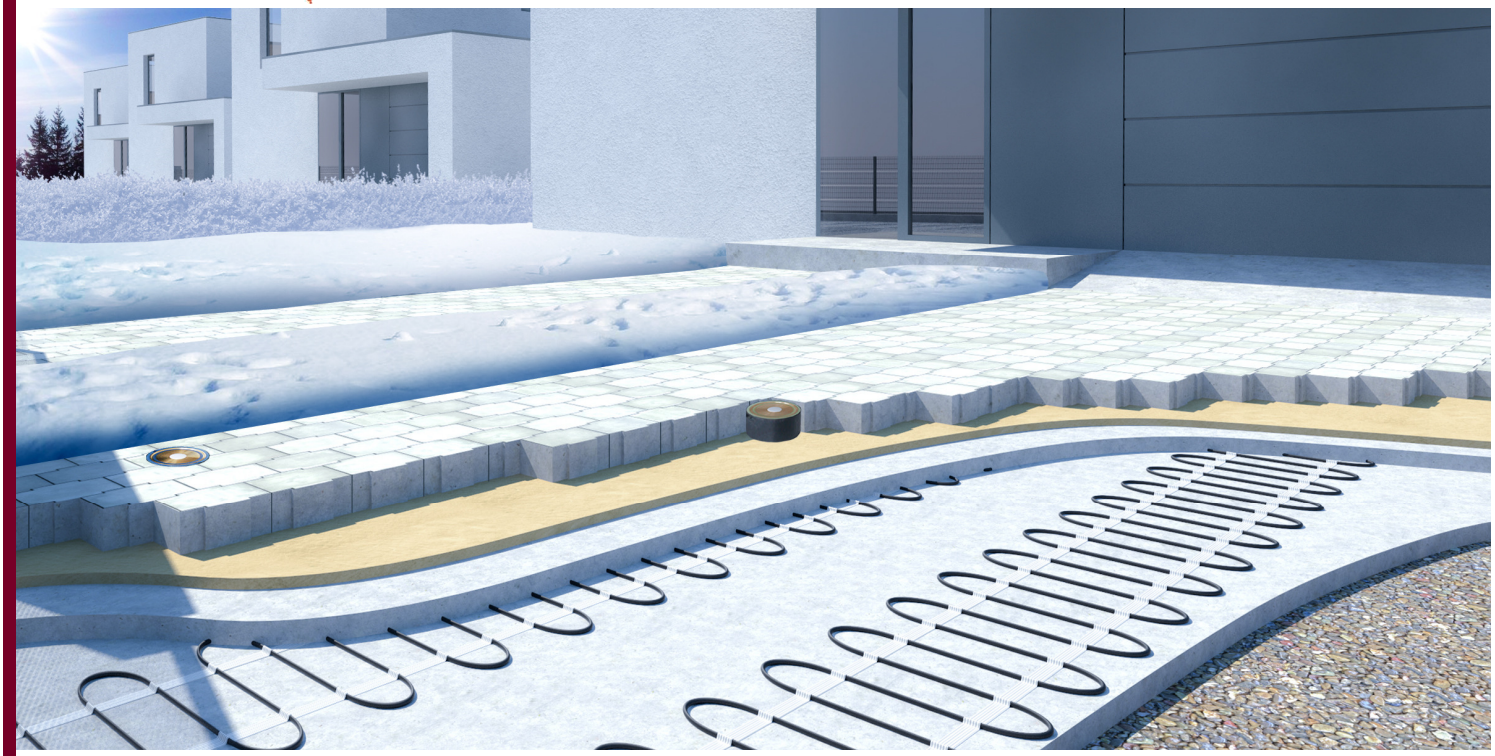
HEATIZON SYSTEMS

RADIANT HEATING AND SNOW MELTING SYSTEMS



SnowMeltz

Snow Melting Cables and Mats

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HEATIZON SYSTEMS

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HEATIZON
SYSTEMS

A FEW CONCRETE SUGGESTIONS

Heatizon Systems is not an asphalt, concrete or pavers expert, but we have a few suggestions that you may wish to discuss with your contractor. We make these suggestions in an effort to increase the likelihood that Heatizon Systems' SnowMeltz will be surrounded by products that are equal to it in both quality and expected longevity. In addition, we make these suggestions in an effort to reduce the possibility that your SnowMeltz heating element will get damaged or broken by the vertical or horizontal movement of asphalt, concrete, or pavers.

Dry Base: Make certain that the ground below where the new asphalt, concrete or pavers will be located is as dry as possible. It is recommended that it be covered whenever there is a risk of a storm for one to two weeks prior to the pour.

Excavation: Be sure that your excavation is deep enough to accommodate the thickness of the concrete, the thickness of the insulation, the depth of the aggregate base you will have below the concrete and a 1" sand bed if you elect to install the SnowMeltz below the concrete.

Compaction: Once the excavation is complete, it is highly recommended that a great deal of care be given to completely and properly compact the entire area where the asphalt, concrete or pavers will be located.

Drainage: In order to have proper drainage and to reduce the likelihood of vertical shifting of your asphalt, concrete, or pavers Heatizon Systems recommends that a minimum of 6 inches of high quality aggregate be laid over the entire area where the asphalt, concrete, or pavers are to be installed, plus one foot around all edges.

Reinforcement: In order to enhance the integrity of your asphalt, concrete or pavers, Heatizon Systems recommends that reinforcement be considered. Most of the time concrete can be reinforced with number 4 gauge welded wire fabric or ½ inch re-bar placed at least 2 inches from the top and bottom surfaces of the concrete.

Insulation: Insulation is a two edged sword. On the one hand, it acts as a good moisture barrier, reduces the response time of your snow melt or heating system, and saves money by reducing operating time. On the other hand, insulation does not allow the heat from the ground to get into the asphalt, concrete, or pavers.

Maximum Area: Heatizon Systems recommends that concrete be poured in square sections no larger than 9.5 feet X 9.5 feet. Pouring other geometric shapes without additional joints almost always results in cracking. Each square must always have a joint on each of its four sides.

Thickness: Heatizon Systems always recommends the following thickness be observed:

Concrete	5 or more inches
Asphalt	4 or more inches
Pavers	4 or less inches

Suggested Mix: Heatizon Systems recommends that a six-bag mix with fiber or steel fibers always be used when pouring concrete.

CONCRETE JOINTS AND USING JUMPERS

Control Joints: Control Joints are intended to control where the slab will crack and are placed either in fresh concrete or saw cut in after the concrete is poured. Spacing of these joints will vary depending on the size and shape of the slab. Use the Cable Jumper to protect the heating cable when crossing control joints (Refer to Step 2 'PLAN THE JUMPERS')

Construction Joints: Construction joints are a common result when multiple concrete pours are completed at different stages during construction. Use a Cable Jumper to protect the heating cable when crossing construction joints (Refer to Step 2 'PLAN THE JUMPERS').

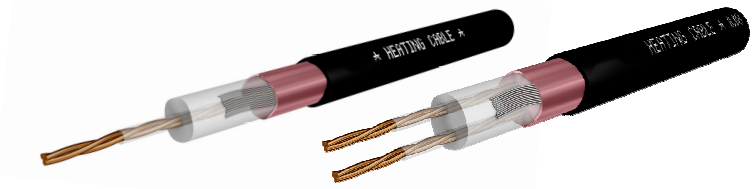
Expansion Joints: Expansion or Isolation joints result when concrete is isolated from something else which can be concrete, a wall, column etc. When an expansion joint is used between two concrete slabs the two structures are not connected using rebar, therefore movement can/will occur between them. Do not cross expansion joints with the heating portion of the cable. The cold lead portion of the cable may cross expansion joints as long as the cold lead is buried under or sleeved with conduit at the bottom of the joint.

Jumpers: It does not matter what kind of joint is in the asphalt or concrete, heating cables should never be allowed to run through them unprotected. Always use a Heatizon Systems jumper under or through any and all joints. Remember, if it is a joint of any kind it must be jumpered with a Cable Jumper Kit (Heatizon Part #MICABJMPKIT). This kit includes 4 jumpers.

Cable Specifications

Heating cable	Single or Dual
Voltage	120VAC to 600VAC
Watts	12 watts/ft max.
Length	Refer to product label
OD Single Conductor	0.23” to 0.26”
OD Dual Conductor	0.24” to 0.35”
Cable Type	Constant Wattage
1st Insulation	Fluoropolymer
2nd Insulation	Cross-Linked XLPE
Protective Screen	Tinned Copper
Outer Jacket	Cross-Linked Halogen Free Fire Retardant Polyolefin with UV Protection
Heating Endurance	-22°F(-30°C) to 194°F(90C)
Short Term Heating Endurance for Asphalt	464°F(240°C) not to exceed 30 minutes
Minimum Spacing	2”
Standard Spacing	3” to 6”
Cap Thickness	2” to 4” max
Bending Radius	6D** (approx. 2”)
Thermal Resistance	464°F(240°C) Do not to exceed 30 minutes

Required Tools:
500 VDC Megohmmeter
Digital Multimeter (DMM)
Screwdrivers, Utility Knife, Wire Strippers.



Note: It is important that heating cable be installed only by qualified persons who are familiar with the proper sizing, installation, construction and operation of snow melting systems and the hazards involved. Heating cable products are designed for in and under concrete, asphalt, and paver snow melt applications.

Note: Heating cable must be installed in accordance with the manufacturer’s installation instructions, as well as with the National Electric Code (NEC) and Canadian Electrical Code (CEC), part 1, and local codes and regulations.

Note: Article 426 of the NEC requires ground fault protection for line voltage equipment embedded in a noncombustible medium. Check local building codes and regulations for ground fault protection device (i.e. GFCI, GFEP, etc.) requirements when installing all heating cable products.

Note: Do not bend heating cable within 3” of a termination or connection between the heating element and the cold lead. Heating cables cannot cross or touch one another.

Note: Article 426 of the NEC limits embedded deicing and snow melting equipment to a maximum of 1300 watts/m² (120 watts/ft²) of heated area.

Note: Store the heating cable in a dry place up to the resistance temperature of the jacket 194°F (90°C).
Minimum installation temperature is 23°F (-5°C).

Product Identification Label

C ETL US LISTED
Intertek

CERTIFIED TO CSA C22.2 No 130

CONFORMS TO UL 1673 UL Subject 1588 UL 515

HEATIZON SYSTEMS

Serial Number:

XXXXXXXXXX

Caution: A ground fault protection device must be used with this heating device.
Attention: Ce produit doit etre utilize avec une protection de mais a la terre.

Minimum Installation Temperature: -5ºC/23ºF

SnowMeltz Heating Cable

xx.x FT

WARNING: Do not proceed with installation of this product until you have read all provided warnings and the entire design and Installation manual.

Circuit Input Voltage	Amps	WS Series Single or Double Conductor	Ω Per Foot	Watts Per Foot	Heating Cable Total Watts
		D			
		D			
		D			
		D			

Electrical Connection Wiring

120V and 480V Connection	
Phase	Cold Lead
Neutral	Cold Lead
Ground	Shield

208V, 240V and 480V Connection	
Phase	Cold Lead
Phase	Cold Lead
Ground	Shield

WARNINGS ⚠

Read this entire Design and Installation Manual prior to installing.

Do not overlay, twist, kink, or spiral the cable/mat.

Do not cut the heating element, or alter or modify it in any way. Cold Lead length can be modified in the field.

⚠ Do not bend the cable within 3" of the cold connection.

⚠ Always protect heating cable circuits with Ground Fault Protection per Article 426 of the NEC.

Use only copper wire from the distribution panel to the cold lead.

Do not allow the heating cable to touch or cross itself, its cold leads, any gas lines or electrical conductors.

When installing cables, the diameter of a bend in the cable must be greater than 6 times the cable's diameter.

Any manner of use different from those specified in this user guide should be consulted with the manufacturer.

Reminders

Before and after laying the mats, it is necessary to measure the resistance of the heating circuit with a digital multimeter. The measured resistance values in ohm (Ω) can be found on product label or by calling Heatizon Systems at (888)-239-1232.

Before and after laying the cables, it is necessary to measure the insulation resistance between the heating conductor and the protective braiding. This measured value may not be less than 0.5MΩ at 500 VDC.

The minimum installation temperature is 23℉ (-5℃)

Always unspool the spool or uncoil the coil to pay out the heating element. Do not pull the cable from the spool or coil.

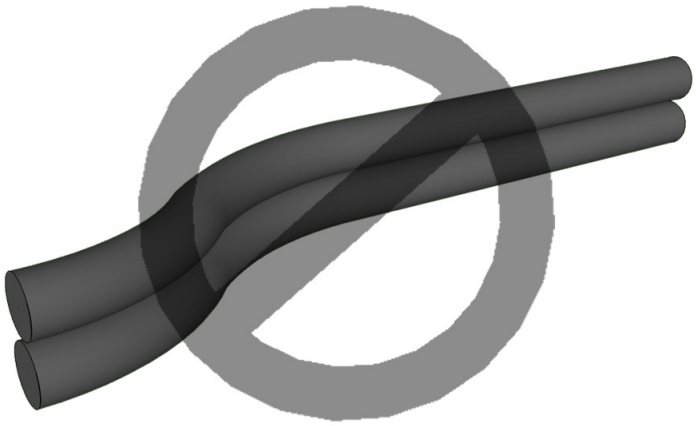
Remember to verify that the supply voltage matches the design voltage of the product you have purchased.

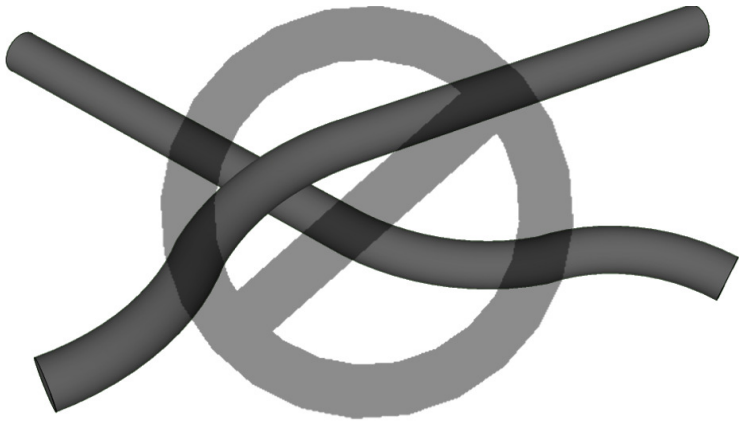
Remember to use asphalt, concrete, a sand bed, thin-set, or a cement based self-leveling product to embed the heating cable and cold connection.

Metal structures or materials used to install or support the heating cable must be grounded in accordance with CSA & NEC Articles.

Please contact Heatizon Systems at 888-239-1232 with any additional questions.

Heating cable must not cross or touch itself in any place. Cable can overheat and will require replacement. Do not bend the heating cable within 3" of the cold connection.





Design and Installation

STEP 1 SYSTEM SELECTION & LAYOUT PLANNING

Gather Necessary Information:

- Size and layout of area
- Voltage and Amperage Available
- Geographic Location
- Cover or cap material and thickness (1.5” minimum)

Design Requirements:

- Whenever possible, The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) design criterion should be followed.
- Cable/Mat must not be closer than 6” to the edge of the slab
- All snow melt systems may be activated manually or automatically.
- Identify and mark for jumpers the location of all future joints in asphalt or concrete.

Draw a sketch of the area where the snow melt will be installed. The sketch should show all measurements and dimensions in order to determine the area to be snow melted. Determine location for the activation device.

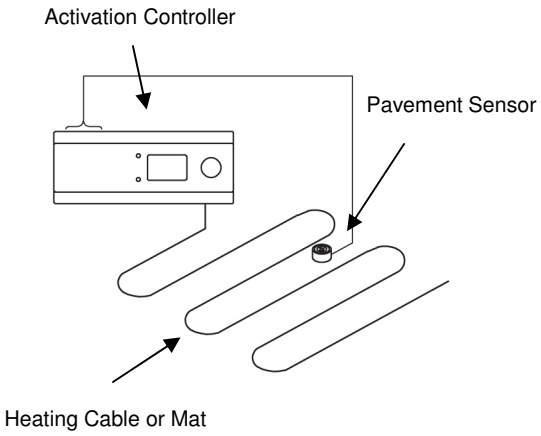
Note: Make certain to plan for the movement of water created by melted snow.

Note: The transition joint between the heating element and the cold lead must be embedded in asphalt, concrete, sand, stone dust, or cementitious material. Do not bend the heating cable within 3” of cold connection.

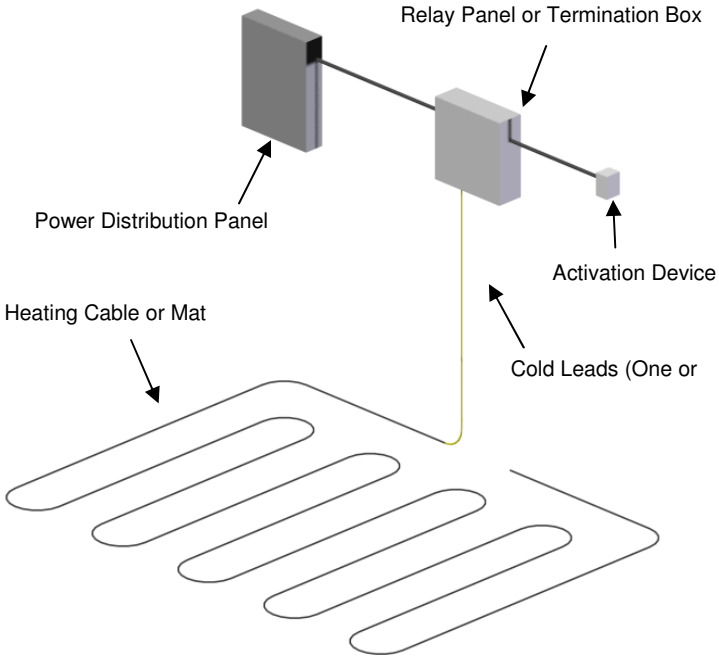
Note: Heatizon constant wattage cables are designed for specific voltages and watt densities. These heating cables can be designed for 120, 208, 240, and 277VAC. Be sure to check product label for correct input power and watt density design for your installation.

Note: Activation Devices are the eyes and ears of the heating system. Location is important. Please reference installation and operation information in the activation device product literature. Some activation devices may or may not require a different voltage than the heating cable.

Activation Device Location



Snow Melt System Configuration



Electrical Power Distribution

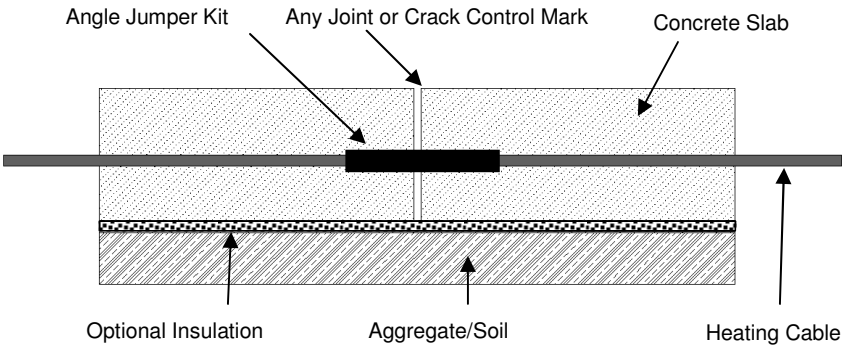
Breaker Size (Amps)	Max Load (Amps)
50	40
40	32
30	24
20	16
15	12

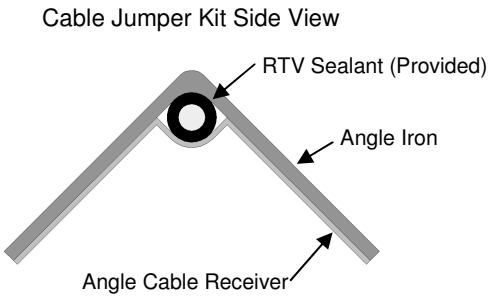
Design and Installation

STEP 2 PLAN THE JUMPERS

ASHRAE and **Heatizon** always require the use of jumpers through joints. Never extend the heating cable through any joint in asphalt and/or concrete without a jumper. Determine the number of joints in order to determine the number of Jumper Kits required for the project. Always jumper under all joints using the appropriate jumper kit provided by Heatizon Systems. Refer to page 1 titled, **A FEW CONCRETE SUGGESTIONS** of this manual for information about types of joints in concrete and asphalt to consider.

Cable Jumper (Heatizon Part # MICABJMPKIT)





STEP 3 VERIFY SNOW MELTING OBJECTIVES & PRODUCT SELECTION

Snow Melt Design Performance

Contact your Heatizon Distributor or Representative for assistance in determining the Watts per square foot needed to accomplish your snow melting objectives. Heatizon recommends that, whenever possible, all snow melting projects be designed using ASHRAE's design criterion. In the event access to ASHRAE's design criteria is not available or applicable, then the "General Guidelines for Product Selection" table at the right, may be helpful.

System Components

If a design has been determined that will satisfy the projects snow melting objectives, materials can then be ordered. For product selection, see the next page for sizing and specifications. There are 4 main components for a snow melting system, but these can be customized and changed depending on project requirements and some activators will switch loads for smaller systems.

Components of a Snow Melting System:

- Heating Cables or Mats
- Activation Device(s)
- Jumpers

General Guidelines for Snow Melt Design

For heavy snow areas or critical emergency accesses, ADA critical areas, landing pads.	30+ Watts per square foot (323 Watts/M^2)
Areas with higher than average amounts of snow or having medium pedestrian traffic or commercial accesses, residential driveways and walkways that are steep.	20-30 Watts per square foot (215-323 Watts/M^2)
Areas with average snow or light pedestrian traffic, residential driveways and walkways.	20+ Watts per square foot (215 Watts/M^2)

Design and Installation

STEP 3 **VERIFY SNOW MELTING OBJECTIVES, PRODUCT SELECTION & ORDER MATERIALS**

Snow Meltz® Product Selection, Sizing, & Specifications

Snow Meltz® Mat, 50 Watts/Ft^2 @ 208 VAC

Heatizon Part #	Total Watts	Total Ohms	Amps @ 208V	Watts/Sqft 208V	Watts/Ft	Coverage Sqft	Watts/ Sqft	Mat Length	Mat Width	Cold Lead Length	Cold Lead AWG
SM-50W208-10	520	83.2	2.5	50	12	10	50	5’	24”	20’	14
SM-50W208-15	825	52.4	4.0	50	12	15	50	8’	24”	20’	14
SM-50W208-25	1235	35	5.9	50	12	25	50	12’	24”	20’	14
SM-50W208-35	1745	24.8	8.4	50	12	35	50	17’	24”	20’	14
SM-50W208-45	2245	19.3	10.8	50	12	45	50	22’	24”	20’	14
SM-50W208-60	2995	14.4	14.4	50	12	60	50	30’	24”	20’	14
SM-50W208-75	3680	11.8	17.7	50	12	75	50	37’	24”	20’	10
SM-50W208-100	4740	9.1	22.8	50	12	100	50	50’	24”	20’	10

Snow Meltz® Mat Models - 50 Watts/Ft^2 @ 240VAC or 37 Watts/Ft^2 @208VAC

Heatizon Part #	Total Watts	Total Ohms	Amps 240V	Watts/Sqft 240V	Amps 208V	Watts/Sqft 208V	Watts/ Ft	Coverage Sqft	Mat Length	Mat Width	Cold Lead Length	Cold Lead AWG
SM-50W240-37W208-15	775	74.3	3.2	50	2.8	37	12	15	8’	24”	20’	14
SM-50W240-37W208-20	950	60.6	4.0	50	3.4	37	12	20	10’	24”	20’	14
SM-50W240-37W208-30	1425	40.4	5.9	50	5.1	37	12	30	15’	24”	20’	14
SM-50W240-37W208-35	1840	31.3	7.7	50	6.6	37	12	35	18’	24”	20’	14
SM-50W240-37W208-45	2215	26.0	9.2	50	8.0	37	12	45	22’	24”	20’	14
SM-50W240-37W208-60	3015	19.1	12.6	50	10.9	37	12	60	30’	24”	20’	14
SM-50W240-37W208-75	3660	15.7	15.3	50	13.2	37	12	75	37’	24”	20’	10
SM-50W240-37W208-110	5500	10.5	22.9	50	19.9	37	12	110	55’	24”	20’	10

Snow Meltz® Mat Models - 50 Watts/Ft^2 @ 277VAC or 37 Watts/Ft^2 @240VAC

Heatizon Part #	Total Watts	Total Ohms	Amps 277V	Watts/Sqft 277V	Amps 240V	Watts/Sqft 240V	Watts/ Ft	Coverage Sqft	Mat Length	Mat Width	Cold Lead Length	Cold Lead AWG
SM-50W277-37W240-10	426	180.1	1.5	50	1	37	12	10	4’	24”	20’	14
SM-50W277-37W240-15	712	107.8	2.6	50	2	37	12	15	7’	24”	20’	14
SM-50W277-37W240-20	1100	69.8	4.0	50	3	37	12	20	10’	24”	20’	14
SM-50W277-37W240-25	1250	61.4	4.5	50	4	37	12	25	13’	24”	20’	14
SM-50W277-37W240-35	1650	46.5	6.0	50	5	37	12	35	17’	24”	20’	14
SM-50W277-37W240-40	2050	37.4	7.4	50	6	37	12	40	21’	24”	20’	14
SM-50W277-37W240-45	2250	34.1	8.1	50	7	37	12	45	23’	24”	20’	14
SM-50W277-37W240-50	2500	30.7	9.0	50	8	37	12	50	25’	24”	20’	14
SM-50W277-37W240-60	2995	25.6	10.8	50	9	37	12	60	30’	24”	20’	14
SM-50W277-37W240-75	3610	21.3	13.0	50	11	37	12	75	37’	24”	20’	14
SM-50W277-37W240-85	4210	18.2	15.2	50	13	37	12	85	43’	24”	20’	10
SM-50W277-37W240-100	4900	15.7	17.7	50	15	37	12	100	50’	24”	20’	10
SM-50W277-37W240-130	6350	12.1	22.9	50	20	37	12	130	65’	24”	20’	10

Design and Installation

STEP 4 ORDER MATERIALS & CONFIRM ONCE RECEIVED

When materials arrive, examine the materials and the packaging for damage. If damage is present file a claim with the delivering company and copy Heatizon Systems. If no damage is present examine the snow melt system and compare the list of materials ordered to those received.

STEP 5 MEASURE & RECORD INSULATION AND CABLE RESISTANCE

Required Tests

Insulation Resistance with Megohmmeter
Before, during, and after installation, it is necessary to measure the insulation resistance between the heating conductor and the protective grounding screen with a 500VDC Megohmmeter. This measured value may not be less than 0.5 Megohms.

- Connect the voltage lead to the inner cold lead conductors and the earth lead to the cold lead outer grounding braid or sheath. Test resistance at 500VDC. Record the measured values in the certificate of warranty.

Cable Conductor Resistance with Multimeter
Before, during, and after installation, it is necessary to measure the resistance of the heating circuit with a multimeter. The measured values should be equal -5% to +10%.

- Connect one meter lead to the one cold lead inner conductor and the other meter lead to the other cold lead inner conductor. Take the Ohm reading. Record the measured values in the certificate of warranty.

Be sure to check product label for proper resistance, operating amperage, operating voltage, cable length and other important information when performing tests.

STEP 6 PREPARE THE AREA

Ensure that the substrate has been properly compacted and drainage has been satisfactorily addressed. For substrate preparation and concrete recommendations please refer to page 1 of this manual for “A FEW CONCRETE SUGGESTIONS”. Other site preparation recommendations include, cleaning up the site to eliminate objects that may damage the heating element prior to, during and after the installation.

Use the site sketch to transfer the following information to the site.

- Identify and mark the location of any and all joints if the heating cable or mat will be installed into a new asphalt or a concrete slab, Do not forget to use jumpers for any and all joints.

- Determine the location of the starting points of the heating element and the exit points for the cold leads. Connections must be embedded in asphalt, concrete, or other cementitious material.

- Determine the location of the activation device. If using an in-slab temperature or temperature/moisture sensor, mark the location for the activation device and install a conduit sleeve for the lead wire to the in-slab sensor. An automated activator is the “eyes and ears” of the snow melt system. It is important that it be installed in a location that will allow it to turn the snow melt system “on” when it is needed and “off” when it is not needed. Verify the proper location has been selected for the activation device. Manual activators require human action—as a result they should be placed in a location that is convenient and easily accessible.

For retrofit snowmelt projects only: *Using a chalk line, mark the desired location where each run of cable will be installed, using the predetermined appropriate spacing for the heating cable. Once the heating element locations are satisfactorily marked, cover each chalk line with a clear spray lacquer to protect the chalk lines during saw cutting.*

Design and Installation

STEP 7 BEGIN THE INSTALL OF THE HEATING CABLE OR MAT –SEE DIAGRAMS PAGE 15

For loose cables, predetermined spacing is provided when ordering a system for desired watt density. Use the formula below to be sure all cable is used during installation and also to determine the watt density per square foot for performance. The required information for these formulas can be found on the product label.

Calculate Heating Cable Spacing

_____	÷	_____	× 12 =	_____
Square Footage		**Length of Heating Cable**		**Cable Spacing**

Calculate Watt Density per Square Foot

12	÷	_____	×	_____	=	_____
		Cable Spacing		**Watts per Foot**		**Watts per Square Foot**

Make sure the connection points are in their desired locations before installing the heating cable zones. If working with a single conductor cable (2 cold leads) make certain that the Cold Lead can return back to the termination box or load switching panel.

Concrete Preparation: Loose heating cable not in a mat may be secured in place by landscape stakes and plastic wire ties, welded wire fabric and plastic wire ties or tape, or pre-punched steel straps purchased from your Heatizon Distributor or Representative. Do not compress or strain the cable, run heavy machinery, equipment, or vehicles over it. Be careful to avoid stepping on the cold section factory connection of the cable. Consult the NEC or CEC for grounding requirements of rebar or welded wire fabric for concrete installations. When working with concrete or asphalt joints, design the layout so each section of the slab is covered and the cable crossing of joints are minimized. See page 15 for example layouts. Cables or mats should be installed in evenly spaced runs per the system design and plan. Sleeve hand rail posts to avoid drilling or penetrations in the slab after the pour.

- **Two Pour Concrete:** In this installation a concrete slab is already present and an additional slab will be poured on top. The heating cable can be layed out using welded wire fabric and zip ties or tape, or pre punched steel strapping for loose cable installations not in a mat form. Cold leads should be sleeved for this installation following conductor fill and size requirements in the NEC and CEC. The heating cable portion and cold connection can not pass into the conduit sleeve. Jumpers must be used to protect the heating cable where joints are present on the concrete slab below as well as in the new slab.

- **Single Pour Concrete:** In this installation the aggregate or concrete base is prepared first. Once the base is prepared the installer can begin by placing a grid of welded wire fabric or rebar in preparation for the heating cable. The heating cables or mats can be attached to the welded wire fabric with plastic zip ties or tape. Take note of layout examples on page 15 for installations requiring jumpers. Jumpers must be used for any and all joint cable crossings. Do not cross expansion joints. Once the heating cable is installed, place chairs or concrete dobies under the rebar or welded wire fabric grid to bring the heating cable within 2” to 3” of the surface. Cold leads can be sleeved following conductor and fill size requirements in the NEC and CEC. The heating cable portion and cold connection can not pass into any conduit sleeve.

Asphalt Preparation: Loose heating cable not in mat form may be secured in place by landscape stakes and plastic wire ties, welded wire fabric and plastic wire ties or tape, or pre-punched steel straps purchased from your Heatizon Distributor or Representative. Cables in a mat can be layed out in the configuration desired directly on the surface. Do not compress or strain the cable, run heavy machinery, equipment, or vehicles over it. Be careful to avoid stepping on the cold section factory connection of the cable. Consult the NEC or CEC for grounding requirements of rebar or welded wire fabric for asphalt installations. When working with concrete or asphalt joints, design the layout so each section of the slab is covered and the cable crossing of joints are minimized. See page 15 for example layouts. Cables or mats should be installed in evenly spaced runs per the system design and plan. Sleeve hand rail posts to avoid drilling or penetrations in the slab after the pour.

- **Two Pour Asphalt:** In this installation a binder or base coat of asphalt is layed down and an additional asphalt layer is placed on top of the heating cable. The base coat is to be rolled smooth in preparation of the heating cable installation. Welded wire mesh can be used to install loose cables in a grid. The grid can be secured to the base coat slab using stakes. If using a heating cable in mat form, the mats can be layed out on the base coat slab and secured down using the mesh portion of the mat and not the heating cable. Cold leads should be sleeved for this installation following conductor fill and size requirements in the NEC and CEC. The heating cable portion and cold connection can not pass into the conduit sleeve. Jumpers must be used to protect the heating cable where any and all joints are present. Do not cross expansion joints.

Design and Installation

STEP 7 BEGIN THE INSTALL OF THE HEATING CABLE OR MAT(CONTINUED) –SEE DIAGRAMS PAGE 15

- **Single Pour Asphalt:** In this installation the aggregate or base is prepared first. Once the base is prepared, a layer of sand or stone dust is placed over the base coat approximately 1" thick. The installer can begin by placing a grid of welded wire fabric or landscaping stakes in preparation for the heating cable. The heating cables or mats can be attached to the welded wire fabric, or landscaping stakes with plastic zip ties that will not melt. Take note of layout examples on page 14 for installations requiring jumpers. Jumpers must be used for any and all joint cable crossings. Cold leads should be sleeved following conductor and fill size requirements in the NEC and CEC. The heating cable portion and connection can not pass into any conduit sleeve.

Retrofit Preparation: Do not compress or strain the cable, run heavy machinery, equipment, or vehicles over it. Be careful to avoid stepping on the cold section factory connection of the cable. For retrofit installations, site preparation includes marking saw cuts with chalk lines and coating them with clear acrylic or laquer so they remain visible when exposed to water used for saw cutting.

- **Retrofit Installation:** Saw cuts measuring 3/8" wide and 1.5" deep are made into the asphalt or concrete. Touch up with a hand grinder may be needed to maintain consistent depths and widths at turns and along parallel runs. The cuts must be power washed and allowed to dry before the heating cable is installed. Follow local ordinances when performing saw cutting and cleanup. Insert the heating cable into the parallel cuts. Cut thickness and depth should be maintained with a hand saw or grinder to prevent cable from being forced into the cut. Do not bend the heating cable closer than 3" to the cold joint. All cold lead factory connections must be embedded and covered in saw cuts. Cold leads can also be run in saw cuts back to the exit point of the slab

Sand Bed Paver Preparation: The heating cable may be secured in place by landscape stakes and plastic wire ties, welded wire fabric and plastic wire ties or tape. Do not compress or strain the cable. Do not run heavy machinery, equipment, or vehicles over the cable. Be careful to avoid stepping on the cold section factory connection of the cable.

- **Sand Bed Installation:** In this installation the aggregate or base is prepared first. Cover the base with 1/2" layer of compact sand. Use welded wire fabric or landscape stakes to place loose heating cables or lay the heating cable mat on the layer of sand in accordance with determined layout. Cover the heating cable or mat with another 1/2" layer of sand. The paver installer must be careful to not walk on the factory connection or damage the heating cable with shovels, rakes or other tools. Cold leads should be sleeved for this installation following conductor fill and size requirements in the NEC and CEC.

Mortar Under Stone & Tile Preparation: The heating cable may be secured in place with pre-punched steel straps or anchor kits purchased from your Heatizon Distributor or Representative. Do not compress or strain the cable. Do not run heavy machinery, equipment, or vehicles over it. Be careful to avoid stepping on the cold section factory connection of the cable.

- **Mortar Bed Installation:** Anchor the heating cable in parallel runs in preparation for mortar placement. Cold leads should also be anchored for this installation back to the exit point of the slab and placed in conduit following conductor fill and size requirements in the NEC and CEC.

Warning: Do not cut or shorten the heating cable . Do not damage or subject the heating element to mechanical or shear stress. Do not bend the cold connection closer that 3" of the cold connection. Never cut or damage the insulator on the heating cable.

STEP 8 INSTALL THE ACTIVATOR & RUN COLD LEADS

Heatizon activation devices come with data sheets, wiring diagrams, and instructions. Install the selected activator by carefully following the specific set of instructions that were included with the activation device. Some systems are professionally designed and can include custom wiring diagrams from our industry professionals.

Run the cold leads to the panel or junction box. Cold Leads should be ran in pairs back to the power source or junction box.

Note: If the selected activation device requires conduit for a temperature sensor, the conduit must be centered between two runs of heating cable. Always run high voltage and low voltage conductors in separate conduits.

Warning: Do not allow the sensor conduit to cross the heating cable. Do not allow any part of the activator to touch the heating cable.

Design and Installation

STEP 9 MEASURE & RECORD INSULATION AND CABLE RESISTANCE

Required Tests

Insulation Resistance with Megohmmeter
Before, during, and after installation, it is necessary to measure the insulation resistance between the heating conductor and the protective grounding screen with a 500VDC Megohmmeter. This measured value may not be less than 0.5 Megohms..

- Connect the voltage lead to the inner cold lead conductors and the earth lead to the cold lead outer grounding braid or sheath. Test resistance at 500VDC. Record the measured values in the certificate of warranty.

Cable Conductor Resistance with Multimeter
Before, during, and after installation, it is necessary to measure the resistance of the heating circuit with a multimeter. The measured values should be equal -5% to +10%.

- Connect one meter lead to the one cold lead inner conductor and the other meter lead to the other cold lead inner conductor. Take the Ohm reading. Record the measured values in the certificate of warranty.

Be sure to check product label for proper resistance, operating amperage, operating voltage, cable length and other important information when performing tests.

STEP 10 APPLY THE SUBSTRATE: ASPHALT, CONCRETE, PAVERS, STONE OR TILE

Ensure that any necessary sensor and cold lead conduit has been properly installed before proceeding beyond this point. Heatizon recommends that photographs of the installed heating cable be taken and/or hand drawings documenting the layout be completed prior to installing the final surface.

For Concrete Applications: Proceed with applying concrete. Ensure that the concrete covers the entire heating element ***and*** the connection between the heating cable and cold leads. Great care should be taken to not damage the heating cables by impacting, cutting or other abuse.

Note: Heatizon recommends that photographs of the installed heating cable be taken and/or hand drawings documenting the layout be completed prior to before installing the asphalt, concrete, pavers, stone or tile.

For Asphalt Applications: Heatizon Systems heating cable is of high quality and durable construction. As a result, it can tolerate the heat and compression of newly poured asphalt with some modification. The heating cables can tolerate 464°F(240°C) for 30 minutes. For single pour asphalt, cover the heating element with 1/2" of substrate material prior to installing asphalt per the directions below. For both single and two pour asphalt installations place a layer of asphalt at least 1/2 inch thick over the cables by hand, and roll with a roller of approximately 1.5 ton size. This will protect the heating cables from damage by tools or paving equipment and will protect the cable from heat during placement of the main pour. Continuously check the insulation resistance of the heating cables to verify that the cables are not damaged during placement of the asphalt. Continue with the main pour.

For Retrofit Applications in Concrete or Asphalt: Place 1/2" backer rod over the cable at about 1/4" depth from the surface. Placing the backer rod at this depth minimizes sealant usage and improves sealant strength. Use the approved Heatizon sealants to seal concrete saw cuts and asphalt saw cuts with regard to slope.

For Paver Applications: Proceed with the installation by covering the heating cable with a layer of sand or stone dust. Ensure that the sand or stone dust covers the entire heating element ***and*** the connection between the heating element and cold leads before the pavers are installed. Great care should be taken to not damage the heating cables by impacting, cutting or other abuse.

For Stone or Tile with Mortar Applications: Cover the heating cable with mortar to completely embed them and allow it to set. Allowing the first layer of mortar to set will protect the heating cables during the final installation and the setting bed for stone or tile. Install the Stone or Tile and keep note that the final cable depth of the cable from the surface should be 2". Great care should be taken to not damage the heating cables by impacting, cutting or other abuse.

Design and Installation

STEP 11 MEASURE & RECORD INSULATION & CABLE RESISTANCE

Required Tests

Insulation Resistance with Megohmmeter
Before, during, and after installation, it is necessary to measure the insulation resistance between the heating conductor and the protective grounding screen with a 500VDC Megohmmeter. This measured value may not be less than 0.5 Megohms..

- Connect the voltage lead to the inner cold lead conductors and the earth lead to the cold lead outer grounding braid or sheath. Test resistance at 500VDC. Record the measured values in the certificate of warranty.

Cable Conductor Resistance with Multimeter
Before, during, and after installation, it is necessary to measure the resistance of the heating circuit with a multimeter. The measured values should be equal -5% to +10%.

- Connect one meter lead to the one cold lead inner conductor and the other meter lead to the other cold lead inner conductor. Take the Ohm reading. Record the measured values in the certificate of warranty.

Be sure to check product label for proper resistance, operating amperage, operating voltage, cable length and other important information when performing tests.

STEP 12 CONNECT POWER SUPPLY & ACTIVATION

The connection of the power supply and the activation device must be done by a qualified electrician in accordance with the National Electrical Code (NEC) and the Canadian Electrical Code (CEC). Refer to the wiring diagram included with the activation device.

Electrical Requirements:
120 or 277 VAC — Single Phase
208, 240, 480 or 600 VAC — Two Phase

The grounding shield from the Cold Lead(s) must be wired to Ground for all primary power installations. Section 426 of the NEC requires that each circuit to the heating cable be protected with a ground fault equipment protection devices.

Note: The circuit breaker amperage rating is determined by the specific product selected. Refer to page 4 for more information about circuit sizing.

STEP 13 TROUBLESHOOTING

Problem: Heating cable fails the insulation resistance test with a Megohmmeter or conductor resistance test with a multimeter.

Potential Causes:

- Inspect the Cable for damage to the insulator or shield, and/or contact between the shield and the core wire(s). Replace entire length of damaged Cable if damaged.
- Call Heatizon Systems technical support @ 888-239-1232

Note: In the event the heating cable or mat has not been damaged in any way, remove and replace the entire length of heating cable. For warranty claims, please return the entire length of heating cable and warranty card to Heatizon Systems, with the end termination and power termination connections intact, for evaluation prior to replacement.

Design and Installation

STEP 14 COMPLETE & ATTACH LABELS

Place the included labels in the following locations:

- **Electrical Panel Label:** Inside door at electrical service panel. This label matches the label that is attached to the non-heating Cold Lead at the factory.
- **Stop Sign Warning Label:** On or near the area which is heated by the heating cable or mat.
- **Optional Embedded Heatizon Plaque (W-7):** Mounted on the surface of the slab or on or near the area which is heated by the heating cable or mat.

Note: Make certain to record information from the Product Identification Label, which can be found on the cold lead portion of each heating cable.

STEP 15 COMPLETE WARRANTY CERTIFICATE

Mail in the warranty certificate immediately after installing the snow melting system. Failure to complete the warranty card could void the manufacturer's warranty. The warranty is subject to the guarantee conditions listed on the warranty certificate, and upon documentation that the required resistance readings were completed. You may wish to keep a copy of the warranty card for your reference.

The snow melting system is now ready to use and enjoy!

Keep these instructions and all other owner/operating manuals for future reference.

Note: The heating cable is designed for snow melt applications in concrete, retrofit in concrete or asphalt, asphalt, a sand or stone dust bed under pavers, or other cementitious applications only.

Note: The heating cable must be embedded in concrete, asphalt, mortar, a sand or stone dust bed under pavers, or similar cementitious material.

Resistance Recording Table

Required Tests

Insulation Resistance with Megohmmeter
Before, during, and after installation, it is necessary to measure the insulation resistance between the heating conductor and the protective grounding screen with a 500VDC Megohmmeter. This measured value may not be less than 0.5 Megohms..

- Connect the voltage lead to the inner cold lead conductors and the earth lead to the cold lead outer grounding braid or sheath. Test resistance at 500VDC. Record the measured values in the certificate of warranty.

Cable Conductor Resistance with Multimeter
Before, during, and after installation, it is necessary to measure the resistance of the heating circuit with a multimeter. The measured values should be equal -5% to +10%.

- Connect one meter lead to the one cold lead inner conductor and the other meter lead to the other cold lead inner conductor. Take the Ohm reading. Record the measured values in the certificate of warranty.

Be sure to check product label for proper resistance, operating amperage, operating voltage, cable length and other important information when performing tests.

Prior to Installation (When removed from Package)	After Installation of Heating Element on Substrate	After Asphalt or Paved Concrete Application
MΩ Ω	MΩ Ω	MΩ Ω
Date Time	Date Time	Date Time

Customer Warranty Information

Name					
Address					
City		**State**		**Zip**	
Phone		**Email**			

Purchased Product Details

Model		**Size**	Sq. Ft.
Manufacture Date		**Serial Number**	
Watts & Volts	Watts Volts	**Ohms**	Ω

Surface	**Concrete** ❒	**Asphalt** ❒	**Sand Bed** ❒	**Other** ❒	**Retrofit** ❒

Heatizon Systems Warranty

Heatizon Systems warrants SnowMeltz to be free from defects in material and workmanship for a period of ten (10) years and Activation Device(s) for a period of one (1) year. Such warranty periods shall commence on the date of shipment by Heatizon Systems. If any parts are found to be defective in manufacture during such time period, Heatizon Systems will, at its sole option, replace or repair defective parts.

This Limited Warranty applies only if articles sold hereunder (a) are selected, designed, and installed according to instruction and operation manuals furnished by Heatizon Systems and installed in a "workmanlike manner" according to the building association standards adopted by Heatizon Systems, (b) remain in their originally installed location, (c) are connected to proper power supplies, (d) are not misused or abused, (e) show no evidence of tampering, mishandling, neglect, damage (accidental or otherwise), modifications or repair without the approval of Heatizon Systems, or damage done to the product by anyone other than Heatizon Systems, and (f) are installed in accordance with applicable code requirements. Any warranty claims must be made in writing, no later than one (1) month following expiration of the warranty period, and must be accompanied by the warranted part or component. Any claim not made in such manner shall not be honored by Heatizon Systems.

This Limited Warranty does not cover:
1. The workmanship of any installer of Heatizon Systems radiant panel or cable heating products.
2, Any Heatizon Systems radiant heating products that have a failure or malfunction resulting from improper or negligent operation, installation, accident, abuse, misuse, unauthorized alteration or improper repair or maintenance.
3. Any Heatizon Systems radiant heating products that have had components not purchased from Heatizon Systems integrated into or connected to them.
4. Any labor costs for removal of alleged defective part(s) and/or reinstallation of replacement part(s), transportation to and from Heatizon Systems (if necessary) and any other material necessary to perform the exchange or repair.
5. Any Heatizon Systems heating products that have not been properly registered by completion and return of the Warranty Registration Card attached hereto within ninety (90) days of the date of sale.

DISCLAIMER OF WARRANTIES:

This warranty described above is in lieu of all other warranties, express or implied, including but not limited to any implied warranties of fitness for a particular purpose and merchantability. Heatizon Systems expressly disclaims and excludes any liability for losses, expenses, inconveniences, consequential, incidental, indirect, or punitive damages for breach of any express or implied warranty. By installing and/or purchasing Heatizon Systems products, you accept the terms of this limited warranty.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you. This Limited Warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

How to make a Warranty Claim

1. Gather the following information:
   - Date of purchase
   - Who product was purchased from
   - Date of installation, if installed
   - Names and phone numbers of electrician/installer
   - Completed resistance recording page from installation
   - Serial number from product label

2. Contact Heatizon Systems for a Return Materials Authorization number, and information on the next required steps to complete your warranty claim.

HEATIZON
SYSTEMS

Mail: Heatizon Systems
4137 South 500 West
Murray, UT 84123
United States

Phone: (801) 293-1232

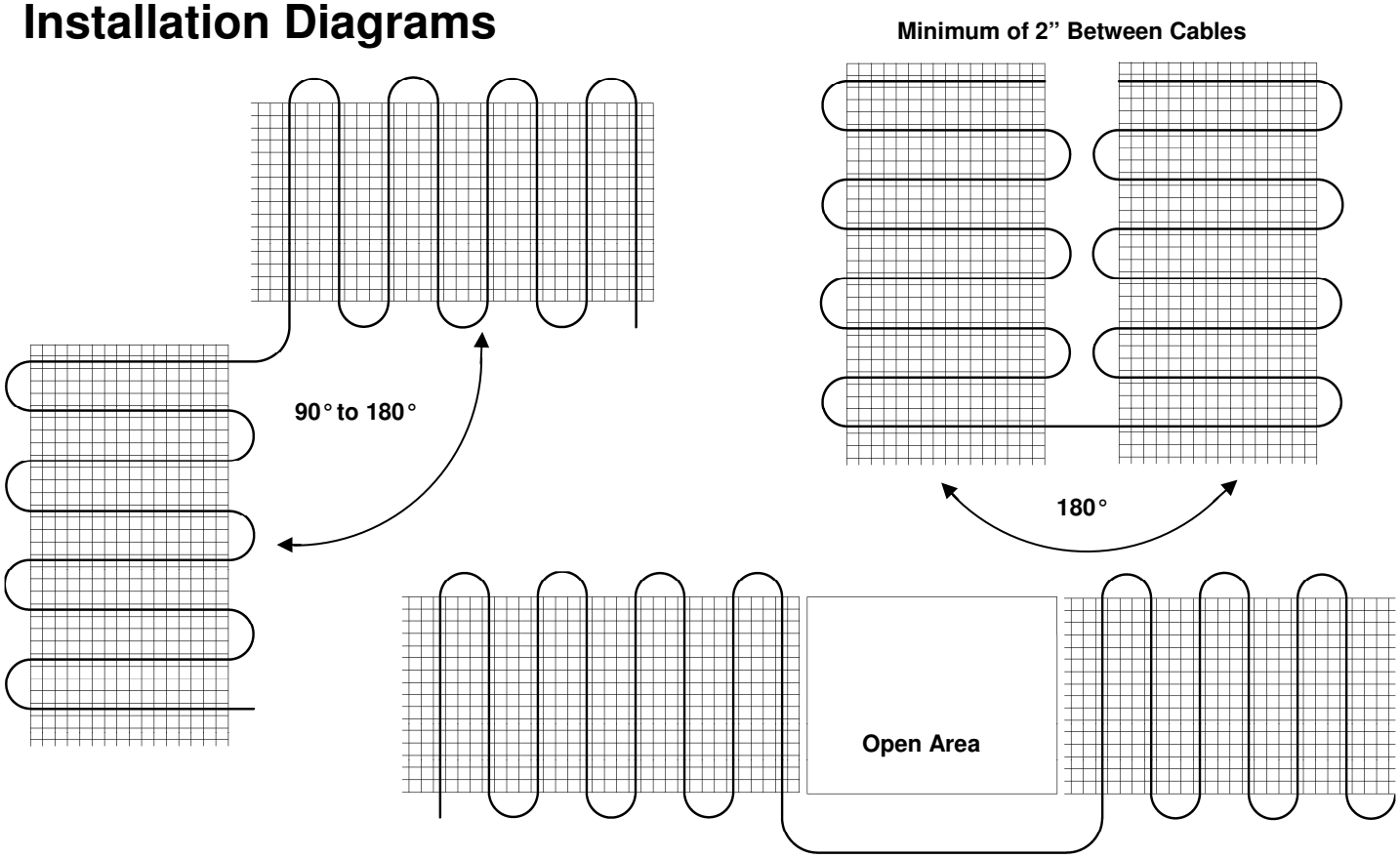
Toll Free: (888) 239-1232

Fax: (801) 293-3077

Email: info@heatizon.com

Website: www.heatizon.com

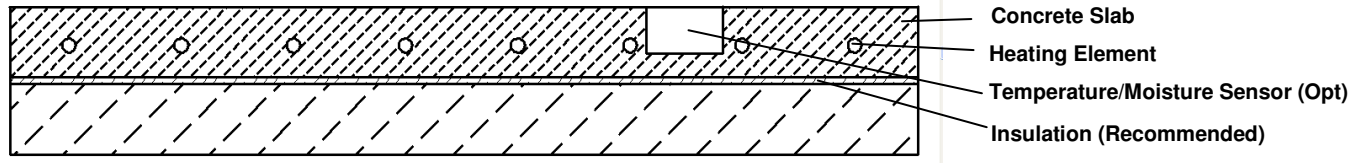
Installation Diagrams



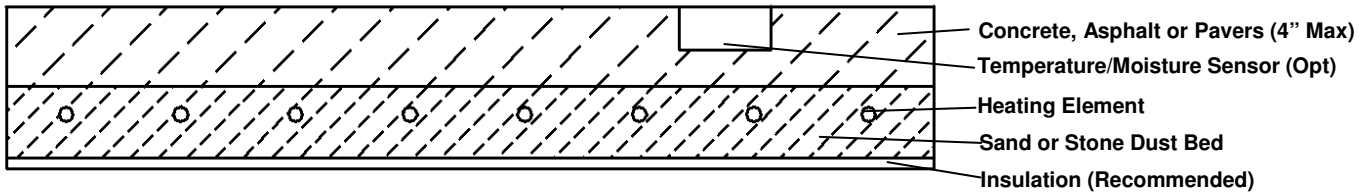
Note: Mats may be adjusted only as shown in the pictures and in no case may the cable be shortened. You may shorten only the cold connection ends, as required. Do not bend the cold connection between the heating cable and the non-heating leads. The heating cables of the heating mats may neither touch nor cross one another. The minimum distance between the cables is 2". If the heating or power supply cables are damaged, they must be replaced or repaired in an approved method. Do not use nails or screws to install the cables! When laying free flowing cable, the diameter of a bend in the cable must be at least 6 times greater than the cable's outside diameter.

Sample Application: Cable in a Concrete Slab

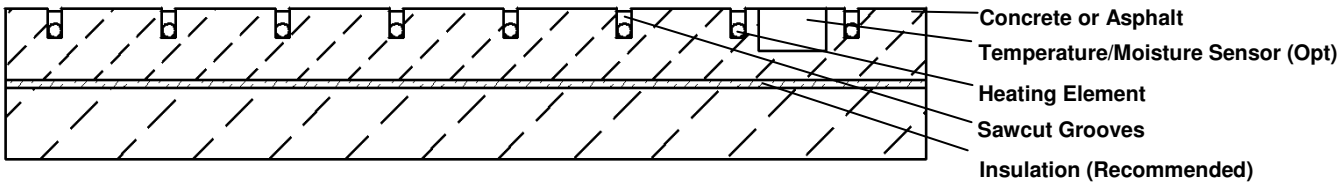
Note: Insulation is always recommended but only required in high water table areas.

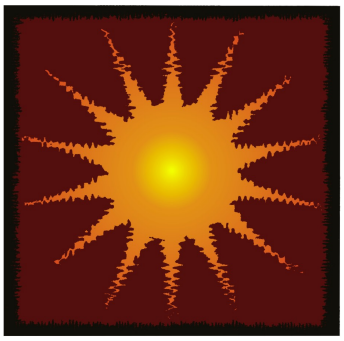


Sample Application: Cable in a Sand Bed Under Concrete, Asphalt or Pavers



Sample Application: Cable Retrofit in Concrete or Asphalt





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