HEAT-SHEET®

Installation Guide

HEAT-SHEET INSTALLATION GUIDE

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HEAT-SHEET™

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Nodules

Interlock

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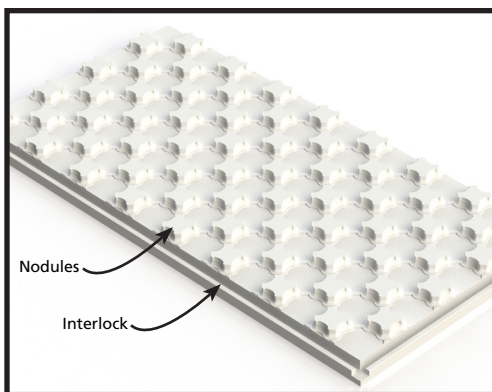
Heat-Sheet is a radiant floor heating system made of rigid foam insulation panels. For use in residential and commercial buildings, Heat-Sheet is designed to be incorporated into concrete floor systems.

Heat-Sheet is available as Heat-Sheet or our larger Heat-Sheet Heavy panels.

PRODUCT DESCRIPTION

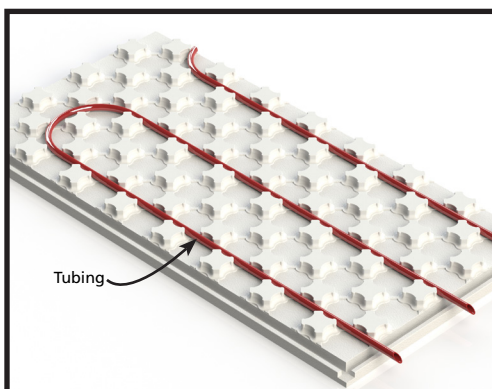Heat-Sheet panels are made with high density expanded polystyrene (EPS) designed to support the weight of cast-in-place concrete, and foot traffic during construction. Type 2 or 3 expanded Polystyrene (EPS), per CAN/ULC S701. And Type II or IX EPS, per ASTM C578.

The staggered nodules provide a simple and efficient system for tube installation, while ensuring a tight fit, and proper tube alignment.
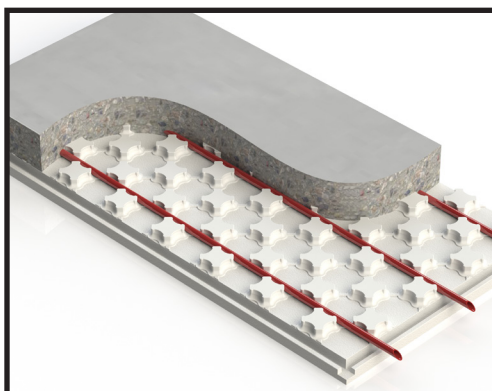
The nodules create a tube channel that accommodates multi-directional placement for 1/2" or 5/8" I.D. tubing with Heat-Sheet, and 3/4" I.D. tubing with Heat-Sheet Heavy. The tube channels provide 3" on-center points with Heat-Sheet and 4" on-center with Heat-Sheet Heavy.

Heat-Sheet is manufactured in 2ft x 4ft panels with interlocking edges to ensure a stable fit between panel joints. Panels are available in a variety of thicknesses. See Product Chart below.

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PRODUCT CHART

Product Chart - HEAT-SHEET
Screed volume rates:
To top of Heat-Sheet nodules = 0.043 ft³/ft²
For each additional inch of slab = 0.083 ft³/ft²

Product	Nominal Panel Thickness [1]	Overall Thickness [2]	Average R-value [3]	Panels/ Bundle [7]	Sqft/ Bundle [7]
HS-R4 [4]	0.5"	1 3/8"	4	16	128
HS-R6 [4]	1.0"	1 7/8"	6	14	112
HS-R8	1.5"	2 3/8"	8	8	64
HS-R10 [5,6]	2.0"	2 7/8"	10	8	64
HS-R12 [5,6]	2.5"	3 3/8"	12	6	48
HS-R14 [5,6]	3.0"	3 7/8"	14	6	48
HS-R16.1 [5,6,8]	3.0"	3 7/8"	16.1	6	48
HS-R20 [5,6]	4 3/8"	5 1/4"	20	6	48

1. Refers to thickness of the panel minus the nodules (grid height per image shown).
2. Refers to thickness of nodule plus nominal panel thickness.
3. In accordance with ASTM C578, and CAN/ULC S701, at 75°F (24°C). R-value is determined based on weighted average R-value of nodule and panel profile.
4. These panels do not interlock, and are designed to be applied only over flat surfaces such as concrete slabs and wood subfloors.
5. Additional vapor barrier may not be required when using Type 3 EPS, per CAN/ULC S701, and the National Building Code of Canada.
6. Additional vapor retarder may not be required when using Type IX or XIV EPS, per ASTM C578, and the International Residential Code. Confirm with your local building official prior to use.
7. Panels per bundle may vary. Contact your local Heat-Sheet representative to confirm.
8. Made with Graphite Polystyrene (GPS) to provide an incremental R-2.1.
9. Custom orders may be available upon request. Confirm availability of all Heat-Sheet products with your local supplier.
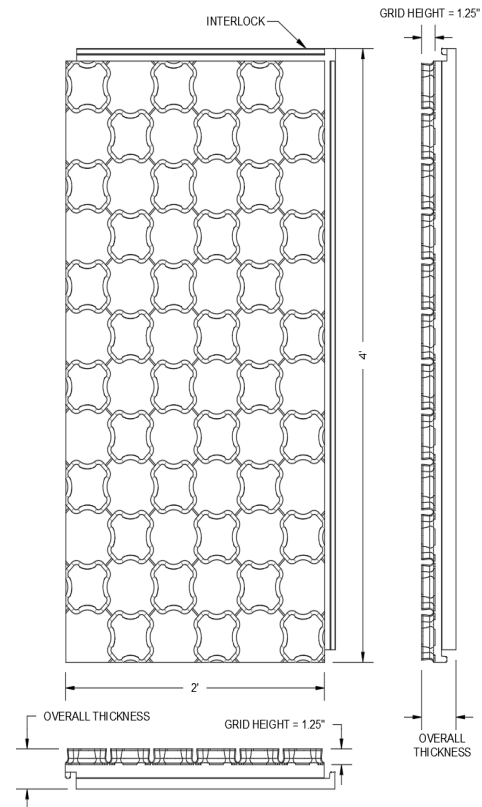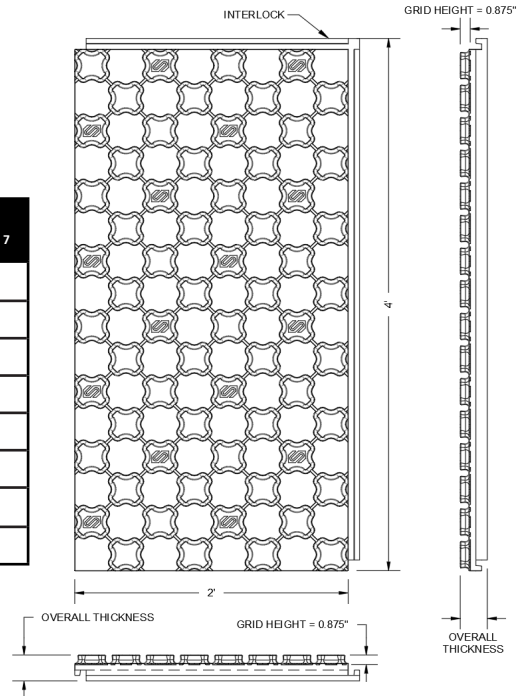
Product Chart - HEAT-SHEET HEAVY
Screed volume rates:
To top of Heat-Sheet nodules = 0.069 ft³/ft²
For each additional inch of slab = 0.083 ft³/ft²

Product	Nominal Panel Thickness [1]	Nominal Overall Thickness [2]	Average R-value [3]	Panels/ Bundle [5]	Sqft/ Bundle
HSH-R8	1 1/2"	2 3/4"	8	10	80
HSH-R10 [4]	2"	3 1/4"	10	8	64
HSH-R12 [4]	2 3/8"	3 5/8"	12	6	48
HSH-R14 [4]	2 7/8"	4 1/8"	14	6	48
HSH-R16.1 [4,6]	2 7/8"	4 1/8"	16	6	48

1. Refers to thickness of the panel minus the nodules (grid height per image).
2. Refers to thickness of nodule plus nominal panel thickness.
3. In accordance with ASTM C578, and CAN/ULC S701, at 75°F (24°C). R-value is determined based on weighted average R-value of nodule and panel profile.
4. Meets water vapor barrier/retarder in accordance with the National Building Code of Canada, and the International Residential Code. Confirm with local bylaws.
5. Panels per bundle may vary. Contact your local Heat-Sheet representative to confirm.
6. Made with Graphite Polystyrene (GPS) to provide an incremental R-2.1.
7. Confirm availability of products with your local Heat-Sheet supplier.

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INTERLOCK — GRID HEIGHT = 0.875"
OVERALL THICKNESS
GRID HEIGHT = 0.875"
2'
4'
OVERALL THICKNESS

INTERLOCK — GRID HEIGHT = 1.25"
OVERALL THICKNESS
GRID HEIGHT = 1.25"
2'
4'
OVERALL THICKNESS

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HEAT-SHEET

APPLICATIONS

Heat-Sheet can be used under concrete slabs where radiant floor heating is required such as slab-on-grade, sandwich slab construction, and snow melt systems. In addition, Heat-Sheet can be used in retrofit and overlay applications.

NOTE: R4 and R6 Heat-Sheet panels were designed to be applied only over flat surfaces such as concrete slabs and wood subfloors - not recommended for use over rough surfaces such as crushed stone substrates.

ESTIMATING

To estimate the quantity of Heat-Sheet required for a job site:

1. Measure the floor area where Heat-Sheet will be installed.
2. Divide the area in Step 1 by 8 to determine the number of Heat-Sheet panels required. (Each Heat-Sheet panel measures 8 ft^2.)
3. Determine the number of bundles required. Divide the number of Heat-Sheet panels, determined in Step 1, by the appropriate 'Panels/bundle' column in the Product Chart table, and round up to the nearest whole number. Heat-Sheet panels are shipped in bundles. The number of Heat-Sheet panels in a bundle will vary depending on the thickness of Heat-Sheet panels used.
4. Determine the concrete volume by the screed volume rates shown in the Product Chart. For each additional inch of slab above the nodules add 0.083. Add this value to the screed volume "To top of Heat-sheet nodules" shown in the Product Chart. This total will be the total volume of concrete per square feet. Therefore, to get the total concrete volume multiply by the area determined in Step 1.

Example:
*   Floor area = 850 ft^2, thickness of slab above nodules = 2"
*   Number of Heat-Sheet panels required =
    850 / 8 = 106.25 Heat-Sheet panels
*   Heat-Sheet panel thickness to use = 2 7/8" (HS-R10)
    From Product Chart, panels per bundle = 8
   Number of Heat-Sheet bundles =
    106.25 / 8 = 13.3 bundles

Therefore, 14 bundles required.

- From Product Chart, volume of concrete to top of nodules = 0.043 ft³/ft²

From Product Chart 1" of slab above nodules = 0.083 ft³/ft². Therefore, 2" of slab above nodules = 0.083 x 2 = 0.166 ft³/ft²

Therefore, the volume of concrete per square feet = 0.166 + 0.043 = 0.209 ft³/ft²

To get the total volume multiply by the floor area:
Concrete volume = 0.209 ft³/ft² x 850 ft² = 178 ft³
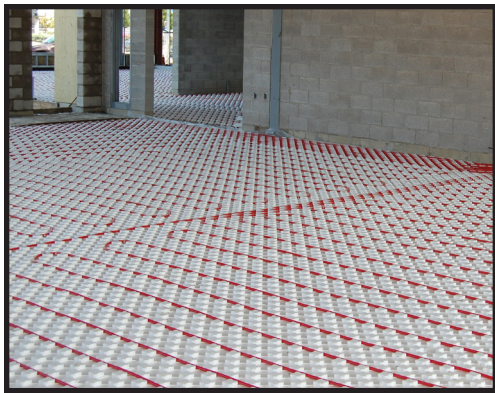
INSTALLATION

Heat-Sheet was designed to be installed quickly and easily, reducing on labor costs.

Installing Heat-Sheet involves laying the Heat-Sheet panels and tubing before concrete placement.

Laying Heat-Sheet Panels

1. Ensure the ground is reasonably level before beginning the installation.

2. Place a vapor barrier, if required, before laying Heat-Sheet panels.

   NOTE: To secure the thinner R4 and R6 Heat-Sheet panels, apply foam friendly adhesive, such as PL300 Foamboard Adhesive, between the Heat-Sheet panels and the subfloor.

3. Remove the interlock from the two sides of the starting panel to avoid an air gap.

   NOTE: It's easiest to remove the interlock you can see when looking at the back of the panel. Starting in a corner, place the cut edges tight against the wall.

4. Cut the interlock along the 4ft length only on the next panel to be placed. Place trimmed panels so they interlock along the 2ft dimension.

5. Continue placing panels until you come to a wall. You will likely need to cut the final panel in this row to fit.

6. Use the left over segments to start the next rows, and be sure to maintain the 3" spacing pattern. The idea is to have a staggered (running bond) layout rather than rows and columns. This helps keeps the panels bound together, and reduces weights.
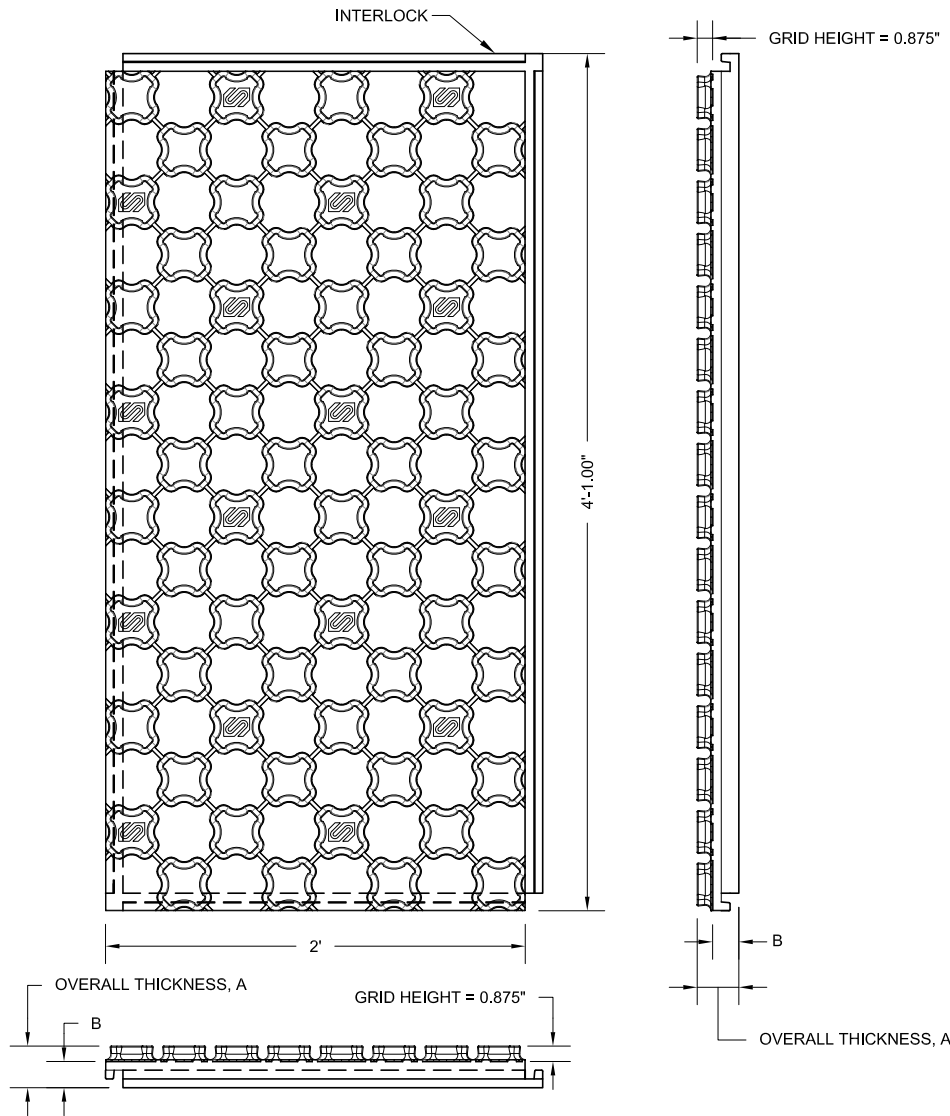
Laying The Tubing

1. Install the tubing by "stepping" into the panels.

   NOTE: Heat-Sheet panels are designed with a 3" grid for easy tube spacing. Please consult a HVAC designer to determine the required separation points.

2. Ensure the tubing is fully seated when turning a corner before you begin your next run. You may need to use a plastic staple on the turns to keep the pipe in place.

3. Place wire mesh and rebar directly on top of the panels if required.

4. Remove debris on top of the panels prior to placing concrete.

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INTERLOCK

GRID HEIGHT = 0.875"

4'-1.00"

2'

OVERALL THICKNESS, A

B

GRID HEIGHT = 0.875"

B

OVERALL THICKNESS, A

HEAT-SHEET SIZES

PRODUCT	NOMINAL PANEL THICKNESS, B	OVERALL THICKNESS, A	AVG R-VALUE[1]	PANELS/ BUNDLE[6]	SQFT/ BUNDLE
HS-R4[2]	$\frac{1}{2}$"	$1\frac{3}{8}$"	4	20	160
HS-R6[2]	1"	$1\frac{7}{8}$"	6	14	112
HS-R8[2]	$1\frac{1}{2}$"	$2\frac{3}{8}$"	8	8	64
HS-R10[3,4]	2"	$2\frac{7}{8}$"	10	8	64
HS-R12[3,4]	$2\frac{1}{2}$"	$3\frac{3}{8}$"	12	6	48
HS-14[3,4]	3"	$3\frac{7}{8}$"	14	6	48
HS-R16.1[3,4,6]	3"	$3\frac{7}{8}$"	16.1	6	48
HS-R20[3,4]	$4\frac{3}{8}$"	$5\frac{1}{4}$"	20	6	48

1. In accordance with ASTM C578, and CAN/ULC S701, at 75°F (24°C). R-value is determined based on weighted average R-value of nodule and panel profile.
2. These panels do not interlock. HS-R4 and HS-R6 are designed to be applied only over flat surfaces such as concrete slabs and wood subfloors.
3. Additional vapor barrier may not be required when using Type 3 EPS, per CAN/ULC S701, and the National Building Code of Canada.
4. Additional vapor retarder may not be required when using Type IX or XIV EPS, per ASTM C578, and the International Residential Code. Confirm with your local building official prior to use. Visit Heat-Sheet.com for more information on Heat-Sheet radiant floor insulation.
5. Panels per bundle may vary. Contact your local Heat-Sheet representative to confirm.
6. Made with Graphite Polystyrene (GPS) to provide an incremental R-2.1.
7. Custom orders may be available upon request. Confirm availability of all Heat-Sheet products with your local supplier.
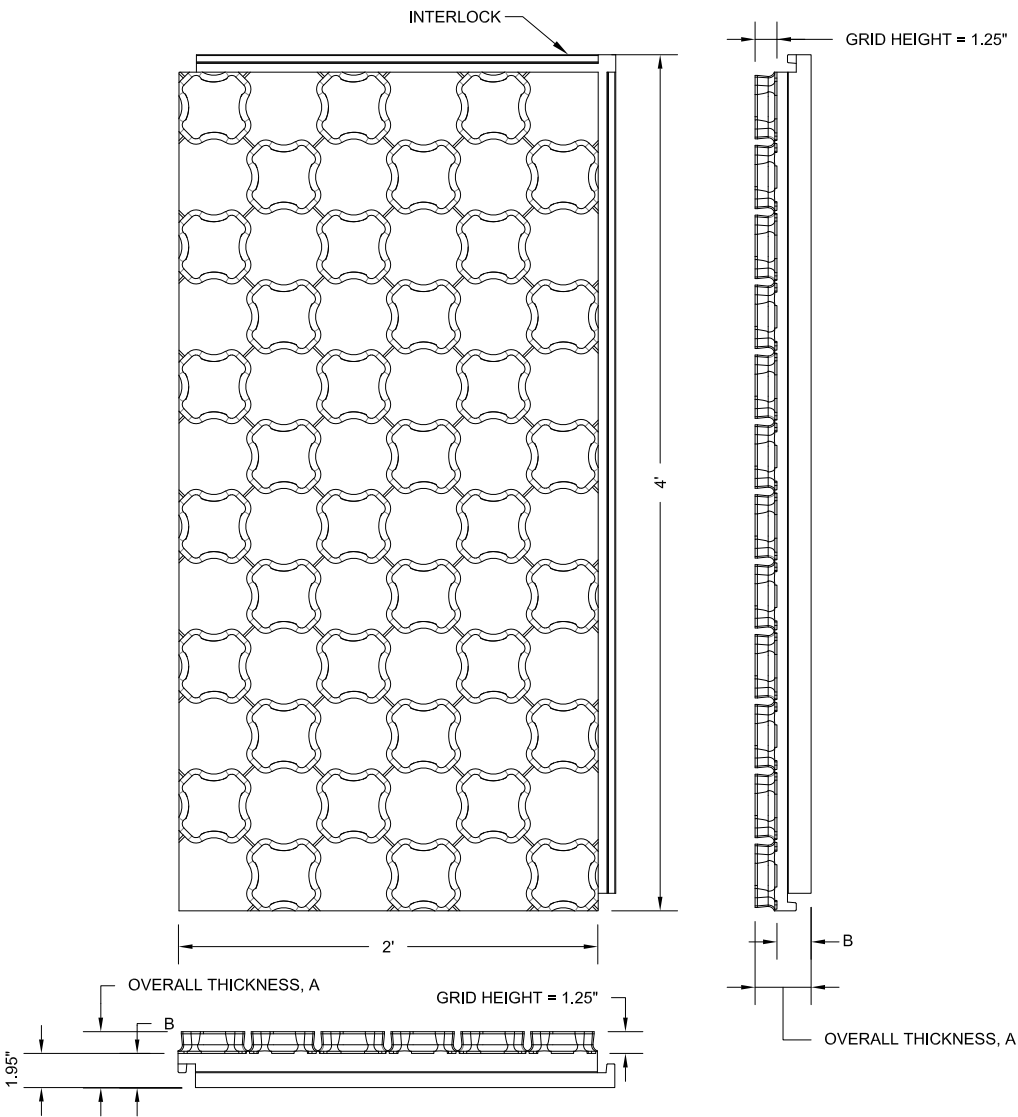8. Visit Heat-Sheet.com for more information.

PRODUCT DRAWING

INTERLOCK

GRID HEIGHT = 1.25"

4'

2'

OVERALL THICKNESS, A

B

GRID HEIGHT = 1.25"

1.95"

B

OVERALL THICKNESS, A

HEAT-SHEET SIZES					
PRODUCT	NOMINAL PANEL THICKNESS, B	OVERALL THICKNESS, A	AVG R-VALUE[1]	PANELS/ BUNDLE[4]	SQFT/ BUNDLE
HSH-R8	$1\frac{1}{2}$"	$2\frac{3}{4}$"	4	10	80
HSH-R10[3]	2"	$3\frac{1}{4}$"	10	8	64
HSH-R12[3]	$2\frac{3}{8}$"	$3\frac{5}{8}$"	12	6	48
HSH-R14[3]	$2\frac{7}{8}$"	$4\frac{1}{8}$"	14	6	48
HSH-R16.1[3,5]	$2\frac{7}{8}$"	$4\frac{1}{8}$"	16	6	48

1. In accordance with ASTM C578, and CAN/ULC S701, at 75°F (24°C). R-value is determined based on weighted average R-value of nodule and panel profile.
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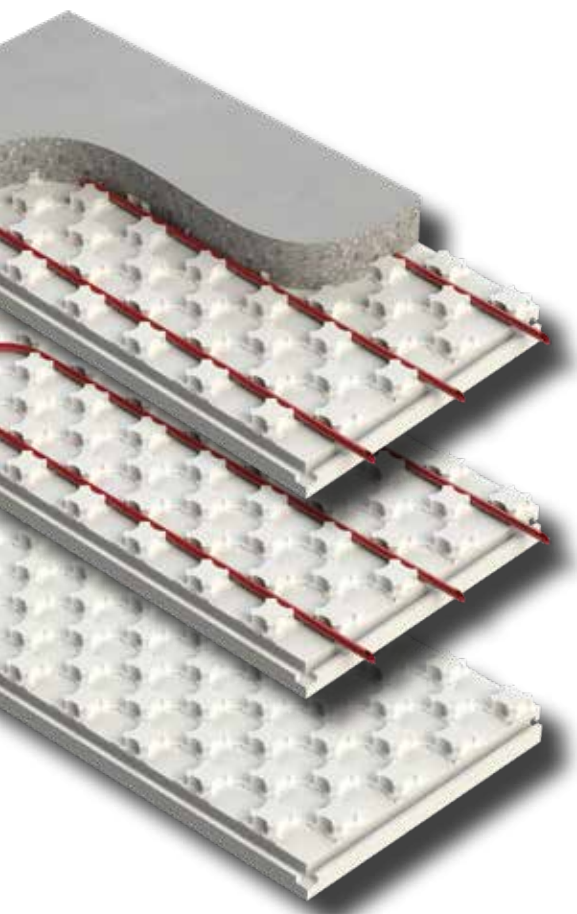7. Visit Heat-Sheet.com for more information.

CONNECT
WITH A LOCAL
MANUFACTURER

888.838.5038
330 Cain Drive
Haysville, KS 67060-2004

888.706.7709
840 Division St.
Cobourg, ON K9A 5V2

877.789.7622
35 Headingley Rd.
Headingley, MB R4H 0A8

888.453.5961
11581-272 St.
Acheson, AB T7X 6E9

888.453.5961
#215-44393 Simpson Rd.
Chilliwack, BC V2R 5M3

HEAT-SHEET®

info@LogixBrands.com   Heat-Sheet.com

A Product By

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