

# THERMA-HEXX

## INSTALLATION MANUAL

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Changing the  
way we heat and cool our  
environments.

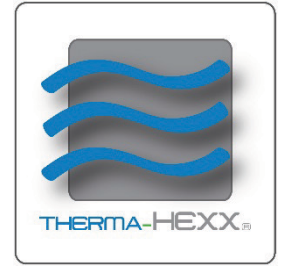
# THERMA-HEXX

## INDEX

PAGE	TITLE
1	<a href="#"><u>TAKING INVENTORY</u></a>
2	<a href="#"><u>SHIPPING – BOXES</u></a>
3	<a href="#"><u>STAGING – UNBOXING</u></a>
4	<a href="#"><u>INSTALLATION – UNFOLDING ROWS</u></a>
5	<a href="#"><u>INSTALLATION – PEDESTAL MOUNT</u></a>
6	<a href="#"><u>INSTALLATION – PEDESTAL MOUNT – GRATING SET</u></a>
7	<a href="#"><u>INSTALLATION – SURFACE MOUNT – SAND SET</u></a>
8	<a href="#"><u>INSTALLATION – SURFACE MOUNT – MORTAR SET</u></a>
9	<a href="#"><u>INSTALLATION – PANEL DETAILS</u></a>
10	<a href="#"><u>INSTALLATION – PANEL TYPES</u></a>
11	<a href="#"><u>INSTALLATION – SECTIONS – ZONES – ROWS</u></a>
12	<a href="#"><u>INSTALLATION – TRIMABLE PANELS</u></a>
13	<a href="#"><u>INSTALLATION – FILLER PANELS</u></a>
14	<a href="#"><u>INSTALLATION – HALF PANELS</u></a>
15	<a href="#"><u>INSTALLATION – ALIGNMENT RING</u></a>
16	<a href="#"><u>INSTALLATION – CONNECTORS AND MANIFOLDS</u></a>
17	<a href="#"><u>INSTALLATION – CONNECTORS AND MANIFOLDS – PRO TIPS</u></a>
18	<a href="#"><u>INSTALLATION – CONNECTORS AND MANIFOLDS – PRO TIPS 2</u></a>
19	<a href="#"><u>INSTALLATION – ACCESS DETAIL</u></a>
20	<a href="#"><u>INSTALLATION – SENSOR DETAIL</u></a>
21	<a href="#"><u>INSTALLATION – FILL AND PURGE</u></a>
22	<a href="#"><u>INSTALLATION - CONTROLS</u></a>



# MANUFACTURING SHEET- INVENTORY



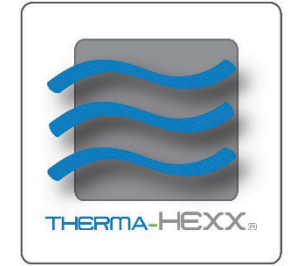
A Manufacturing Sheet shows the labelling of each row built and what box number it is in. It also shows what material is on each pallet, with dimensions & weights. Check the bill of lading to make sure that all of the boxes arrived and are undamaged. If any items are missing or damaged, notify Therma-HEXX immediately.

READ THIS FIRST								
Manufacturing Sheet & Boxing Index								
Your Project Name								
Section	Zone	Row	Panels	Full	Trim	Half	Check	Box
1	1	1A	12	12			✓	1
		1B	12	12			✓	1
		2A	12	12			✓	2
		2B	12	12			✓	2
		3A	9	7	2		✓	3
		3B	4	2	2		✓	3
		4A	12	3	9		✓	3
		4B	12	12			✓	4
		5A	12	12			✓	4
		5B	12	12			✓	5
		6A	12	12			✓	5
		6B	12	12			✓	6
		7A	10	8	2		✓	6
		7B	8	7	1		✓	7
		8A	8	8			✓	7
		8B	8	6	2		✓	7
		8C	2	1	1		✓	7
1	2	1A	12	12			✓	8
		1B	12	12			✓	8
		2A	12	12			✓	9

READ THIS FIRST			
Pallet	Boxes	Dimensions	Weight
1	1-6	40 x 48 x 90	834
2	7-12	40 x 48 x 90	815
3	13-18	40 x 48 x 90	766
4	19-24	40 x 48 x 90	835
5	25-30	40 x 48 x 90	845
6	31-36	40 x 48 x 90	875
7	37-42	40 x 48 x 90	870
8	43 + fillers	40 x 48 x 90	924
9	Manifolds, fillers	40 x 48 x 90	352
10	Tubing	40 x 48 x 90	194



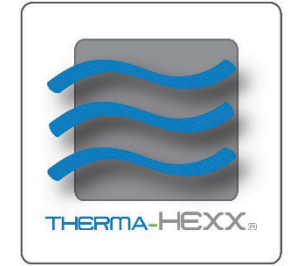
# SHIPPING- BOXES



- 1) Boxes are 7' x 2' x 2' (approx.) and weigh approx. 130 lbs. Each pallet holds 6 boxes, approx./ 800 lbs.
- 2) Boxes are stacked on end and banded onto pallets for shipping.
- 3) Boxes are labeled indicating which rows are inside on all four sides so that they can be stacked and sorted horizontally at the site.
- 4) In order to keep the boxes rigid for handling by two people, do not cut the white box straps until the boxes are staged in the vicinity of the installation area.



# STAGING- UNBOXING



- 1) Sort the bundles according to the supplied plans and panel labels.
- 2) Take notice of the supply and return ends.
- 3) Supply lines are indicated by orange lines and return lines are light blue lines on the plans.
- 4) Place the bundle at the beginning of the row area with the red capped supply end in the proper position as shown on the plans. Return lines are indicated by a blue cap. Panels are embossed with a flow direction arrow.
- 5) Cut strapping once the row is in position and ready to be installed.

# SYSTEM INSTALLATION - UNFOLDING



- 1) Rows are be manufactured in lengths up to 48'.
- 2) At least two people shall gently lift and unfold the row like a Z brochure.
- 3) Take care not to crimp the tube interconnects.
- 4) Take care to not break the zip ties that fasten the tubes at panel edges.
- 5) Replace any zip ties that do break.
- 6) If any metal brackets fall off, replace them.
- 7) Keep dirt and debris from entering any tubes.



# SYSTEM INSTALLATION - PEDESTAL MOUNT



- 1) Layout and square the layout grid with chalk lines.
- 2) Set and level the first row of pedestals.
- 3) Set the first two pedestals of the second row.
- 4) Unfold and place the row of panels while setting the first panel of the row on the first set of pedestals.
- 5) If applicable, place the Therma-HEXX alignment disks on top of the ThermaPANEL at each corner. Remove tabs from pedestals if alignment disks are utilized.
- 6) Place the first paver and check for level.
- 7) Lift the next panel and place the next 2<sup>nd</sup> row pedestal and level. Place the next paver. Repeat.
- 8) Connect supply and return lines to the manifold and test to 35psi as each row is set. Make sure that the supplied 50 psi PRV is connected to an open port on the supply manifold to prevent over pressurization.



# SYSTEM INSTALLATION - PEDESTAL MOUNT + GRATING



- 1) Grates are delivered as either 4x12 sheets, 2x2 panels or custom sizing.
- 2) Cut the grates to the appropriate sizes using a diamond saw blade.
- 3) Layout and square the pedestal grid with chalk lines.
- 4) Pedestals should be set on 2' centers unless otherwise noted.
- 5) Set, plumb and level the first two rows of pedestals.
- 6) Set and level the grating. Repeat.
- 7) Unfold and place the rows of panels on the grating per the plan.
- 8) Space the panels out to fit.
- 9) If applicable, place the Therma-HEXX alignment disks on top of the ThermaPANEL at each corner. Place the first paver and check for level.
- 10) Cut grating with a diamond saw to fit and for routing tubes.
- 11) **Do not shim on top of the ThermaPANEL units.**
- 12) Connect supply and return lines to the manifold and test to 35psi as each row is set. Make sure that the supplied 50 psi PRV is connected to an open port on the supply manifold to prevent over pressurization.

# SYSTEM INSTALLATION - SURFACE MOUNT - SAND SET



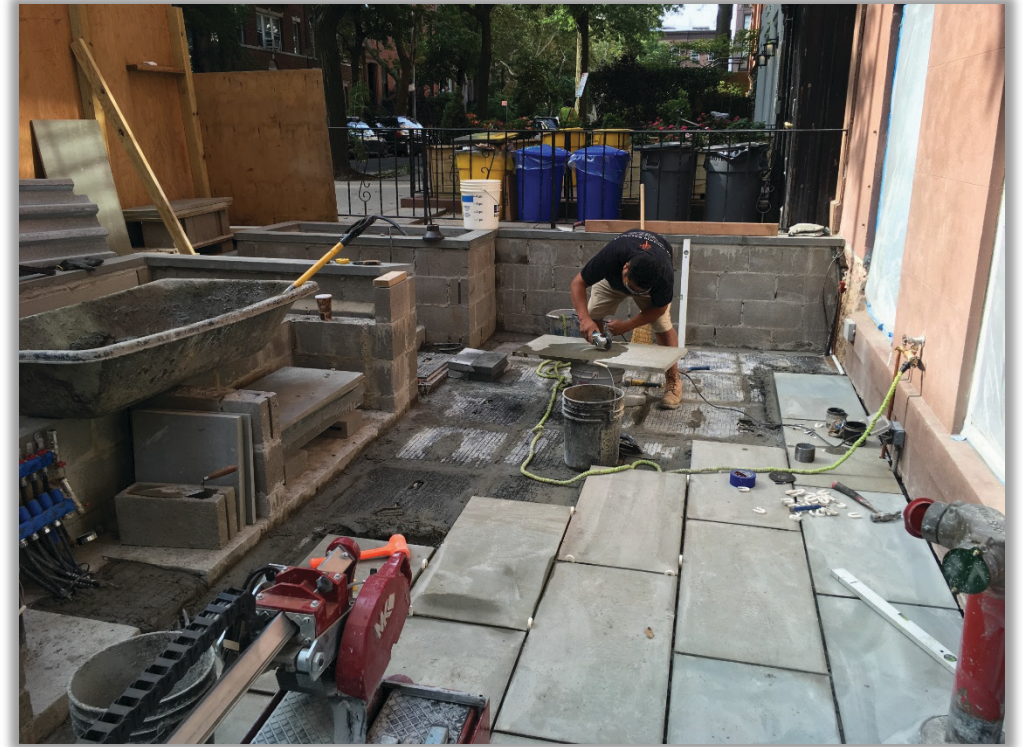
- 1) Prepare the compacted base per ICPI specifications and smooth with a thin layer of sand or stone dust.
- 2) Layout out panels for each row per the plans. Space panels to fit.
- 3) Keep tube ends capped until ready to connect supply and return lines. Take care to keep sand out of lines.
- 4) Connect each row to manifolds per plans and test up to 37 psi with air. Make sure that the supplied 50 psi PRV is connected to an open port on the supply manifold to prevent over pressurization.
- 5) Using 1" pipes, screed 1" of masonry sand on top of and between the panels. Compact the sand between the rows with a steel tamper. Set pavers and compact using a plate compactor. Place jointing material.



# SYSTEM INSTALLATION - SURFACE MOUNT - MORTAR SET

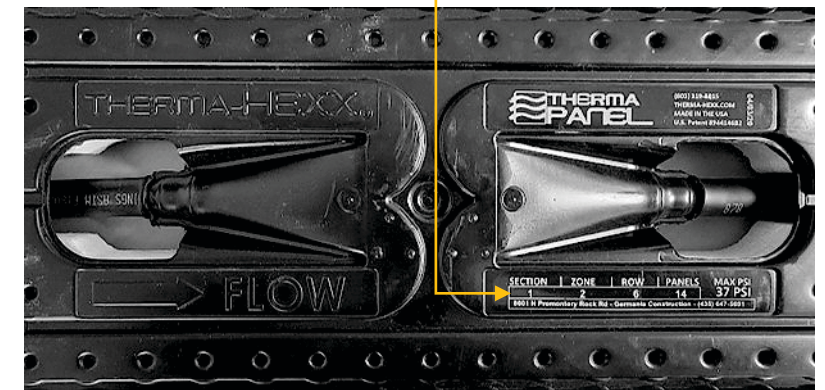
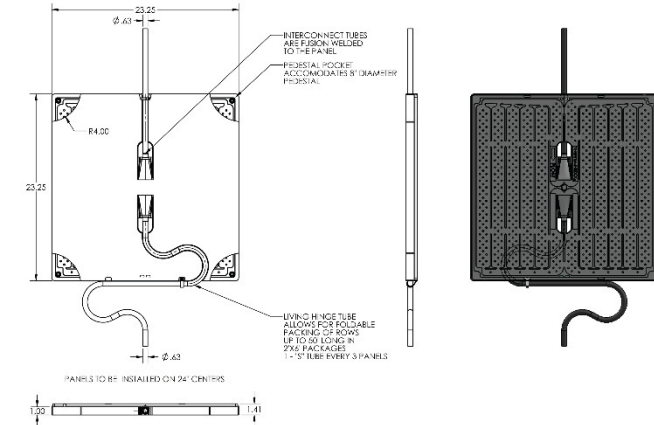
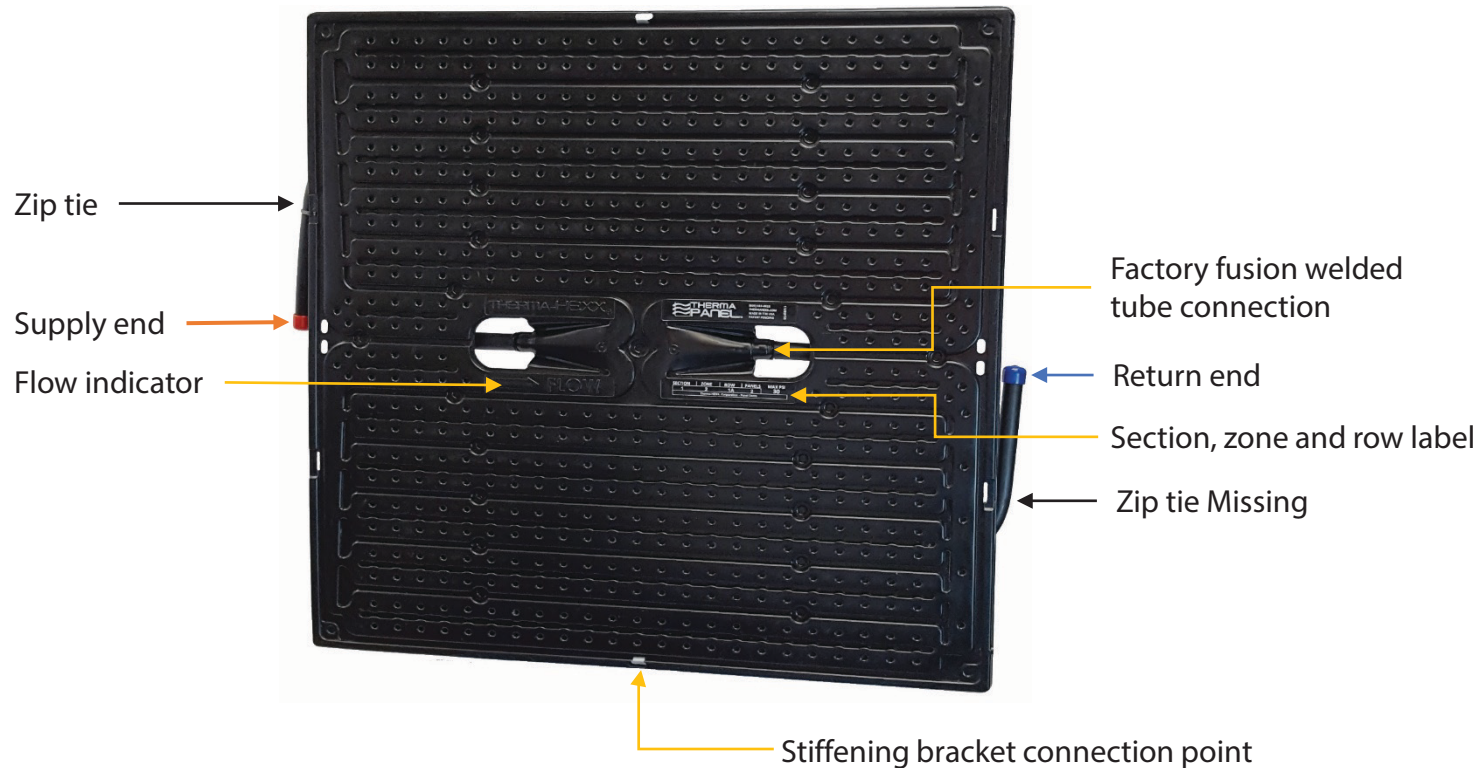


- 1) Prepare the concrete slab base.
- 2) Lay drainage mat if required
- 3) Layout ThermaPANEL rows per the plans. Some applications may require a layer of mortar or thin set beneath the panels.
- 4) Route and connect supply and return lines per the plans.
- 5) Test the system with air at 37 psi and then hot water at 37 psi. It is imperative to run a hot fluid test to ensure that there are no loose connections or leaks.
- 6) Fill gaps between the panels with mortar and bed the pavers or pour concrete per the plan details.
- 7) Grout the joints.
- 8) Seal the surface and joints with an appropriate sealer.





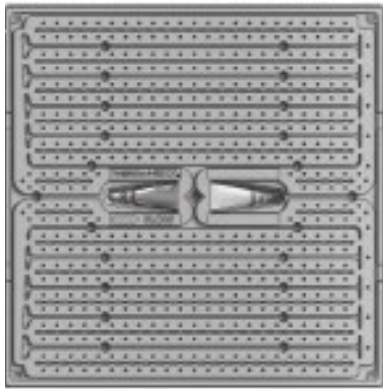
# SYSTEM INSTALLATION - PANEL DETAILS



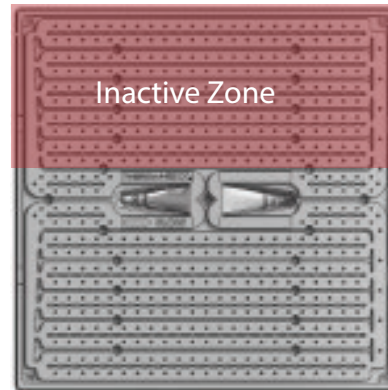
# SYSTEM INSTALLATION -

## PANEL DETAILS

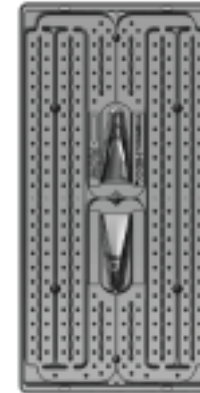
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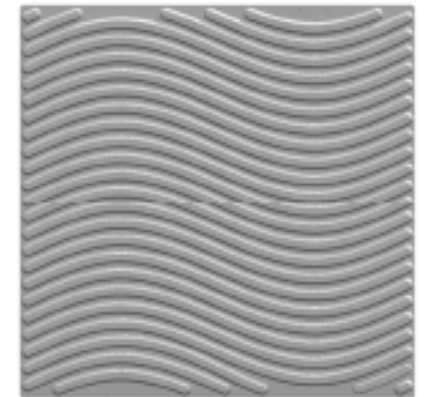
Full Panel  
23.375" x 23.375" x 1.4"



Trimable Panel  
23.375" x 23.375" x 1.4"  
Trimable to 13.5"

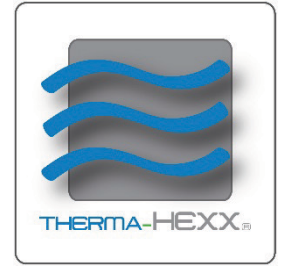


Half Panel  
23.375" x 11.5" x 1.4"

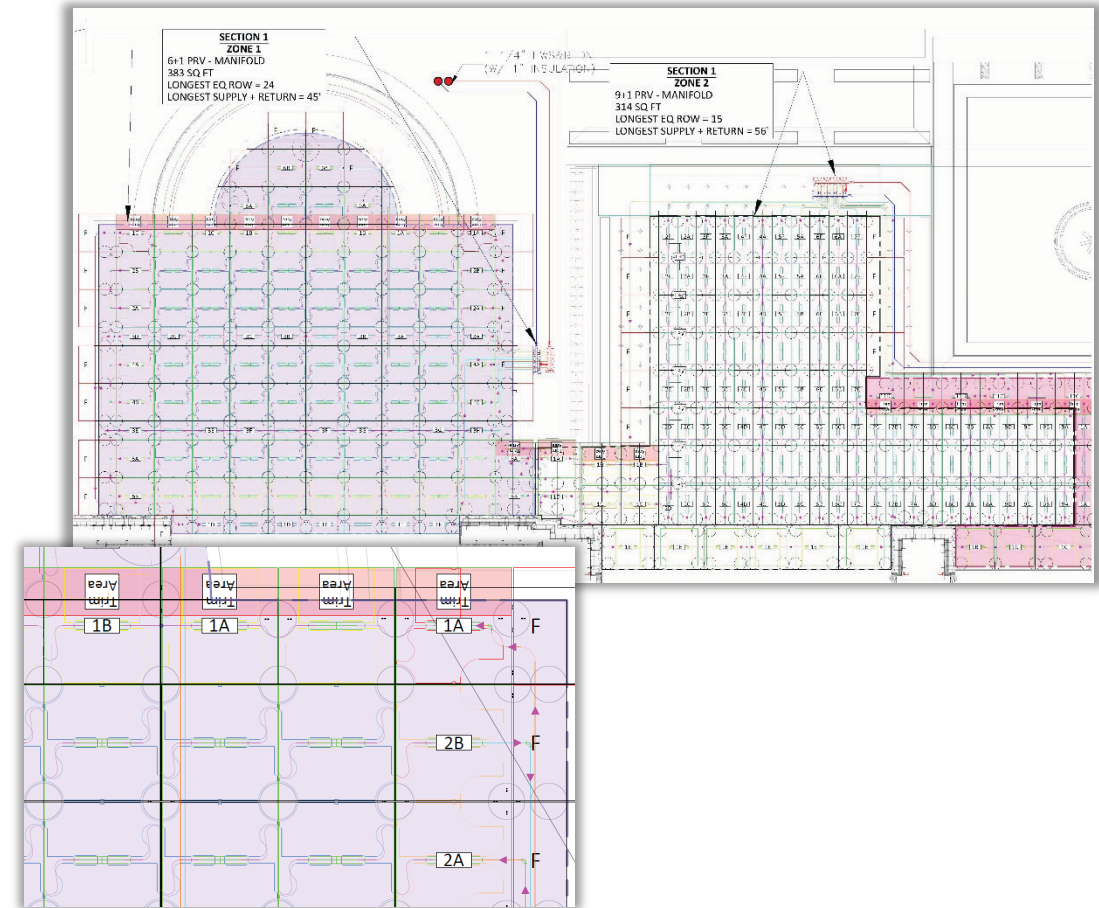


Permeable Protection Panel  
23.375" x 23.375" x .4"

# SYSTEM INSTALLATION - SECTIONS - ZONES - ROWS



- 1) SECTION: An area served by a circulator.
- 2) ZONE: A sub section area served by a manifold.
- 3) ROW: A series of panels in a zone that form a loop from the supply manifold (red) to the return manifold (blue).
- 4) On the plans, a SECTION is defined by a perimeter line and notated. A ZONE is notated by a dashed perimeter line and notated.
- 5) On the plans, a row (1, 2, 3) or row component (1A, 1B, 1C), is notated at each end by a number and a letter.
- 6) If the row has a letter, it means that the row is broken up into segments. Row 1A connects to 1B then 1C and so on.
- 7) Only connect rows of the same Section, zone and number together in the correct order.

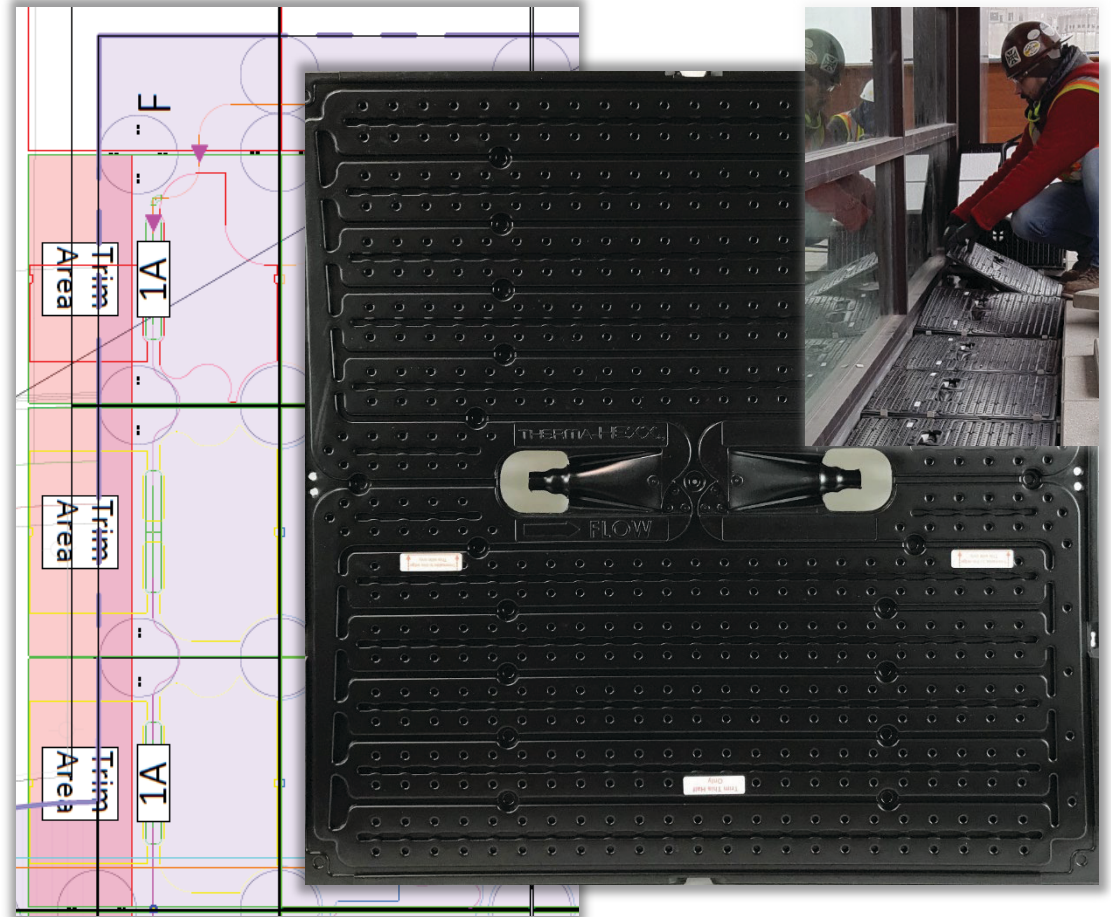




# SYSTEM INSTALLATION - TRIMMABLE PANELS



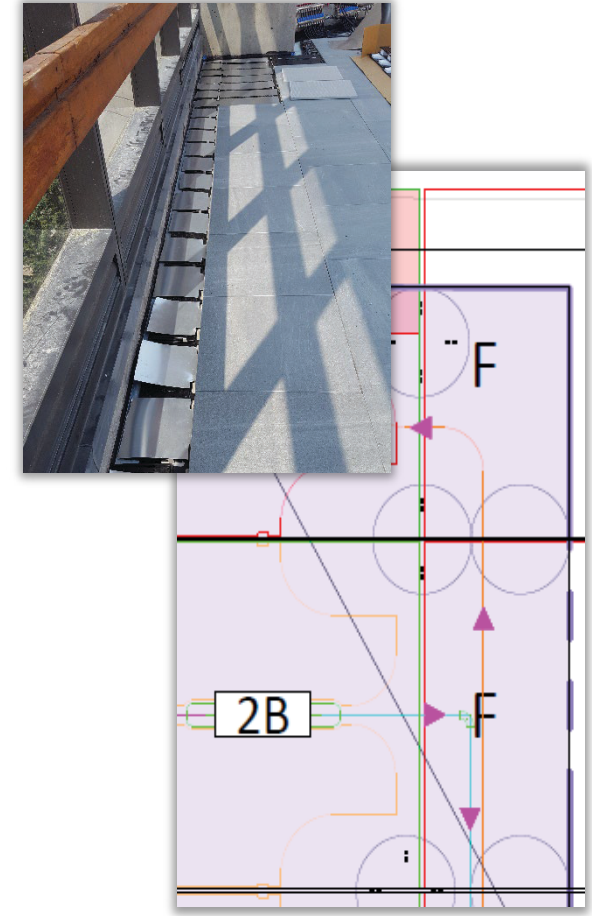
- 1) Trimmable panels have half the panel deactivated by pinching off the supply and return channels on one half of the panel.
- 2) The trimmable area is indicated by labels.
- 3) The panel can be cut using any type of saw.
- 4) On the plans, the trimmable area is noted by a red hatched area. The plans indicate how much panel needs to be trimmed by the perimeter line intersecting the trimmable area.
- 5) Once the paver is trimmed to match the ThermaPANEL, the heated side will migrate heat to the unheated side of the paver.
- 6) Interconnect tubes are always routed to avoid the trimmable area so as not to get cut accidentally.



# SYSTEM INSTALLATION - FILLER PANELS



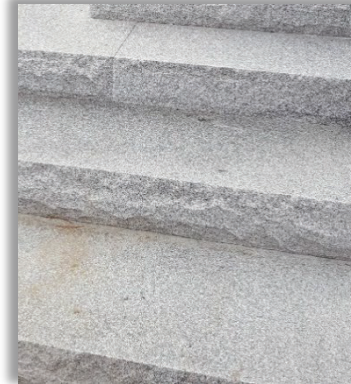
- 1) Filler panels are simply a full panel that does not have any tubes connected to it. They support an aluminum heat transfer sheet and do not have any section, zone or row labels.
- 2) They are used where full, half or trimmable panels cannot fit.
- 3) On the plans, the filler panel is notated with an F.
- 4) They act as a support for a 20" wide aluminum heat transfer sheet.
- 5) Once the filler is placed, the aluminum sheet is trimmed to cover the nearest heated panel and extend across the filler panel. It may need to be notched at the edges to avoid hitting the pedestal spacer tabs.
- 6) The panel can be cut using any type of saw. The aluminum can be cut by scoring it with a utility knife and bending it on the score line.
- 7) The plans indicate how much panel needs to be trimmed by the perimeter line intersecting the trimmable area.
- 8) Heat from the heated paver will transfer through the aluminum to the filler paver across the gapped joint.



# SYSTEM INSTALLATION - HALF PANELS



- 1) Half panels are typically used for 12" x 24" pavers, steps or areas less than 13.5" wide.
- 2) They will easily heat a 7-8" thick granite slab or step.
- 3) They are shipped as 3 panel units because the S tube, which is used on full panels so that the rows can be folded, will not fit.
- 4) They are shipped with either straight tubes or mini-U tubes that allow for routing around pedestals along a wall. They are spaced to fit the exact paver centers as designed. Any changes to the paver sizes or spacer tabs will affect the alignment.
- 5) They can be set in a stacked or running bond.



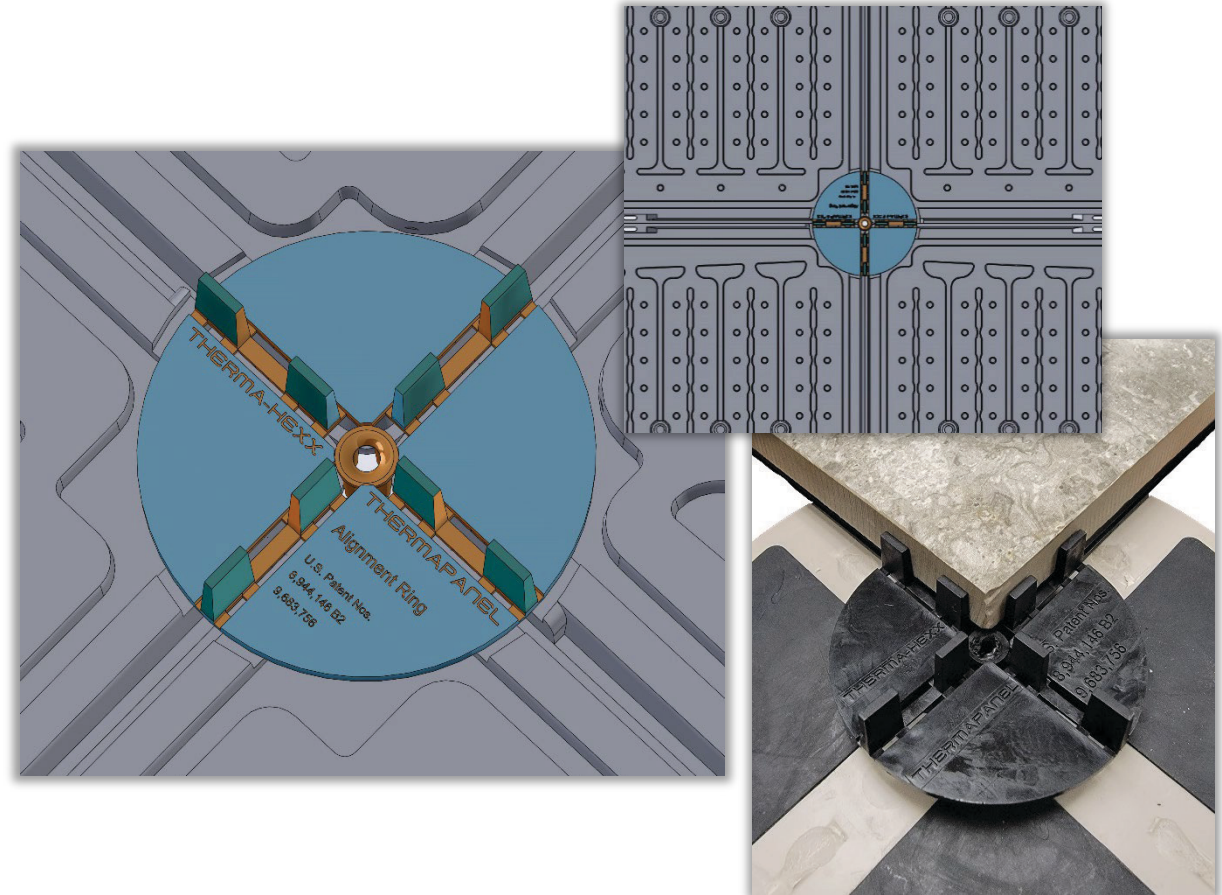


# SYSTEM INSTALLATION -

## ALIGNMENT RING



- 1) Full panel systems are shipped with the Therma-HEXX alignment ring.
- 2) The ring replaces the need for spacer tabs on most of the pedestals.
- 3) They allow for easy fine adjustment to the paver alignment without requiring moving of the pedestal.
- 4) It does not adjust height.
- 5) A common deck screw can be driven through the center hole into the pedestal to secure the pavers and panels in their final position.
- 6) Although they are not rated, they will also help with wind uplift.
- 7) They can be cut into quarters or halves for corners and along walls.



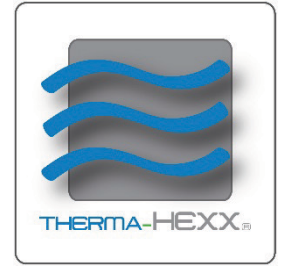
# SYSTEM INSTALLATION - CONNECTORS & MANIFOLDS



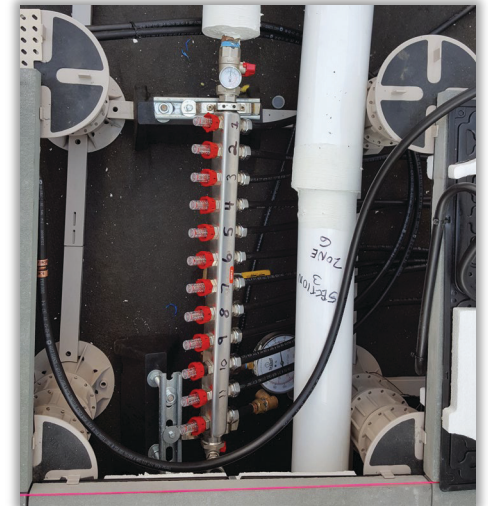
- 1) The system is supplied with 1 set of ARCH D plans, .DWG or .PDF plans are available upon request, inventory / QC sheet, labeled, pre-assembled panels, spare panels, alignment rings if applicable, ½" PE-RT tubing, straight and elbow copper crimp connectors, crimp rings and the necessary crimp tool, tubing cutter and a pair of thin adjustable pliers for assembling the manifold.
- 2) Legend stainless manifolds, Y filter and 50 psi PRV for each manifold, Axiom glycol makeup package (glycol feeder) are options. We prefer to include them as they are customized for the ThermaPANEL system.



# SYSTEM INSTALLATION - CONNECTORS & MANIFOLDS - PRO TIPS



- 1) Layout and square the grid for the pedestals with chalk lines.
- 2) Run the main supply and returns as shown on the plans to the manifold locations.
- 3) Assemble and attach the manifolds to the mains. Make sure you place the Y filter on the supply side shut off valve. Pay attention to the flow direction on the Y filter.
- 4) Attach the pre-assembled PRV to one of the supply ports. Cap off the corresponding return port and close the port valves except for the PRV port (red cap). The red lock collars on the supply valves can be pried off and flipped over to provide a turnable unit. Clockwise closes the valves. Open them until you feel resistance for full open. The system is designed to have all ports at full open.
- 5) Using the supplied pliers, tighten all elements on the manifolds. Do not overtighten the shut off valve union or the two connections at the manifold body. These gaskets can be damaged by overtightening. We supply spares, just in case.
- 6) Pressure test the mains and manifolds to manufacturer recommendations.
- 7) For surface mount applications, manifolds can be placed in landscape valve boxes.





# SYSTEM INSTALLATION - CONNECTORS & MANIFOLDS - PRO TIPS



- 1) A de-coiler of some sort will help to run the ½" PE-RT tubing.
- 2) After setting the first row of panels, run out the supply and return lines as shown on the plans to the manifold. Take care not to waste tubing at the end of the run. We measure the actual line lengths from our plan in order to supply the correct amount of tubing plus a margin of 25%. If you run short, any ½" PEX or PE-RT tube found locally will suffice.
- 3) If when inserting the connectors into the tubes on the ends of the panel rows, they are difficult to insert, heat the tube with a heat gun or gently with a torch.
- 4) Double check all crimp connections with the supplied go / no-go gauge.
- 5) Try to use elbows only if necessary. It is better to use a gentle loop or arc of tube taking care to not crimp the tube from over bending.
- 6) As each row is laid out, run the supply and return lines to the manifold as shown on the plans. Connect with the supplied compression fittings with the supplied pliers.
- 7) **Make sure that the PRV port is open. Test with 37 psi air. The PRV is a fail safe.**
- 8) **DO NOT OVER PRESSURIZE OR THE WARRANTY WILL BE VOIDED.**



# SYSTEM INSTALLATION -

## ACCESS DETAIL



To create easy access to a manifold, roof drain or other item, cut the S tube in the middle and add a 4-6' coiled loop of tubing between the two cut ends. You will be able to open or close the area without the need to shut down the system. You can place a loop on one S tube or both ends of the panel if needed.





# SYSTEM INSTALLATION - SENSOR DETAILS

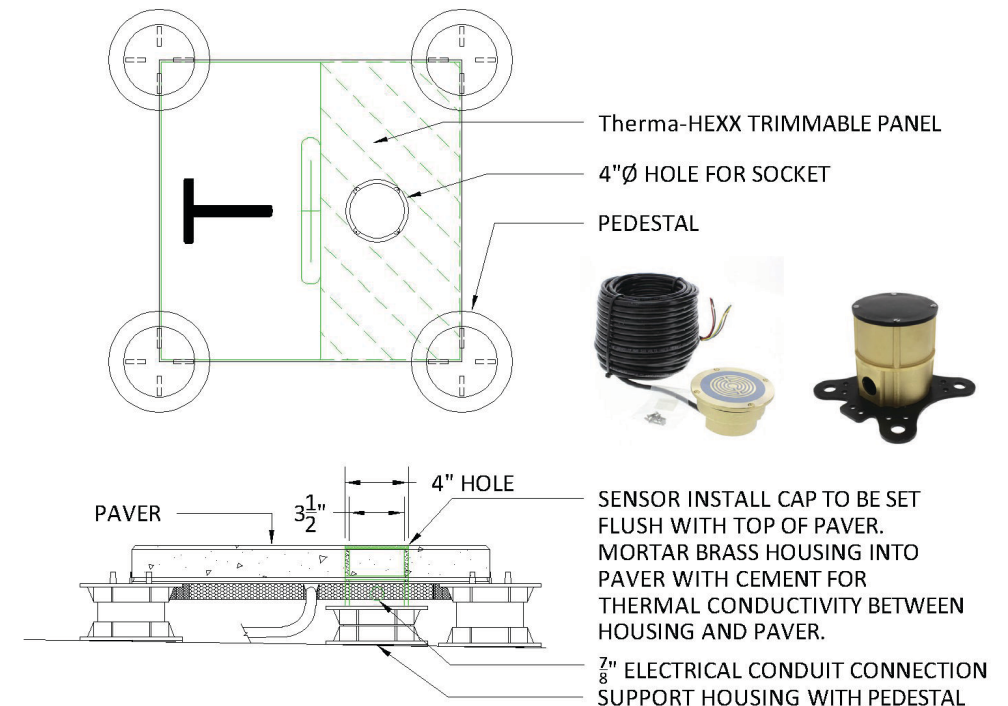


If your system is supplied with a Tekmar snow melt control, 090 sensor and 091 sensor housing, you will need to determine a suitable location for it.

For a pedestal mounted system, the sensor housing will need to be placed in the inactive side of a trimmable panel. Bore a 4" hole in the paver and panel as shown in the detail. Place the 091 housing on a pedestal or support that will place the top of it flush with the paver surface. Grout it into place.

For ground mount, do the same thing only mount it directly in the supporting surface beneath the panels.

Programming of the sensor is part of the Tekmar package



# SYSTEM COMMISSIONING -

## FILL & PURGE



Once the system has been pressure tested with air, proceed to filling the system with the approved fluid, propylene glycol and deionized water, at a ratio to prevent freezing in the worst-case scenario for the location.

- 1) Fill the main supply and return lines to the manifold and purge. Fill the glycol feeder halfway.
- 2) Close off the main valves at the manifolds.
- 3) Close off the zone valves on the supply and return ports except for the supply port that has the 50 PSI PRV.
- 4) Connect short hoses to the supply and return manifold hose bibs.
- 5) Connect a transfer pump to the supply hose and route the return hose into a bucket.
- 6) Open one pair of supply and return ports at a time and fill each zone with the specified fluid. The air will be purged into the bucket. Keep the fluid flowing until no bubbles are visible in the return bucket.
- 7) Turn off the transfer pump and close off the ports.
- 8) Repeat the process with each pair of ports.
- 9) Close off the hose bibs and open the main valves.
- 10) Run the system.
- 11) The system will continue to purge air from the Spirovent and the glycol feeder will add glycol as needed.
- 12) You may need to add glycol to the feeder a few times as the system fully purges itself.



# SYSTEM COMMISSIONING - CONTROLS



Therma-HEXX offers the option of supplying TEKMAR snowmelt controls with our system package.

- 1) Install the appropriate controls and sensor(s) per the TEKMAR instructions included with their packaging or from their website at [www.watts.com/resources](http://www.watts.com/resources).
- 2) Program and test the system.
- 3) Therma-HEXX does not provide technical support for any TEKMAR products.
- 4) Contact Jeff LaLiberte at Tekmar support at (781) 938-8900 ext 2435 OR (800) 338-2581 with any programming, BACnet, wiring questions or issues.

