

## BRITECH Snow Melting Mats — Homeowner's Guide and Installation Manual — SNOW-MAT

BRITECH Snow Melting Mats and Cables are designed to provide sufficient heat to melt snow in residential and commercial applications across Canada. They are constructed of the finest heating cables available, and are bound to a heavy mesh backing that will withstand the rigors of construction site installations.

The BRITECH Snow melting Mats and cables consist of a solid copper, twin conductor cable with a resistance wire element and a return wire, wrapped in a layer of thermoplastic insulation. The insulation element is further protected by a tinned copper grounding shield. The armored heating element is then woven to a 1" open fiber mesh that can be easily formed and adapted to almost any geometrical shape, to suit your walkway, landing or ramp. The mats and heating cables are factory bonded to a 16' (4.9M) long cold lead for ease of installation. This design utilizes the most advanced materials and is the most easily installed mat or cable available for residential or commercial renovation and new construction.

BRITECH Snow Melting Mats and Cables are CSA listed for OUTDOOR SNOW MELTING APPLICATIONS.



They are warranted to be free from manufacturers defect for 10 years (see written Limited Warranty for details). Maintenance free, safe, silent, energy efficient and once installed, it is totally out-of-sight. While a variety of controls can be used with BRITECH Snow Melting Mats, we strongly recommend using a snow sensor and in slab thermostat with a remote bulb temperature sensor. This form of control affords the greatest comfort, energy efficiency and control of your installation.

These features are only a few of those which make BRITECH Snow Melting Mats and Cables the most versatile, easy to install, and most reliable snow melt system available.

The following pages will provide you with an overview of how the BRITECH Snow Melting Mat works, how it is installed and maintained. Take a few moments to review this information. If you have further questions, one of our application engineering professionals will be happy to assist you.

### Owner's Information

#### General Instructions:

The electrical connection of the BRITECH Snow Melting Mat must be performed by a qualified electrician in accordance with Section 62 CAN/CSA-C22.1 part 1, the Canadian Electrical Code (CEC). The installer has been instructed to provide you with a plan of the system installation. The plan shows where the heating element is installed, the location of the temperature sensor and the electrical description of the system. Keep the plan for your system and a copy of these instructions for future reference. Future homeowners should also receive this information. The Snow Mats are designed to operate with 240 volt system. To optimize the efficiency of the system never bury the mat deeper than 3" (76mm) in concrete or asphalt. Interlocking stone or bricks should be no more than 3" (76mm) thick with a 1" (25mm) thick layer of sand or screening underneath. Make sure your installation is planned to use the mats or cables only in the areas where snow melting is required. Do not install them under lawns or city sidewalks.

#### Snow Sensing:

We recommend the use of an automatic snow sensor to sense temperature, freezing rain, and falling or blowing snow. This makes the system fully automatic and will ensure the area will be clean all the time.

#### Temperature Control:

A thermostat which monitors and controls the temperature through a remote sensor is mounted in the ramp, driveway or sidewalk at the time of installation. It is required in all installations. The system will not be warranted without this type of temperature controller. The thermostat will also save energy by only providing the amount of heat necessary to melt snow or ice.

BRITECH's Temperature Control comes with a 20' (6M) capillary to reach into the heated area.

#### Maintenance:

Periodically, the listed GFCI (Ground Fault Circuit Interrupter) which is required in all installations should be tested to insure its continued operation. BRITECH Snow Melting Mats and Cables have no moving parts. The system is virtually maintenance free. If the system does not appear to be heating properly, refer to the troubleshooting guide or call your installer.

#### Installer's Guide to Installation

##### General Instructions:

These instructions must be followed when assembling and installing the Snow Melting system. Make them available to the installer working on the project and when finished turn them over to the homeowner for future reference. Failure to follow these instructions may void the warranty on the installed system.

#### Considerations:

The electrical connection of the heating system and the thermostat should be done only by a qualified electrician in accordance with the Canadian Electrical Code and with local codes. To assure safety, the BRITECH Snow Melting System **must** be connected to the electrical service via a listed GFCI (Ground Fault Circuit Interrupter).

The heating system may be installed in concrete, asphalt and under interlock or marble driveways. Do not install in loose gravel. The Mat and Cables must be covered by a permanent surface. Do not walk on the unprotected Mat or Cable.

***Penetrating fasteners such as nails or screws may not be installed through the areas of the Mat or Cables***

The Mat's heating element should not be laid across expansion joints of ramps. While installing the BRITECH Snow Melting Mat, avoid crimping or bending the heating element wire.

**NOTE: To avoid damage to the heating element during installation, care must be taken that tools with sharp edges or points are not dropped or used carelessly on the element. Do not drive loaders, wheelbarrows, cars or trucks over the cables. These are electric elements. Care must be taken to avoid costly repairs or cancellation of the warranty.**

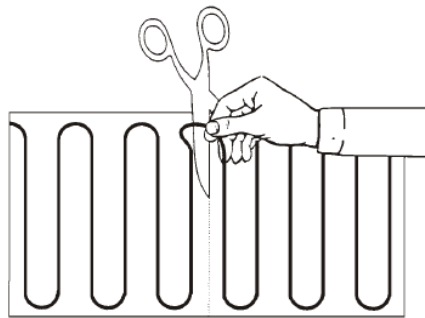


Figure 4 Cutting heating mat.

For electrical connections use the correct gauge of wire as listed in the Canadian Electric code. To determine amperage, add up the wattage of each Mat or Cable and divide by the volts. Example:  $5200\text{ w} / 240\text{V} = 22\text{ amps}$ . Use 10 gauge wire to connect. A GFCI must be installed on all cables.

**IMPORTANT: Cold leads and temperature sensors should be inserted into the electrical box without extensions or splices. Extensions or splices are not permitted. Consult your local representative if extensions or splices are required. All junction boxes must be visible and accessible.**

The Canadian Electrical Code (CEC) requires that cold leads must be protected in a listed conduit when they extend outside the heated area (see also local codes). Plastic bushings should be used where cold leads and sensors enter conduit to protect the wires.

**IMPORTANT: The slab sensor should be secured in the heated area only after heating mats and cables have been secured to the sub-base. This will allow you to place the sensor properly between the heating element wires.**

### Positioning the Heating Mat

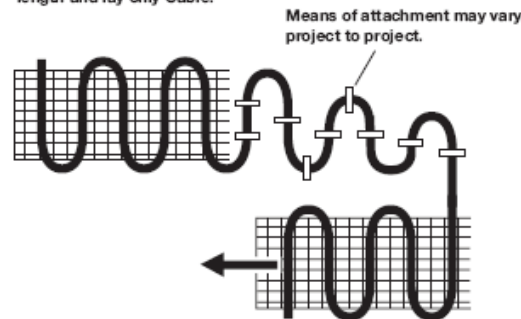
Start to layout the heating mat from an area adjacent to the thermostat or junction box. Ensure cold leads and temperature sensor can reach the flush mounted electrical box where the thermostat will be installed. Heating cables must not cross or overlap at any point. The heating cable length may NOT be cut or altered under any circumstances. This will cause over heating and result in damage to the system. Cables should be separated from other

heat sources such as lights and chimneys.

### Laying Out the Snow Melting Mat

Make sure the area is completely free of all debris including all nails, sharp metallic objects, wood and construction debris. Start from the location of the power connection box. Roll out the Heating Mat with cable side up, and secure the mesh onto the sub-base with Clip Strips or U clips. For rebar or grid use plastic zip ties (supplied by the installer). As needed, cut the mesh backing between the heating elements wire to create the desired layout shape.

For other shapes, detach Cable from Mat to required length and lay only Cable.

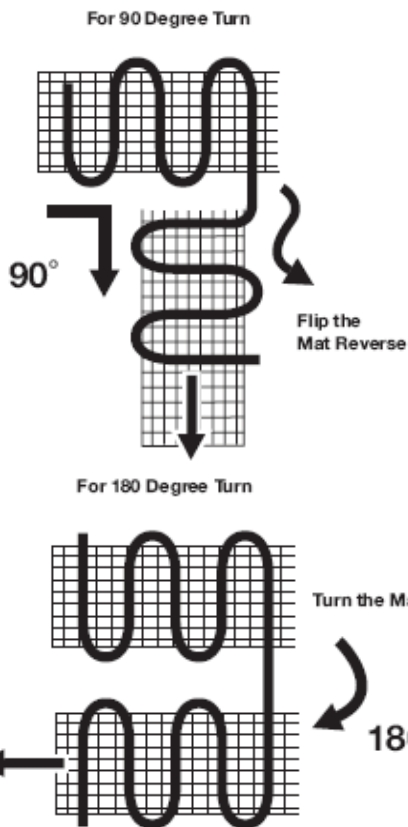


While cutting, be sure to cut only the mesh and to avoid nicking or damaging the heating element wires.

Ensure the entire element is encased in the sidewalk, ramp or driveway material. Only the cold lead and temperature sensor tube can protrude beyond the heated area.

**IMPORTANT: At no time may the heating element wire be cut.**

**For snow melting on stairs or uncommon geometric areas, please contact your BRITECH representative for information on Snow Melting Cables.**



### ELEMENT SPACING

Dimension A and B should be equal when possible. Dimension A Should never be less than 60% of dimension B

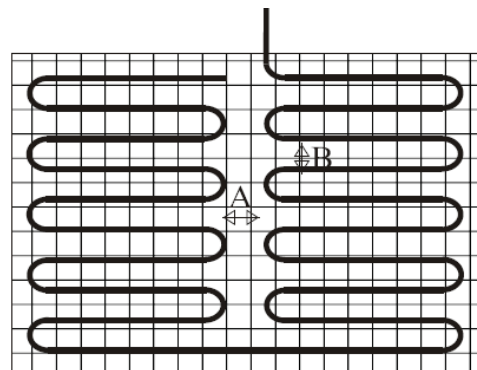


Figure 5

**IMPORTANT: The mesh may overlap but the heating element wire must never overlap.**

Minimum bend radius of the cables is 2 inches (5cm). Do not install the mat below  $-15^{\circ}\text{C}$  ( $5^{\circ}\text{F}$ ).

**Testing the System Resistance:**

Before setting the heating Mat or cables, measure the resistance with an Ohmmeter (see chart) and note the value on the system installation sticker that should be attached to the distribution panel. After completing the heating system installation, measure the system's resistance again with the Ohmmeter. Compare the new reading with the first measurement to assure they are identical and no damage has occurred to the Snow melting Mat during installation. Mark the measured resistance on the attached card and fasten to the circuit breaker box (distribution panel).

**IMPORTANT: The system warranty may be cancelled without evidence that the system resistance has been tested or the data is not filled in on the Control Card below.**

The BRITECH Snow Mats are designed to operate on 240 volts.

## BRITECH Snow Melting Mat

### Operating Voltage 240V

| PRODUCT           | AREA<br>(Sq. ft.) | WIDTH (ft)<br>of Mat | LENGTH (ft)<br>of Mat | POWER<br>(watts) | LOAD<br>(Amps.) | RESISTANCE<br>(ohms) |
|-------------------|-------------------|----------------------|-----------------------|------------------|-----------------|----------------------|
| <b>SMMT- 970</b>  | 24.0              | 1.5                  | 16.0                  | 970              | 4.0             | 59.4                 |
| <b>SMMT- 1440</b> | 36.0              | 1.5                  | 24.0                  | 1440             | 6.0             | 40.0                 |
| <b>SMMT- 1950</b> | 49.0              | 1.5                  | 32.0                  | 1950             | 8.1             | 29.5                 |
| <b>SMMT- 2160</b> | 54.0              | 1.5                  | 36.0                  | 2160             | 9.0             | 26.7                 |
| <b>SMMT- 2890</b> | 72.0              | 1.5                  | 48.0                  | 2890             | 12.0            | 19.9                 |
| <b>SMMT- 3900</b> | 97.0              | 1.5                  | 65.0                  | 3900             | 16.3            | 14.8                 |
| <b>SMMT- 4330</b> | 108.0             | 3                    | 36.0                  | 4330             | 18.0            | 13.3                 |
| <b>SMMT- 4870</b> | 122.0             | 3                    | 41.0                  | 4870             | 20.3            | 11.8                 |

## BRITECH Snow Melting Control Card

Cat Ref No :

| Test | Before commencing installation | After installation but before final surface | After final surface |
|------|--------------------------------|---|---------------------|
|------|--------------------------------|---|---------------------|

|                                     |  |  |  |
|-------------------------------------|--|--|--|
| Continuity                          |  |  |  |
| Resistance of Cable<br>( Ohms )     |  |  |  |
| Insulation Resistance<br>( M Ohms ) |  |  |  |

**Address of Installation :**

**Date of Installation :**

**Name and Signature of Qualified Electrician :**

## Covering the Heating Mat or Cables

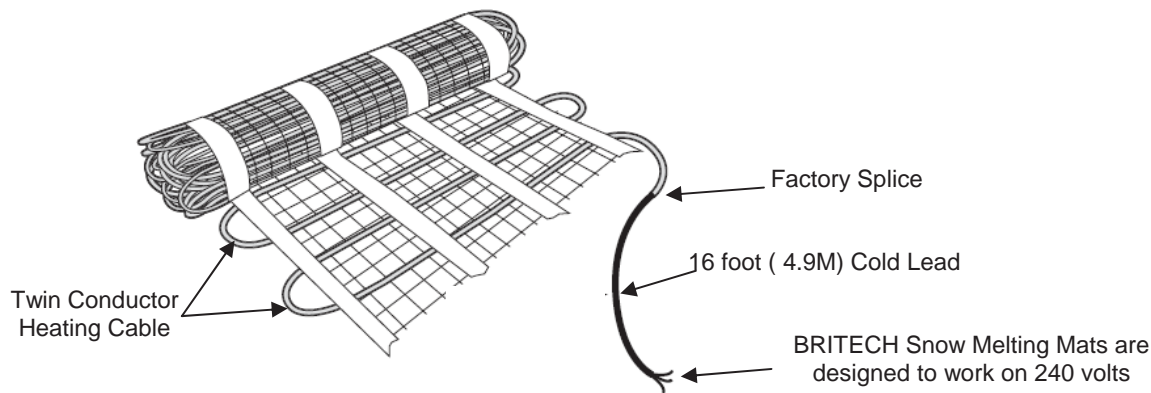
The Heating system may be covered with concrete, asphalt or interlock. When covering the system do not move or place heavy loads such as wheel loaders, tampers, wheelbarrows, cars, trucks, skids of brick, stone, or cement or mixers on the cable or mat.

**BE CAREFUL!! Shovels and rakes can damage the cables.**

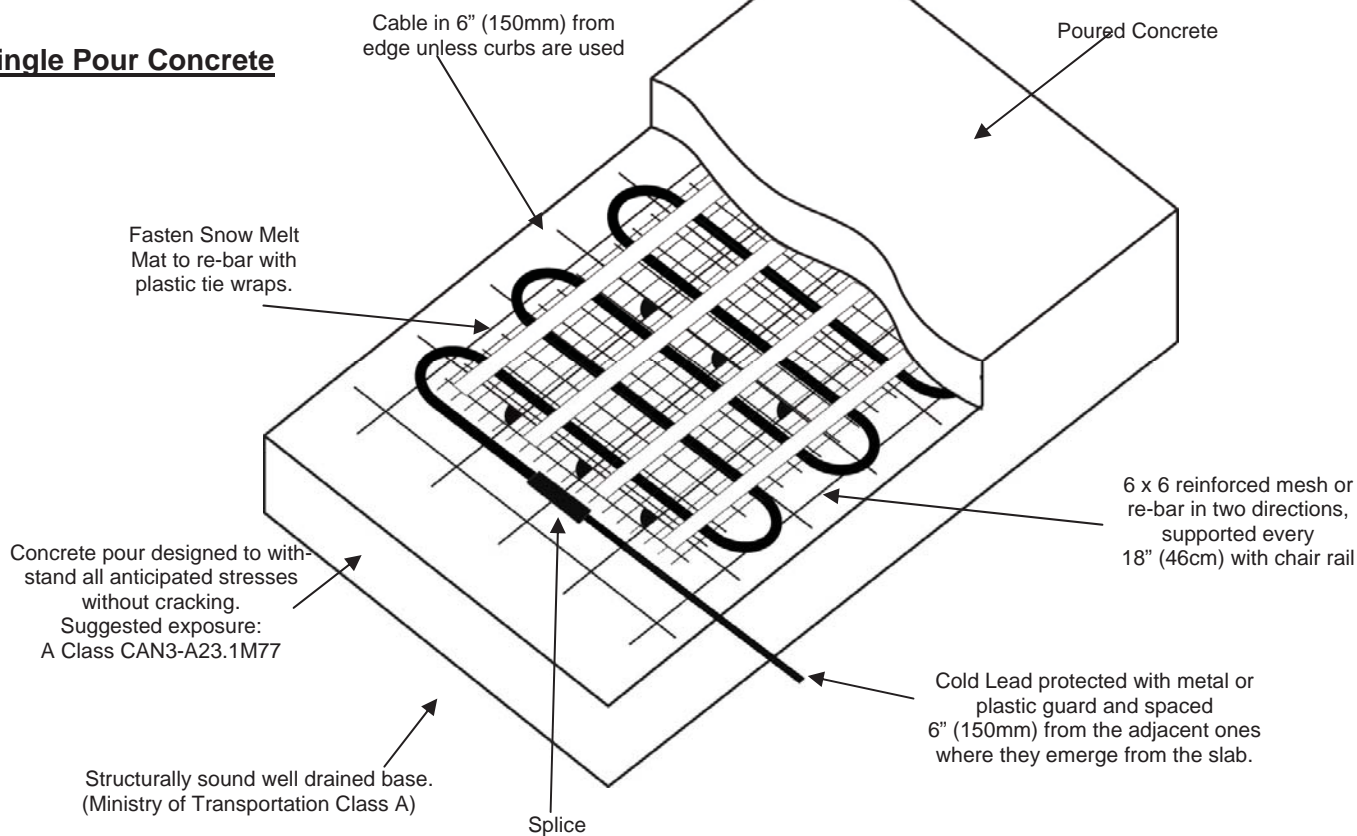
Should access with heavy equipment be required, carefully move the mats or cables away from the path of the heavy loads, cover the furthest area with the surface material and work back towards the road.

Ensure the entire Heating Cable, factory splice and thermostat sensor are embedded into the cement, asphalt or sand. Allow a sufficient drying or curing period of the concrete or asphalt before turning on the system, to prevent failure of the system.

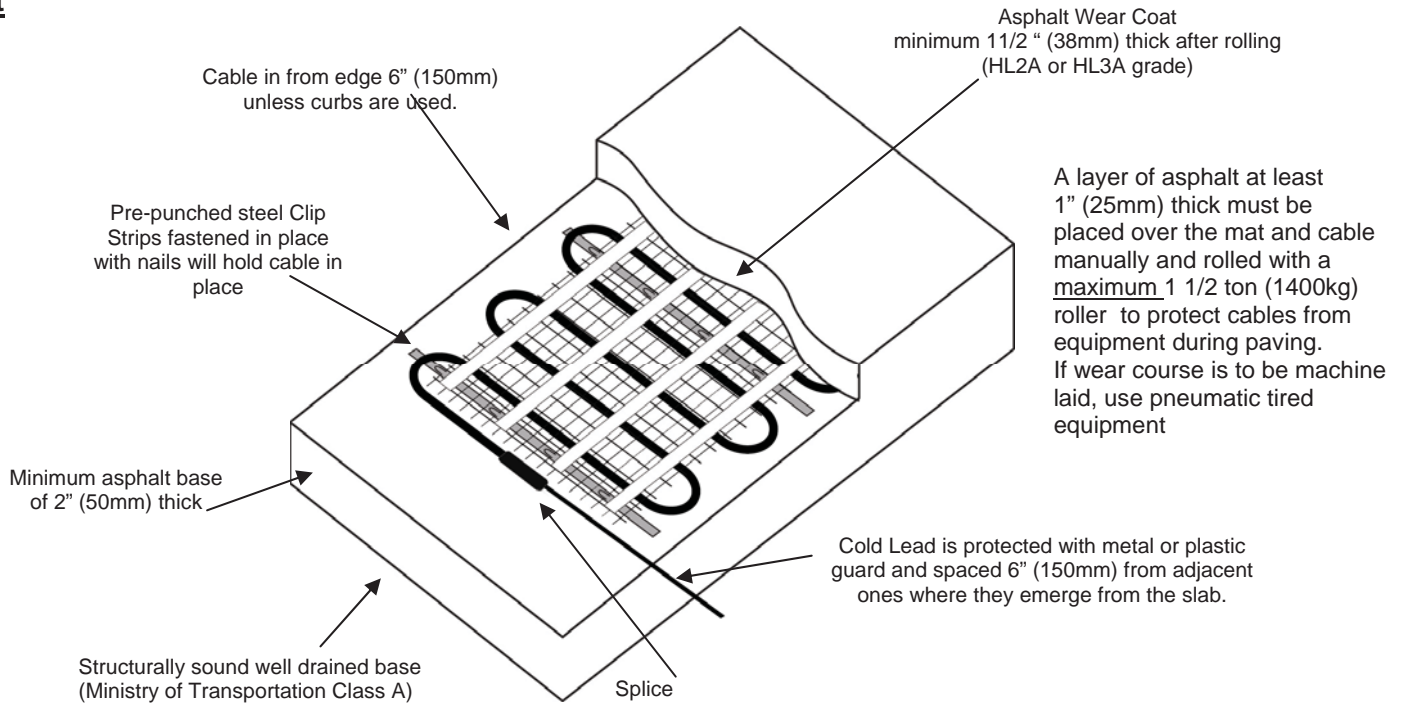
***For snow melting on stairs, small areas or uncommon geometric areas, please contact your BRITECH representative for information on Snow Melting Cables.***



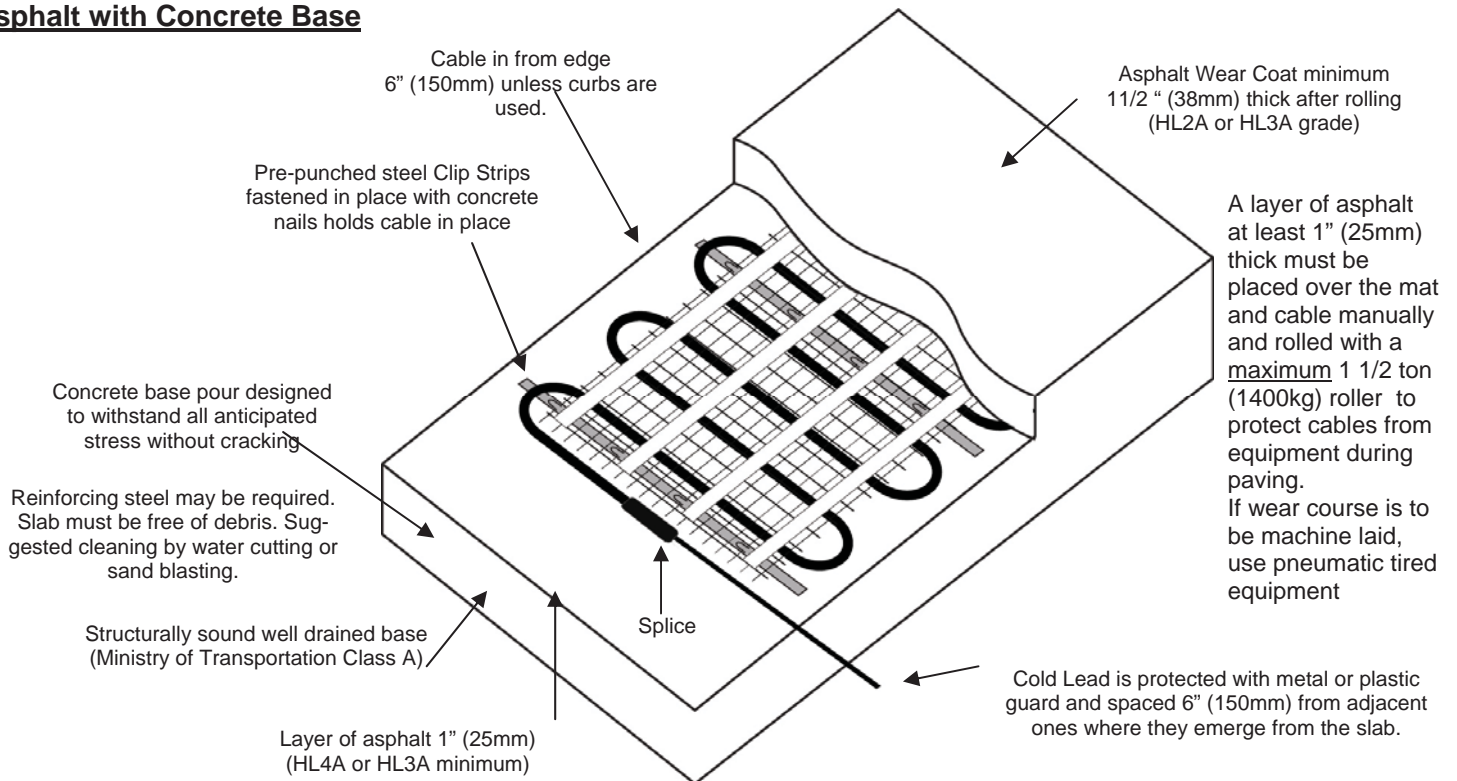
## Single Pour Concrete



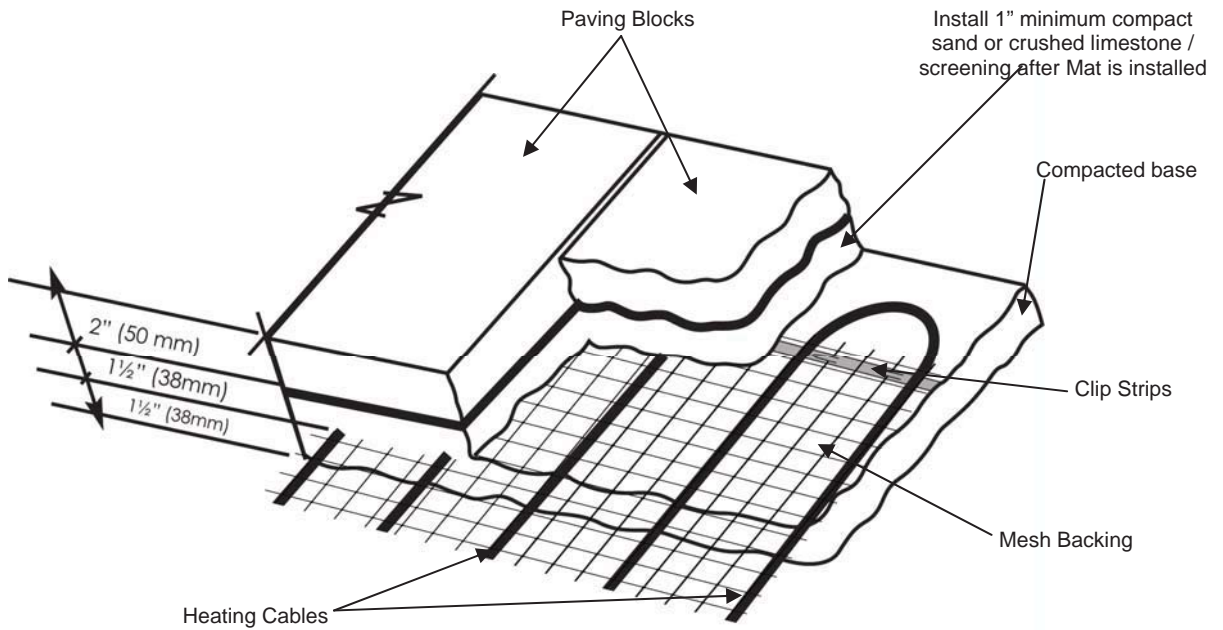
## Asphalt



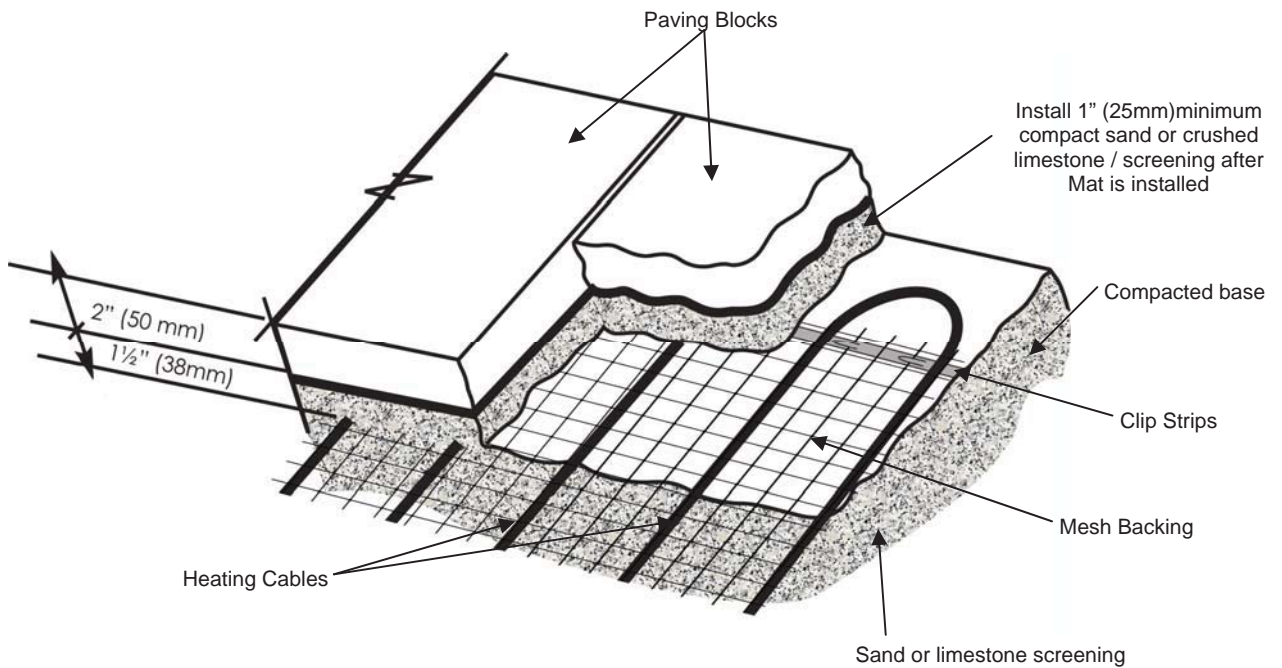
## Asphalt with Concrete Base



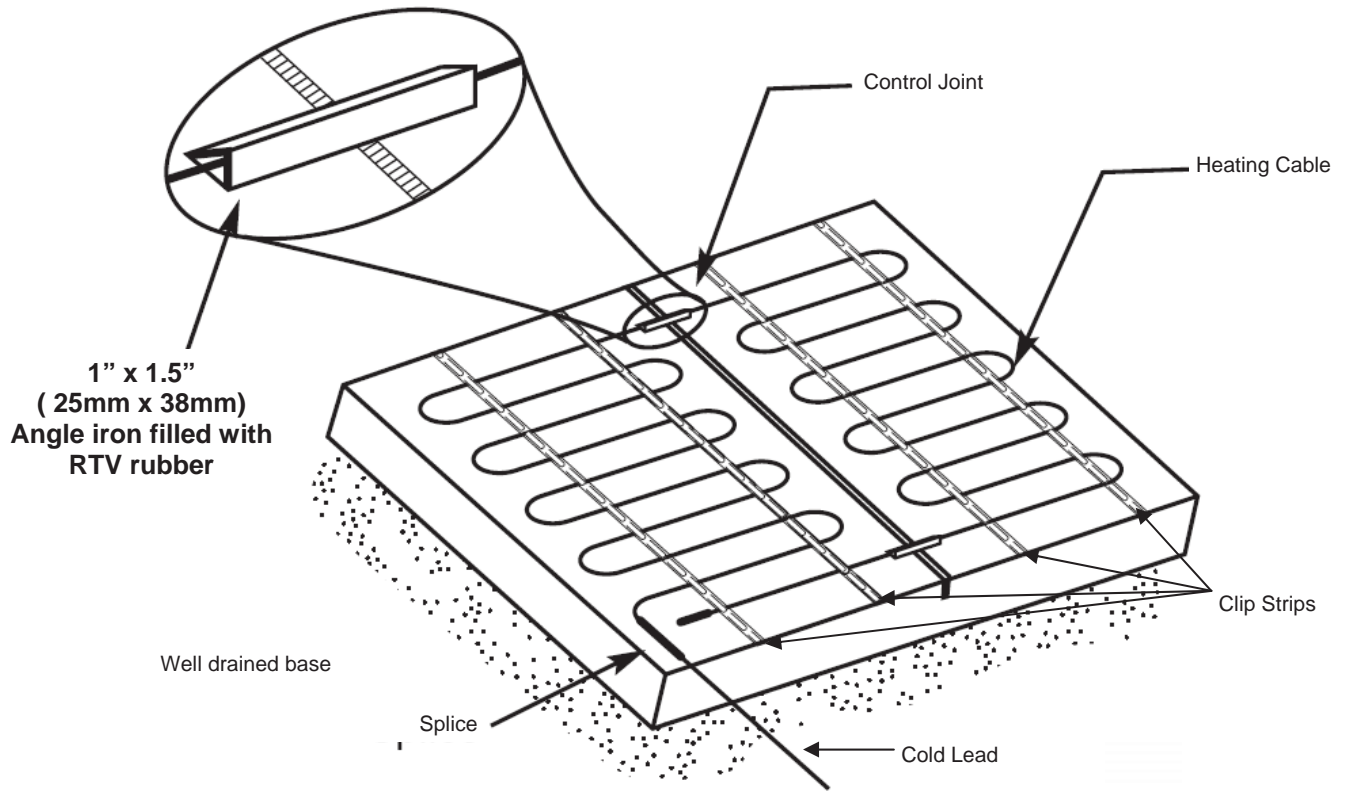
## Pavers on Concrete



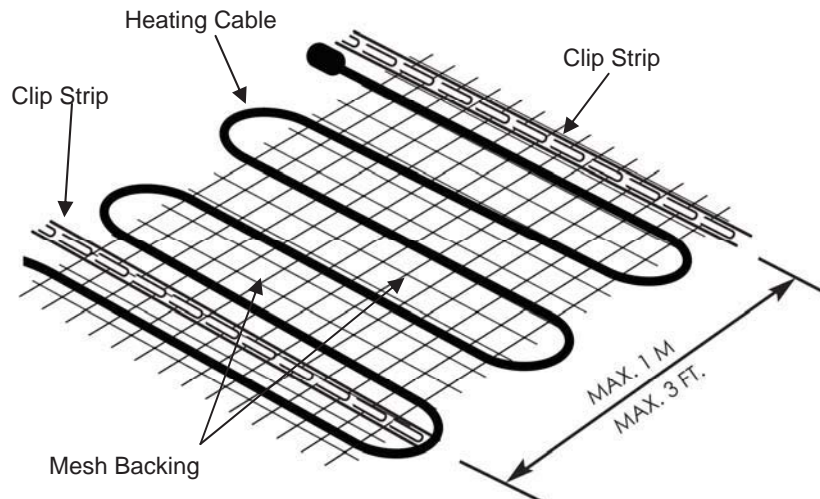
## Pavers on Crush Run



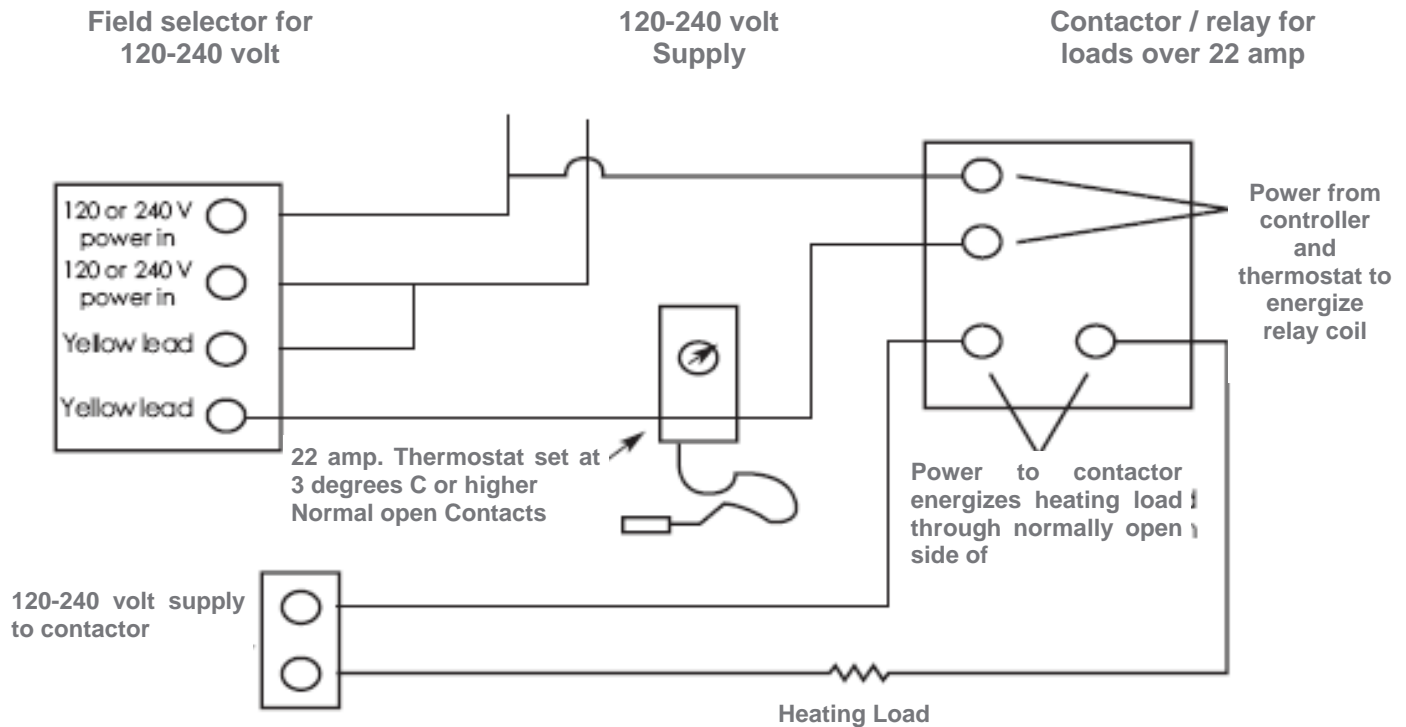
## Control Joint



## Clip Strip



## SNOW MELT CONTROL—120 to 240 volt Maximum 22 amp. 240 volts supply to sensor and thermostat DS-2B



Check instruction manual to ensure the timer, temperature settings and dip switches are set.

Timer should be set for 90 minutes "ON".

Temperature switch to be set to 34 to 35 degrees F. (1-1.5 C.)

Dip switches set as following:

|      |     |
|------|-----|
| LTC  | OFF |
| DEL  | ON  |
| RAIN | OFF |
| SNOW | ON  |

**FAILURE TO ACCURATELY SET ALL FUNCTIONS WILL RESULT IN POOR PERFORMANCE.**

### Trouble Shooting

**CAUTION: TURN OFF ELECTRICITY BEFORE TROUBLESHOOTING SYSTEM**

1. If the system fails to heat, make sure the GFCI (Ground Fault Circuit Interrupter) has not been tripped. If it has, find the fault and rectify.
2. Check for continuity with an Ohmmeter. Compare the reading with the resistance marked on the Output Plate. Lack of, or reduced, continuity may indicate a break in the system.
3. Make sure the breaker or fuse is delivering power to the system. If your system fails to heat after these checks call your installer. Be sure to tell the installer the Model Number of your system. This will be found on the warranty card attached to the circuit breaker box door.