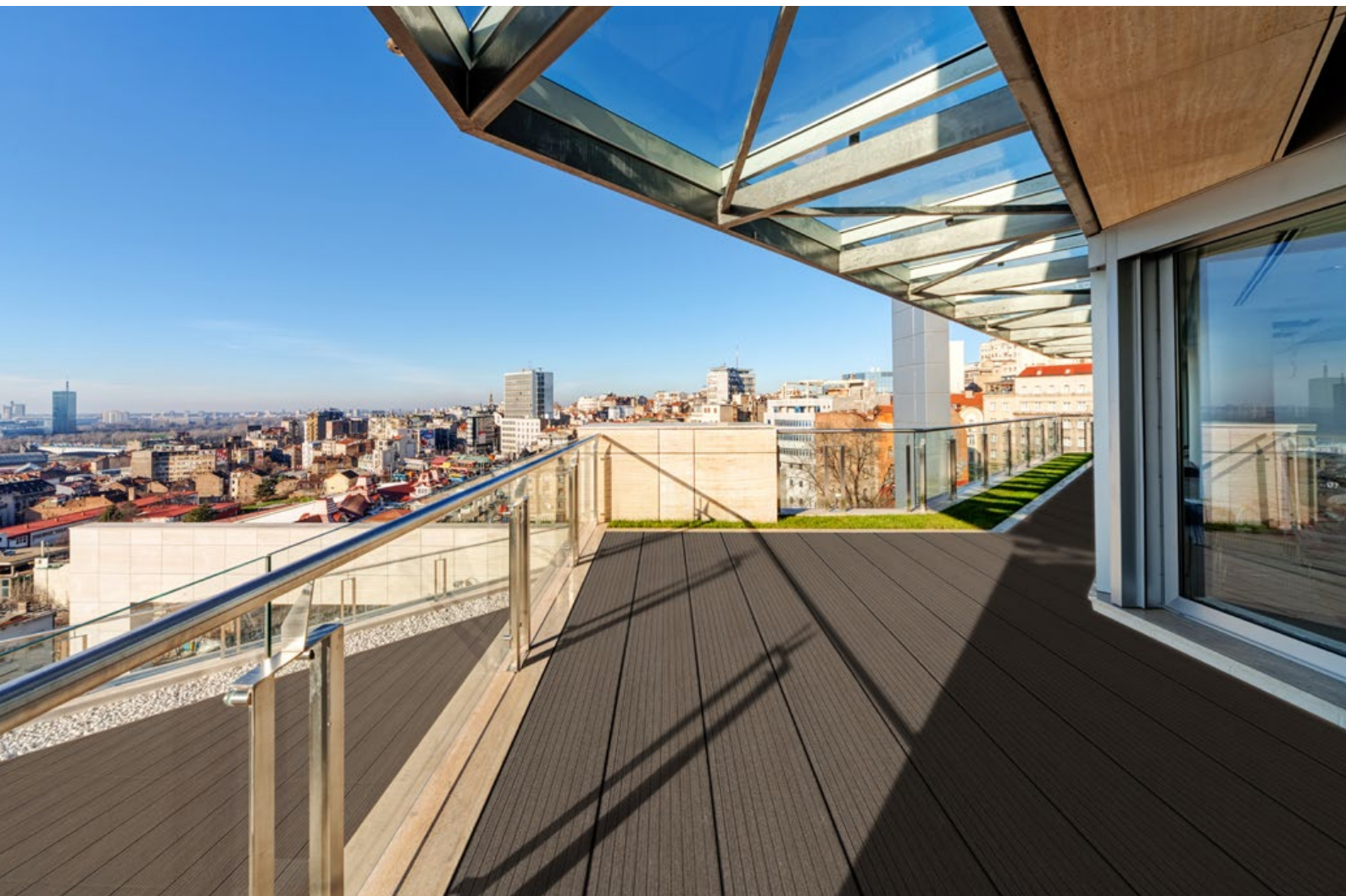
These guidelines are for information and preview purposes and are intended to present the methods of installing our terrace boards and describe some possible ways of making a substructure using materials available in our offer or with the use of alternative materials available in the construction industry. When constructing terraces by professional companies (contractors), it should be remembered that each time the place of installation, conditions of surrounding development, and types of substrate will be different. When constructing and designing the terrace structure, the materials used to make the load-bearing structures and foundations, construction technologies, place and conditions of use of the terrace as well as the available art and general knowledge of construction should be taken into account. In addition, they must comply with building standards and regulations and designed by the constructor using materials that meet these conditions. According to the applicable law, the contractor provides a guarantee for the performance of the service. Following these guidelines is not a substitute for the complete knowledge of terrace construction contractors specializing in this type of construction activity.



Gamrat WPC

INSTALLATION LAYOUT





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