

How to Install UltraBaseSystems® Panels

Tools



Leather Gloves



Hard Top Knee Pads



Infrared Thermometer

Steps

- 🔹 **Ground Prep:** A professional engineer should approve ground preparation prior to installation. Installation on a hard surface such as concrete or asphalt is acceptable.



Earth Subbase



Concrete or Asphalt Subbase

- 🔹 **Geosynthetic Stabilization Fabric Installation:** *(The selected fabric installed under the panels in order to help create a stable base.)* Use of a preferred geosynthetic stabilization fabric is mandatory on all earth installations. A 6-inch overlap between each row of Geo fabric is recommended. Several layout options are illustrated below. Unroll 15 to 30 feet (4.6 to 9 meters) of fabric at a time and immediately cover with unassembled UltraBaseSystems panels to act as ballast to keep the Geo fabric from moving. It is recommended that the use of a heavy duty woven Geo fabric can be used to act as a sound barrier between UBS panels and concrete or asphalt to prevent any unwanted tapping sound due to inconsistencies between the two surfaces.

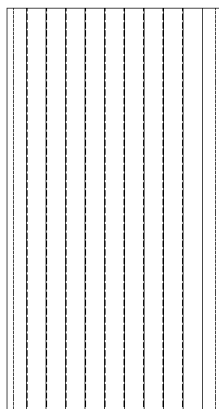


Figure 1.1 End Zone to End Zone
Fabric Installation

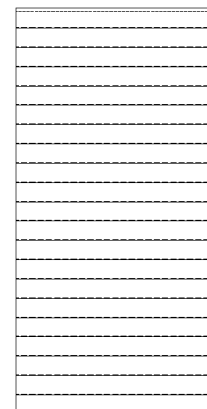


Figure 1.2 Side Line to Side Line
Fabric Installation

🔷 **Site Layout:** UBS panels must be installed in perfectly straight rows in all directions. Creating straight rows is achievable with two tightly stretched string lines intersecting at a perfect 90° angle. Additional string lines should continue to be located in two directions as installation progresses as reference points in order to remain straight.

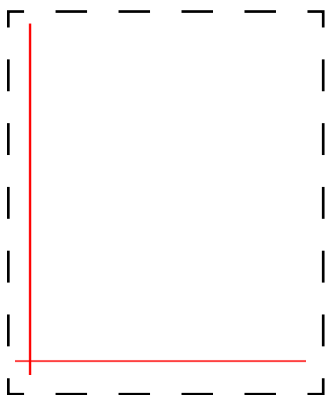


Figure 2.1 Corner Method

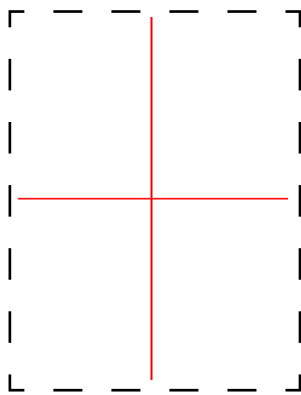


Figure 2.2 Center Method

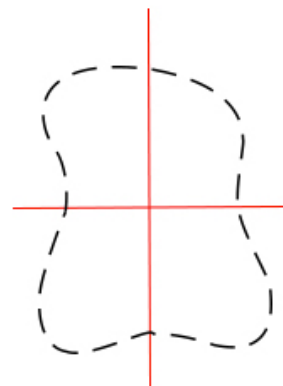
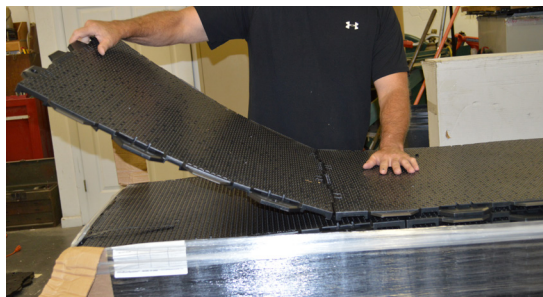
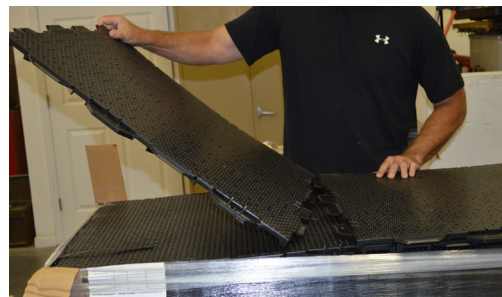


Figure 2.3 Irregular Shape Method

🔷 **Separating Panels:** To separate the panels as they are removed from the pallets or to remove once installed simply place one hand on Panel 1 and slightly lift Panel 2 and pull to separate.



Step One: Place one hand on Panel 1 and lift Panel 2.



Step Two: Pull Panel 2 and panels will separate.

🔷 **Cutting Panels:** Panels can be trimmed straight or cut into any shape utilizing a commercially available Circular saw, Jigsaw or Table saw. An aggressive cutting wood blade should be used.



Circular Saw



Jigsaw



Table saw

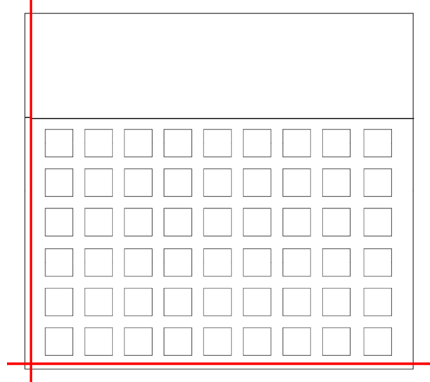
🟡 **Acclimation and Panel Layout:** (*Acclimation is the process of allowing uninstalled panels to raise or lower in temperature to those previously installed.*) Individual panels should be laid out neatly with minimal space between each panel. This will help speed up the installation crew during assembly. To avoid distortion of the panels do not allow panels to overlap each other during this preliminary placement (figure 3.1). Laying all the panels down in neat rows prior to installation allows the panels to achieve the temperature of the surrounding previously installed panels. Allow the panels to acclimate for at least 30 minutes prior to installation. This same acclimation process is standard operating procedure for installing other products such as hard wood flooring and vinyl siding. You can measure the temperature of the installed and ready to install panels by aiming the infrared thermometer at the panel, several inches above the surface of the panel.

*The UBS panels are engineered and designed to flex over uneven terrain such as an athletic field slope, golf contours, or residential landscaping terrain.

Assemble the starting row being certain to remain straight on the string lines in both directions maintaining a 90° corner as shown in Figure 3.2.

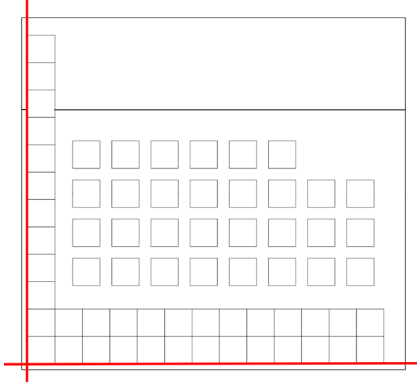
Achieving a 90° corner is accomplished by using the simple geometric formula as shown in Figure 3.3.

Figure 3.1



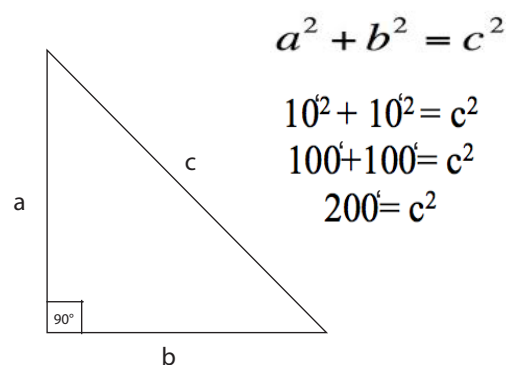
Layout panels flat in rows on geosynthetic fabric.

Figure 3.2



First Row of Installation

Figure 3.3



How to calculate a square corner.

🟡 **Gapping Panels:** UBS panels are designed to allow for expansion and contraction between the panels during temperature changes. The UBS panels will get larger when temperatures are hot and will get smaller when temperatures are cold. The chart below (Figure 4.2) indicates the expansion and contraction rate of the panels depending upon the temperature of the panels. You can easily determine the temperature of the panel using the infrared thermometer.

For example, panels that have a surface temperature of 140°F/60°C will require a 16th of an inch (1.6mm) gap between each assembled panel. A panel with a 50°F/10°C temperature will require a 3/16th inch (4.8mm) gap between the assembled panels. This is done so when the panels grow in the hot sun there is room for growth.

Gapping Panels Continued: Measure the temperature of the panels to be installed and compare to the proper gap settings shown in the chart below (Figure 4.2). By identifying the temperature of previously installed panels and the gaps which occur naturally this will help you determine the gaps of the panels ready to be installed. This trick is appropriate when the panel temperature of the uninstalled panels is similar to the installed panels. It is not necessary to measure the temperature of every panel, you are simply getting a general idea of the overall temperature in an area. For instance, if the entire field was in the full sun then the panels should be approximately the same temperature. So do not think it is necessary to measure every panel.

For Example, if the panels installed earlier in the day are currently at 140°F/60°C with 1/16th of an inch (1.6mm) or less gap between each panel then new panels ready to be installed that have been acclimating, and are the same approximate temperature due to the fact that they all have been sitting with the same level of sun intensity or cloud cover should be installed with the same amount of gap. Be advised as the sun shifts in the day or cloud cover occurs the gap between panels will change and this change must be identified and duplicated with newly installed panels. You may have a situation where part of the field is in the sun and part of the field is in the shade, which will result in different gaps being evident between the panels. Looking at your previously installed work as well as identifying general panel temperatures in an area with your infrared thermometer will help you determine the proper gap. Never install a cold panel next to a hot panel. This is why allowing the panels to acclimate to the temperature surrounding them is so important. By not following this gapping rule improper expansion and contraction of the UBS panels could occur causing the panels to bind and distort on the ground.

It is important when installing the panels that a space of 2 inches (50.8mm) is left between the outer perimeter edge of the installation shape and any immovable object such as a wall, curb, fence post, light pole, goal post etc. Failure to do so could cause panels that have not been properly gapped to not have the room required to adjust themselves.

You will witness Mother Nature in action when you see the panels resting right next to each other in the hot sun but as the temperature cools at night or each morning a uniform gap will occur between each panel. This natural movement of panel gaps from small to large will continue to occur everyday making the entire installation work as one perfect unit.

Figure 4.1

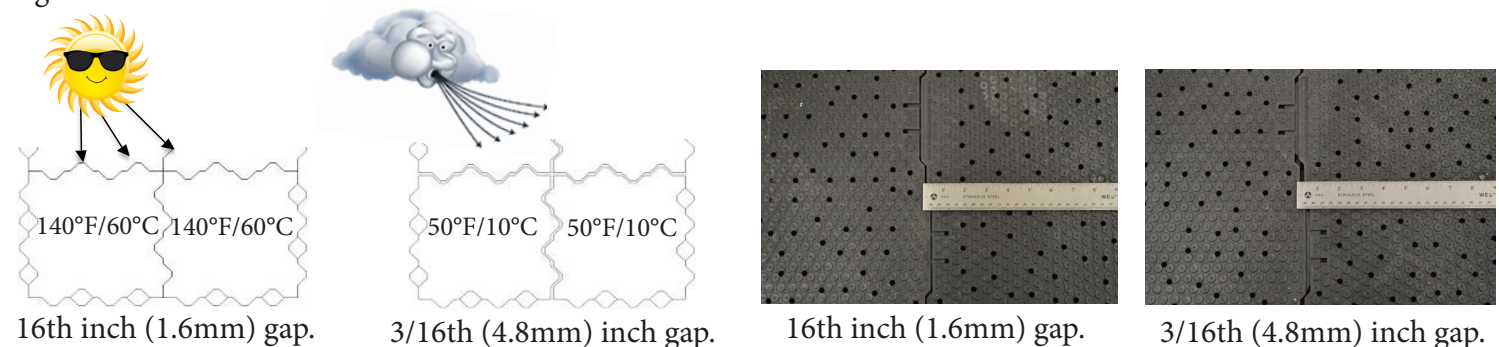


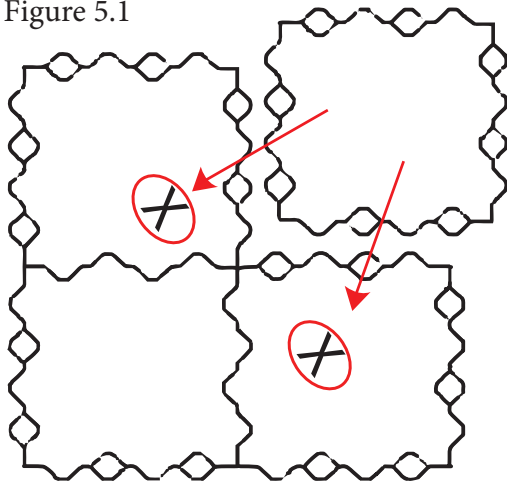
Figure 4.2 This chart shows the gaps needed with a certain panel temperature for each type of panel.

UBS Standard Panel			UBS Champion Panel		
Panel Temperature F/C	Size in/mm	Required Gap	Panel Temperature F/C	Size	Required Gap
40°F/4°C	27 15/16in./709.61mm	3/16in./4.8mm	40°F/4.4°C	27 15/16in./709.61mm	3/16in./4.8mm
50°F/10°C	27 15/16in./709.61mm	3/16in./4.8mm	50°F/10°C	27 31/32 in./735.8mm	3/16in./4.8mm
70°F/21°C	27 31/32 in./735.8mm	3/16in./4.8mm	70°F/21°C	27 31/32 in./735.8mm	3/16in./4.8mm
78°F/25.5°C	27 15/16in./709.6mm	3/16in./4.8mm	78°F/25.5°C	27 31/32 in./735.8mm	3/16in./4.8mm
95°F/35°C	27 31/32 in./735.8mm	3/16in./4.8mm	95°F/35°C	28in./711.2mm	3/16in./4.8mm
110°F/43°C	28in./711.2mm	1/8in./3.2mm	110°F/43°C	28in./711.2mm	1/8in./3.2mm
125°F/ 51.7°C	28 1/32in/735.8mm	1/8in./3.2mm	125°F/ 51.7°C	28 1/32in/735.8mm	1/8in./3.2mm
140°F/60°C	28 1/32in/735.8mm	1/16in/1.6mm	140°F/60°C	28 1/16in/712.8mm	1/16in/1.6mm
155°F/68.3°C	28 1/8in/714.4mm	1/16in/1.6mm	155°F/68.3°C	28 1/32in/735.8mm	1/16in/1.6mm
UP	28 1/8in/714.4mm	-1/16in/-1.6mm	UP	28 1/8in/714.4mm	-1/16in/-1.6mm

Installation Method: Now that you have multiple rows of panels in position ready to be locked together, start installing panels as shown with the technique below in Figure 5.1. Be sure to wear knee pads and leather gloves during the installation. Be certain that the first row is gapped properly as this will determine the success of the installation moving forward. The technique we have developed is the best way to assemble the panels the fastest and to maintain the gaps that you have already created. Make sure that all the rows are remaining straight in both directions. Do not kick or hammer panels into place as this will alter the proper gapping you have already successfully completed.

Once the first rows are completed proceed with additional rows as shown. Multiple rows can be assembled at one time as shown in Figure 5.3. It is recommended that a supervisor is overseeing both the gap placement between the panels in each row and that the rows are staying straight in all directions. If a situation occurs that proper gapping was overlooked sections of panels may be able to be respaced by jamming your foot hard on the top surface of the panel in a forward motion. In an effort to increase or decrease the gapping between the panels. Continue this process from panel to panel until desired gapping has been achieved. Failure to do so will result in the panels not locking together properly and can cause overcrowding during temperature changes potentially resulting in panels lifting off the ground. Never start a row at both ends to meet in the middle. It will be impossible to interlock the last panel.

Figure 5.1



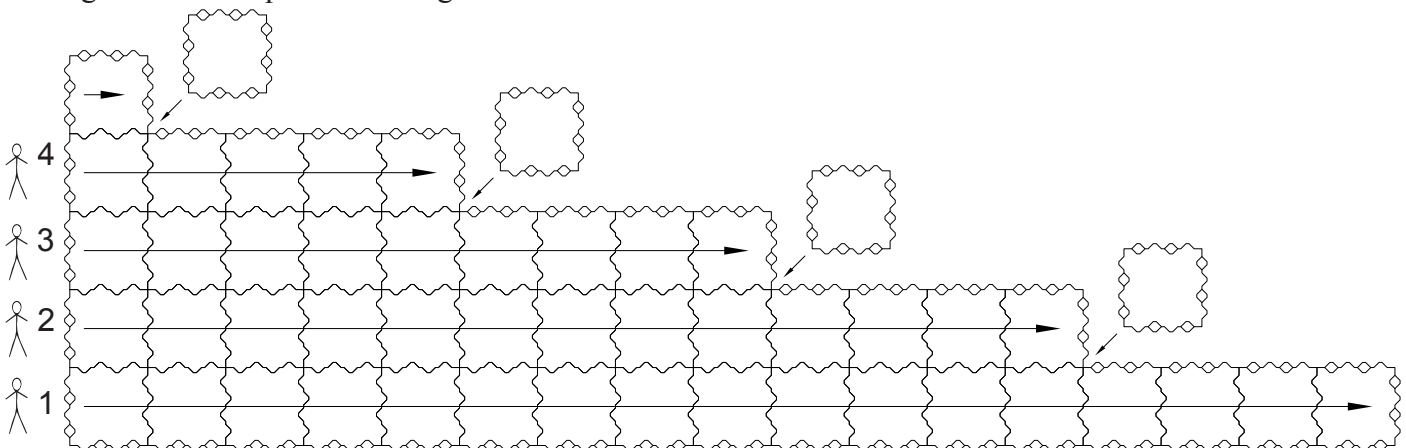
X Represents Knee Placement on Panels
Proper panel assembly technique

Figure 5.2



The proper technique in action

Figure 5.3 Multiple rows being installed at one time.



🟡 **Continuing Panel Installation:** As panel installation continues it will becoming necessary to lay down additional fabric and unassembled panels to allow them to acclimate to the weather conditions as you did previously. Continue this process of acclimation and assembly until the desired dimensions of the field are completed.

*Driving inflatable tire utility vehicles on a properly prepared stabilized base covered with UBS panels is acceptable. This will help moving new panels and turf in to position easier.



Geo Fabric ready for more panels



Moving new pallets of panels on installed UBS panels

🟡 **Completing Panel Installation:** After all UBS panels have been assembled and trimmed to allow for the proper perimeter spacing the installation is now ready for turf. It is recommended that a leaf blower is used to remove foreign debris from the panels prior to installation of turf. The turf should never be glued or fastened to the panels other than around the outer perimeter edge. The decision to fasten the turf to the panels around the perimeter edge is dependent on the type of turf and infill being used. Every turf expands and contracts at a different rate so prequalify your turf prior to fastening.



Turf rolls moved in to position



A geo slip sheet is temporarily placed under the rubber or felt backed turf to allow for positioning



Workers “pop“ the turf to allow air to flow under the turf so it can float in to position

*The patented turf barbs are a great development for helping to keep turf from sliding during installation and ultimately play. To move large pieces of turf it will be necessary to “pop” the turf upwards to create air under the turf to allow for easy movement.

In the case of a rubber backed turf or a felt back turf which will grab the turf barbs like Velcro a geofabric slip sheet can be placed under the turf which will prevent the barbs on the panels from touching the turf. Now you can easily slide the felt backed turf in to place. Once happy with alignment simply slide the geo fabric out from under the turf and move to next piece.

Basic Troubleshooting

Problem	Solution
After installation the panels are lifting in high temperatures.	If panels have lifted upwards in high temperatures it is because of improper gapping during installation. In other words the panels are jammed against each other with no place to go other than up. Check to make sure panels are not touching any perimeter or interior fixed objects. If so recut panels to allow space. In order to create more gap between the panels after large areas have been completed is more difficult. Try the feet scuffing technique of moving panels in order to shift panels out to the edge in hopes of gaining some space. Removing an interior panel in the problem area can sometimes help. This panel will have to be reinstalled later by cutting off the teeth and dropping back in to place. The panels will often work themselves flat in time with regular heating and cooling cycles. We have seen bad areas flatten out perfectly in just a few days of heating and cooling but it is not a guarantee. In order for this to occur there must be space around the perimeter or any interior fixed objects for the panels to shift and move to.
Rows of panels are not straight	Short of tearing apart your work and starting again try working row by row out or in by using the feet scuffing technique. Panels really don't like to move once installed so this will take some effort. Staying straight from the start is the key.
UBS panels are installed and it becomes apparent that there is a void or rise in subbase under the panels.	The UBS long version manual shows how to cut out a panel and disassemble an area that is need of ground repair. In short once one panel is cut out and removed additional panels are easy to disassemble row by row. Make the ground repairs and reinstall the panels row by row. It will take some work to get the last panel of each row back in place. This is shown in detail in the UBS long version manual.
A fixed obstacle is located somewhere in the middle of your installation.	Treat a fixed object in the field as you would treat an obstacle in the perimeter by leaving a 2 inch space around the object; this is achieved by cutting the panels to the proper shape.

* The method detailed are primarily for exterior installations. Interior installations are essentially done the same way with the exception of the gapping between the panels will be less dramatic. We recommend a gap between 1/16 inch (1.6 mm) and 1/8 inch (3.2 mm) to allow for the potential movement of the panel caused by a hot warehouse environment or sun beating through a glass window. Every indoor installation scenario must be examined to evaluate the extreme temperature that could be achieved. In most cases the temperature variation will be minimal and will have no effect on the panels but be aware of your environment.