

## TECH-Series Snow Melting Cables — Homeowner's Guide and Installation Manual — SNOW-CABLES

TECH-Series Snow Melting Cables are designed to provide sufficient heat to melt snow in residential and commercial applications across North America.

The TECH-Series Snow Melting Cables are constructed of the finest materials available. The Heating Cables are comprised of a dual, multi strand heating element with primary insulation of fluoropolymer. The insulation core is then protected with a woven metal braid and an outer jacket of PVC, EPR or Zero Polyolefin base compound to make it sturdier and to provide corrosion protection. These cables come with a 16.4' (5M) cold lead. The element to the cold lead splice is sturdy and waterproof.

TECH-Series Snow Melting Cables are CSA listed for OUTDOOR SNOW MELTING APPLICATIONS.



TECH-Series Heating Cables are warranted to be free from manufacturers defect for 20 years (see written Limited Warranty for details). Maintenance free, safe, silent, energy efficient and once installed, they are totally out-of-sight. While a variety of controls can be used with TECH-Series Snow Melting Cables, we strongly recommend using a snow sensor, an 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 TECH-Series Snow Melting 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 TECH-Series Snow Melting Cables 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:

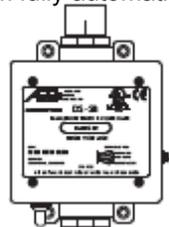
The electrical connection of the TECH-Series Snow Melting Cables must be preformed by a qualified electrician in accordance with all National (NEC), State and Local Electrical Codes. Most installers should be able to provide you with a plan of the system installation. We suggest taking a photo of the heating elements and the location of the optional floor temperature sensor previous to covering the elements along with the electrical description of the system. Keep the photos for your system and a copy of these instructions for future reference. Future homeowners should also receive this information.

No penetrating fasteners (such as nails or screws) may be installed through the area covered by the Snow Melting Cables. To optimize the efficiency of the system never bury the Cables 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 crushed, compacted stone between the cables and the brick. Make sure your installation is planned to use the 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.

Sensor



#### 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. Temperature controls come in many different varieties and apillary to reach into the slab.

#### Maintenance:

Periodically, the listed GFEP (Ground Fault Equipment Protection) which is required in all installations, should be tested (if the unit design allows) to insure its continued operation. TECH-Series Snow Melting Mats have no moving parts. The system is virtually maintenance free. If the system does not appear to be heating properly, refer to your 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 National Electrical Code and all local codes. To assure safety, the TECH-Series Snow Melting System must be connected to the electrical service via a listed GFEP (Ground Fault Equipment Protection).

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

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

The heating element should not be laid across expansion joints of ramps. While installing the TECH-Series Snow Melting Cables, avoid crimping or bending the heating element wire.



Thermostat

**Testing the System Resistance:**

Before setting the heating 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 during installation. Mark the measured resistance on the attached card and fasten to the circuit breaker box (distribution panel).

**IMPORTANT: The system warranty is not valid without evidence that the system resistance has been tested or if the Control Card has not been completely filled out.**

**TECH-Series Snow Melting Cables**

Operating Voltage 240v

Standard Wattage 11w / ft

| PRODUCT          | Length (ft) | Watts | Load (Amps) | Resistance (Ohms) | Recommended Coverage |    |             |
|------------------|-------------|-------|-------------|-------------------|----------------------|----|-------------|
|                  |             |       |             |                   | @40w/sq.ft.          |    | @35w/sq.ft. |
| <b>SMC-T970</b>  | 88.6        | 970   | 4.0         | 59.4              | 24 sq.ft.            | to | 28 sq.ft.   |
| <b>SMC-T1440</b> | 131.2       | 1440  | 6.0         | 40.0              | 36 sq.ft.            | to | 41 sq.ft.   |
| <b>SMC-T1950</b> | 177.2       | 1950  | 8.1         | 29.5              | 49 sq.ft.            | to | 56 sq.ft.   |
| <b>SMC-T2160</b> | 196.9       | 2160  | 9.0         | 26.7              | 54 sq.ft.            | to | 61 sq.ft.   |
| <b>SMC-T2890</b> | 262.5       | 2890  | 12.0        | 19.9              | 72 sq.ft.            | to | 83 sq.ft.   |
| <b>SMC-T3900</b> | 354.3       | 3900  | 16.3        | 14.8              | 97 sq.ft.            | to | 111 sq.ft.  |

Cold Lead 16.4 ft .

**TECH-Series Snow Melting Control Card**

Cat Ref No :

| Test                             | Before commencing installation | After installation but before final surface | After final surface |
|----------------------------------|--------------------------------|---|---------------------|
| Continuity                       |                                |   |                     |
| Resistance of Cable ( Ohms )     |                                |   |                     |
| Insulation Resistance ( M Ohms ) |                                |   |                     |

**Address of Installation :**

**Date of Installation :**

**Name and Signature of Qualified Electrician :**

**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.**

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

**IMPORTANT: Cold leads from remote temperature sensors must also be wired in accordance with all National (NEC), state and local electrical codes. If EXTENSIONS or SPLICES are required for heating cables or remote sensors, follow all National (NEC), state and local electrical codes. All junction boxes must be visible and accessible per NEC Code.**

The National Electrical Code (NEC) requires that heating cable cold leads must be protected in a listed conduit when they extend outside the heating 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 cables have been secured to the sub-base. This will allow you to place the sensor as required, between the heating element wires.**

**Positioning the Heating Cables**

Start to layout the heating Cables as close as possible to the electric supply source and the thermostat or junction box. Ensure cold leads and temperature sensor can reach the flush mounted electrical box where the thermostat will be installed. Should the system become damaged

during the installation process, it is helpful to know the location of the splice. 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 that may hinder operation and/or possibly damage the product.

**Laying Out the Snow Melting Cable**

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. Cable must be laid out with even spacing over the entire area to be heated. To ensure an accurate and easy method of installing the cable we recommend you use Orbit's Clip Strips. For rebar or grid use plastic zip ties (supplied by the installer).

The Clip Strips should be laid perpendicular to the direction of the cable. Space the Clip Strips 3feet (91 cm) apart. Secure the cable to the strips at the correct center to center distance.

The spacing should not exceed 4" ( 100mm) and should not be less then 3" (76mm) . If the spacing distance is higher, cold spots may form on the surface and uniform melting may not occur. Please see surface application section for the correct spacing for your project.

Ensure the entire element is encased in the sidewalk, ramp or driveway. 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.**

**ELEMENT SPACING**

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

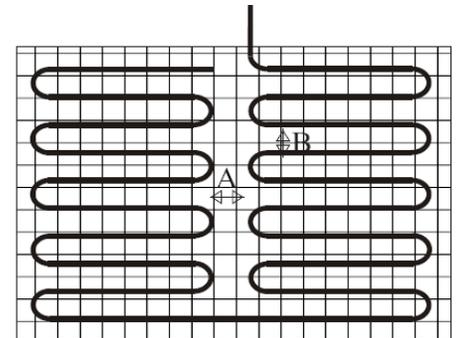


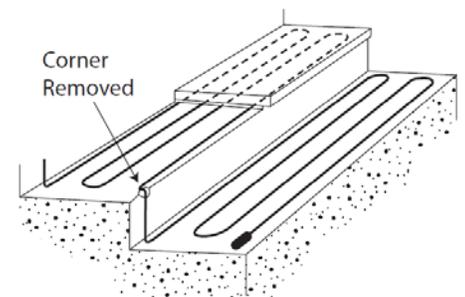
Figure 5

**IMPORTANT: Heating element wire must never overlap.**

Minimum bend radius of the cables is 2" (5 cm). Do not install the mat below – 15° C (5° F).

**Heating Cables on Stairs**

The TECH-Series Snow Melting Cables should be laid lengthways on the top of each step so they only lie only on the horizontal surface. The cables should be embedded in mortar covered with 2" (50cm) screed or paving slabs. Normally there are 3 to 5 cable runs on each step.



### Covering the Heating 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 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.

### Single Pour Concrete

**Important: The splice must be embedded in the concrete.**

Cold lead cable should be terminated in the junction box above grade level to prevent moisture from entering the box.

Care must be taken not to damage the cable with rakes, shovels, wheelbarrows, cars, trucks, cement or mixers etc.

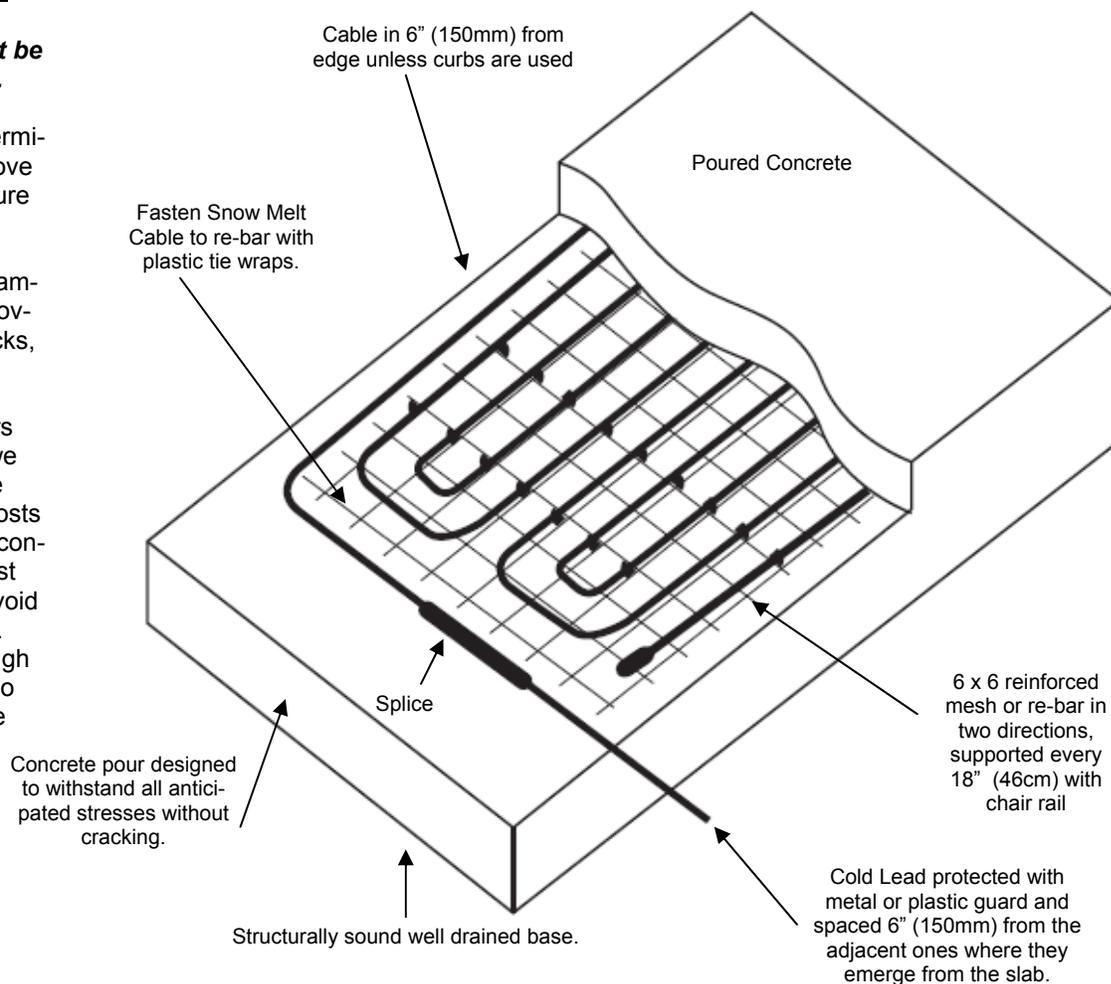
For installations around stairs that will include hand rails, we strongly recommend that the installer pre-sleeve for the posts to avoid any drilling into the concrete. The heating cable must be routed around posts to avoid any direct contact with them. Avoid cutting or drilling through the heating cables that will no longer be visible beneath the concrete.

### To Determine Spacing

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

**EXAMPLE:**

$$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7''$$



## ASPHALT

**Important: The splice must be embedded in the asphalt.**

Cold lead cable should be terminated in the junction box above grade level to prevent moisture from entering the box.

Care must be taken not to damage the cable with rakes, shovels, wheelbarrows, etc.

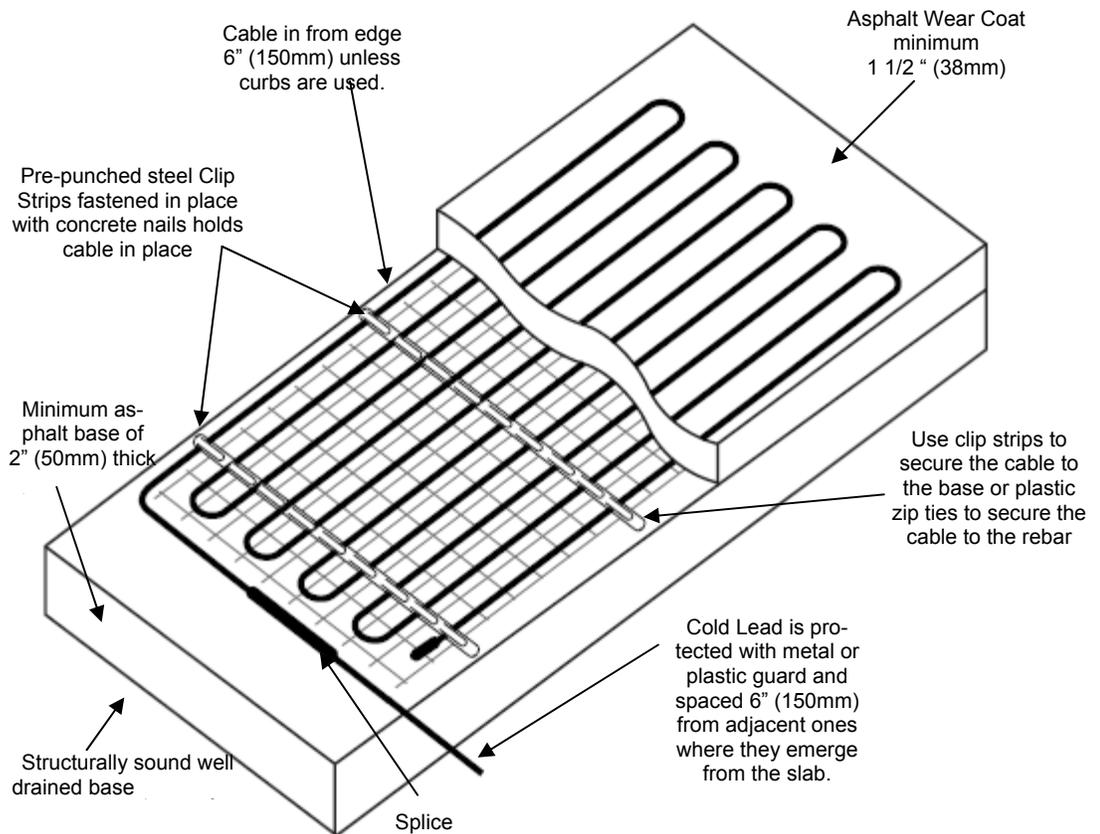
A layer of asphalt at least 1" (25mm) thick must be placed over the cable manually and rolled with a maximum 1 1/2 ton (1400kg) roller to protect cables from equipment during paving. If wear course is to be machine laid, use pneumatic tired equipment.

### To Determine Spacing

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

EXAMPLE:

$$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7''$$



## ASPHALT

### with Concrete base

**Important: The splice must be embedded in the asphalt.**

Cold lead cable should be terminated in the junction box above grade level to prevent moisture from entering the box.

Care must be taken not to damage the cable with rakes, shovels, wheelbarrows, etc.

A layer of asphalt at least 1" (25mm) thick must be placed over the cable manually and rolled with a maximum 1 1/2 ton (1400kg) roller to protect cables from equipment during paving. If wear course is to be machine laid, use pneumatic tired equipment.

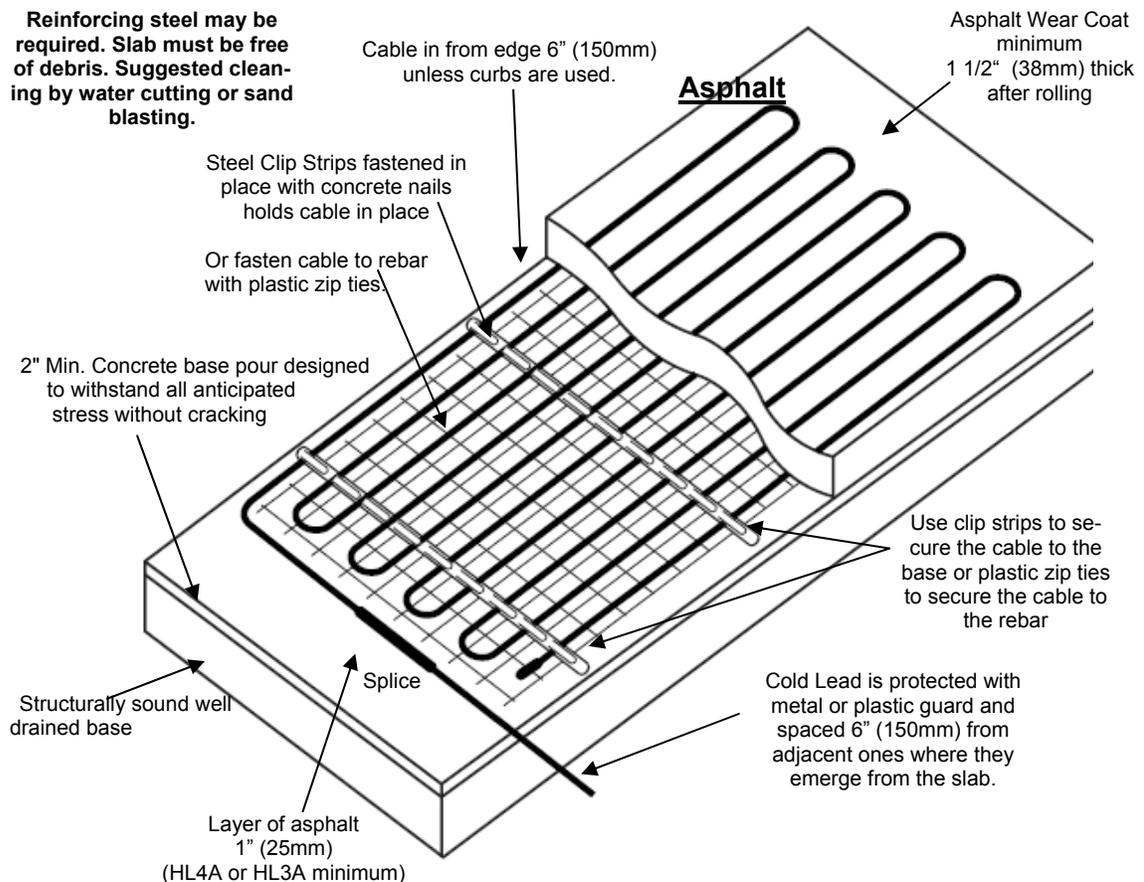
### To Determine Spacing

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

EXAMPLE:

$$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7''$$

Reinforcing steel may be required. Slab must be free of debris. Suggested cleaning by water cutting or sand blasting.



## **STAIRS**

**Important: The splice must be embedded in the concrete or tile adhesive.**

Cold lead cable should be terminated in the junction box above grade level to prevent moisture from entering the box.

Care must be taken not to damage the cable with rakes, shovels, wheelbarrows, etc.

When using the two pour method the base slab must be clean, wetted and then coated with a cement slurry. Slurry must NOT dry before the top cap is poured.

Cold Lead must be protected with metal or plastic guard and spaced 6" (150mm) from adjacent ones where they emerge from the slab.

Cables should be at least 4" (100mm) from the sides of each step.

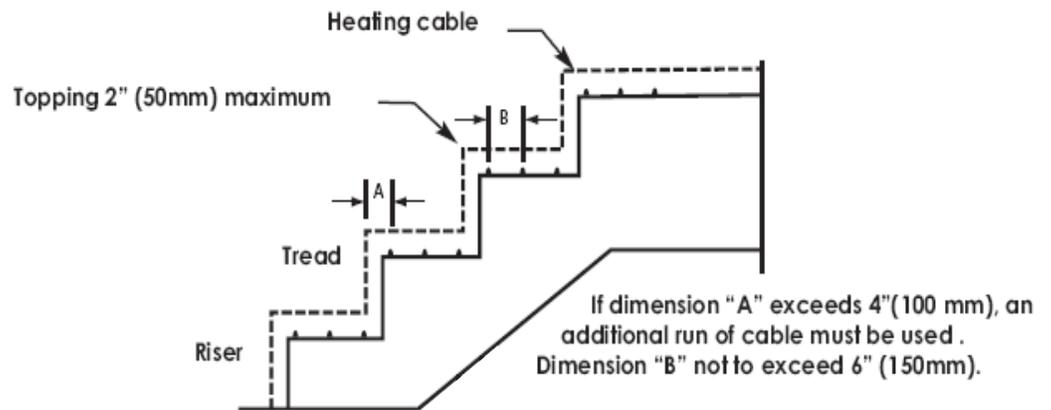
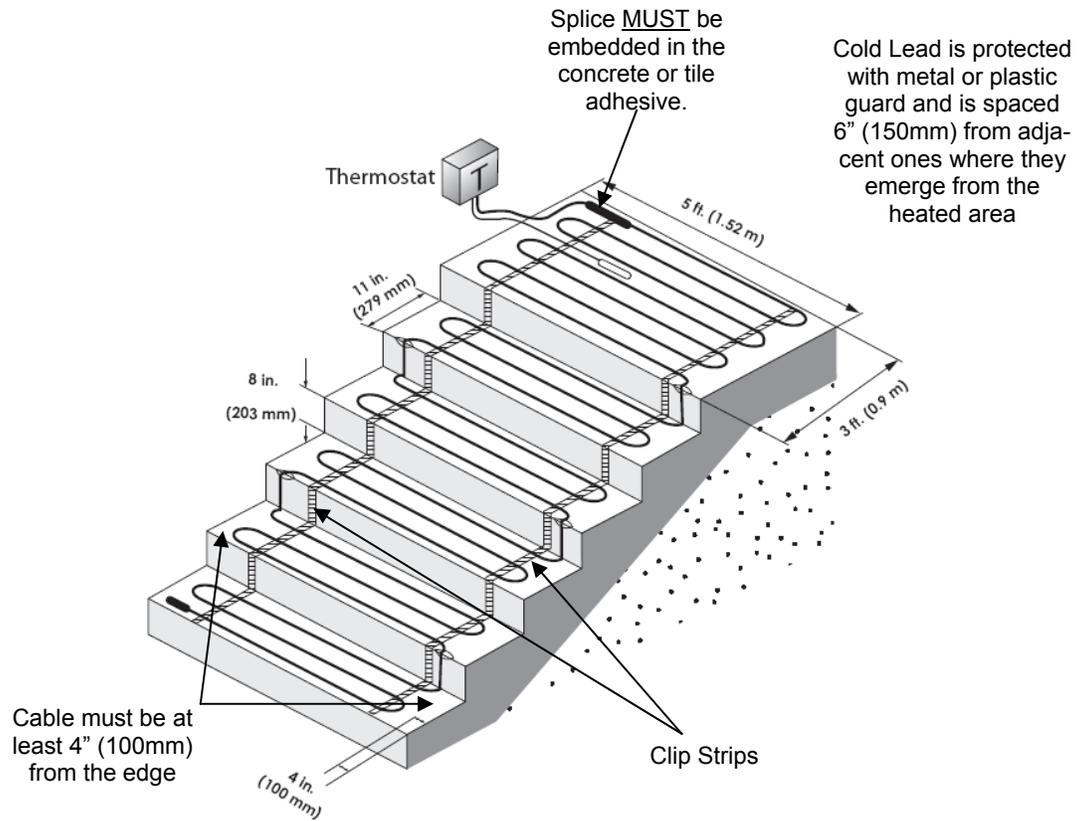
For installations in stairs that will include hand rails, we strongly recommend that the installer pre-sleeve for the posts to avoid any drilling into the mortar. The heating cable must be routed around posts to avoid any direct contact with them. The electrician and paver should coordinate their efforts so they avoid cutting or drilling through the heating cables that will no longer be visible beneath the mortar.

### **To Determine Spacing**

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

**EXAMPLE:**

$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7"$



## Pavers on Concrete

The heating cable should be attached to the concrete with clip strips or tied to rebar with plastic zip ties.

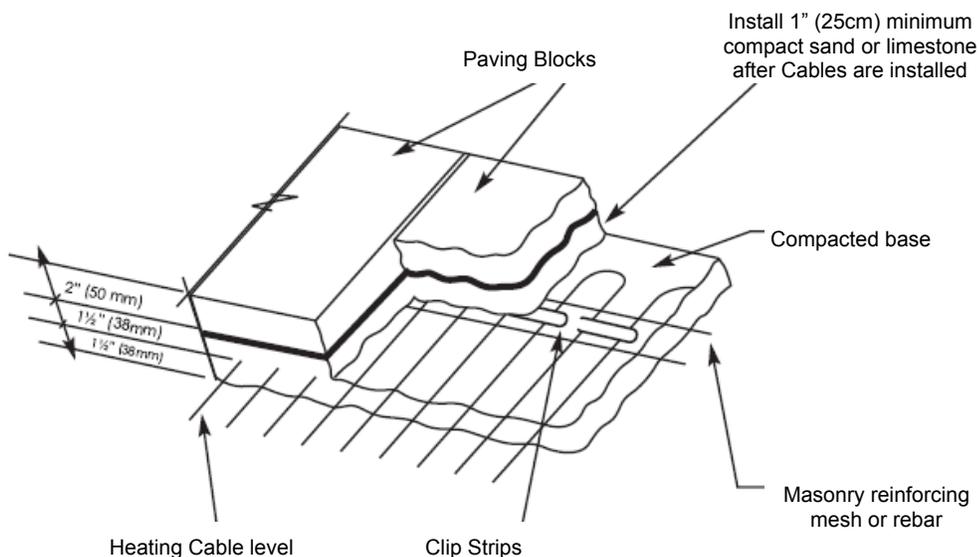
Care must be taken by the paver installers to cover the cables with sand or limestone so they do not make direct contact with the pavers or bricks. We recommend that this layer be at least 1" (2.5cm) thick.

### To Determine Spacing

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

*EXAMPLE:*

$$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7''$$



## Pavers on Crush Run

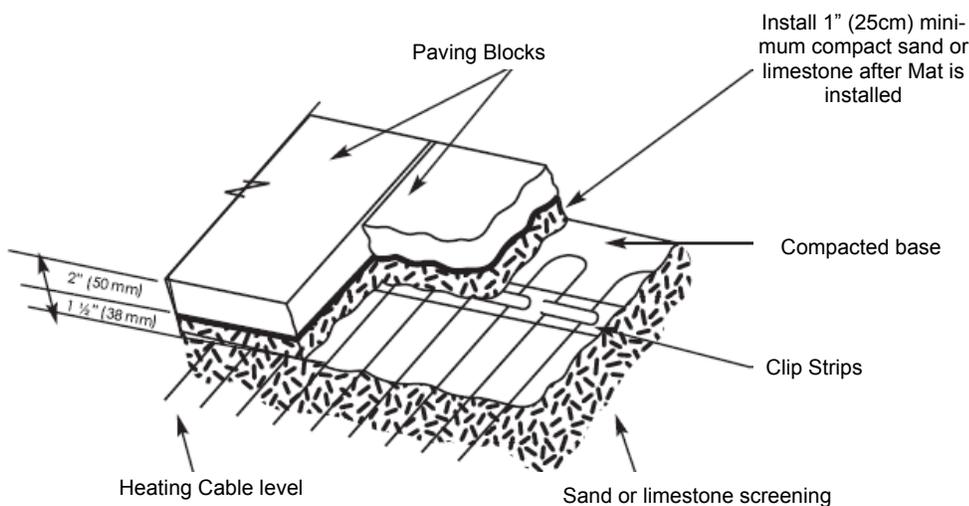
Special care must be taken not to damage the heating cables when they are being installed under brick or tiles. The area must be completely level and free of stones or other sharp objects. The heating cable must be installed close to the bricks or tiles in a layer of sand at least 1" (2.5cm) under the bricks.

### To Determine Spacing

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

*EXAMPLE:*

$$(61 \text{ sq. ft.} \times 12) \div 197 \text{ ft.} = 3.7''$$



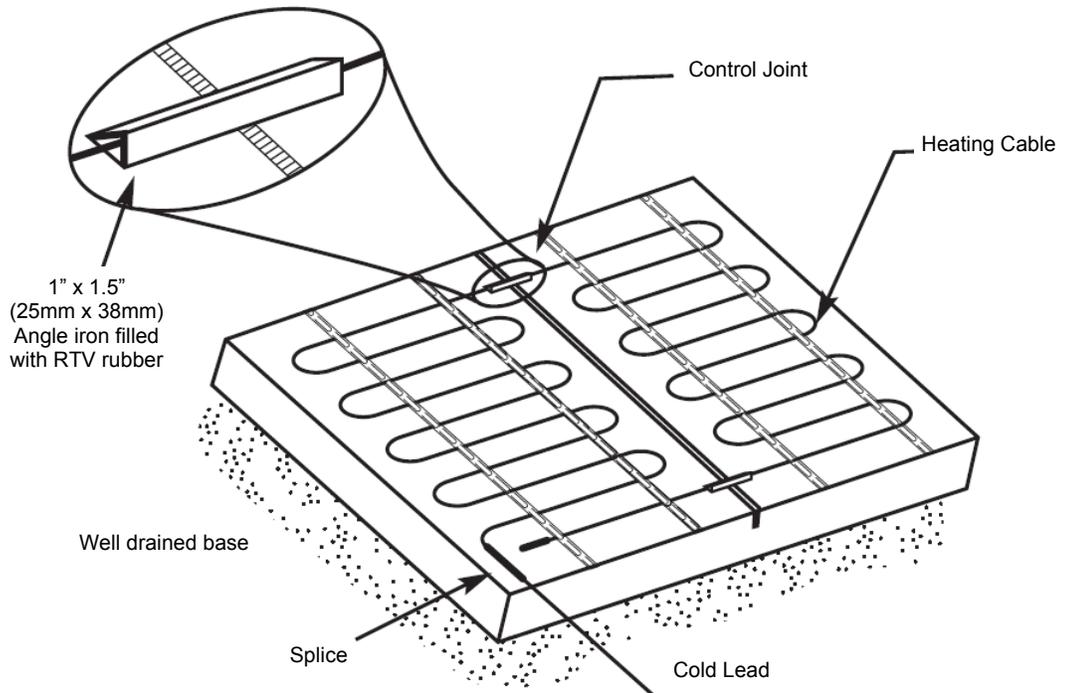
**Control Joint**

**Important: The splice must be embedded in the concrete.**

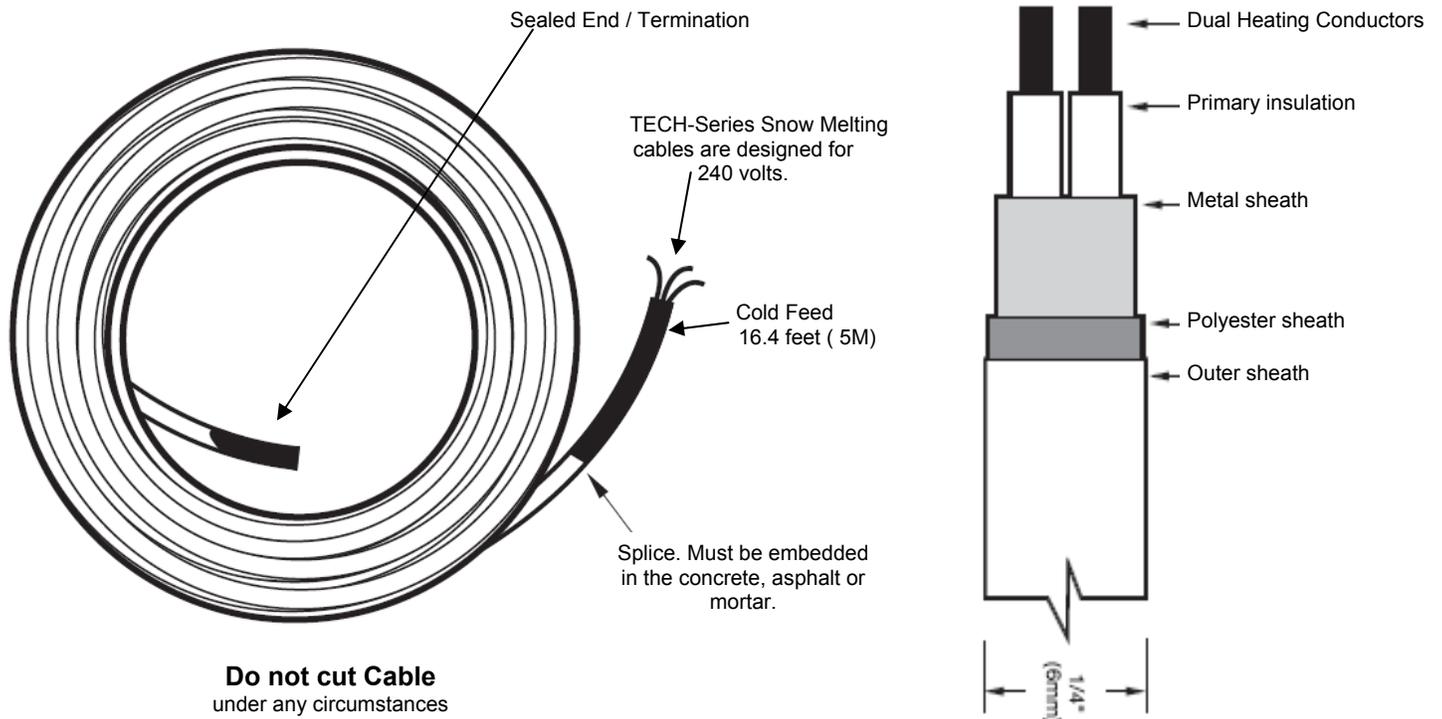
**To Determine Spacing**

Multiply the surface area (sq.ft.) by 12 and divide by the heating cable length (ft) = spacing (inches).

**EXAMPLE:**  
(61 sq. ft. x 12) ÷ 197 ft. = 3.7"

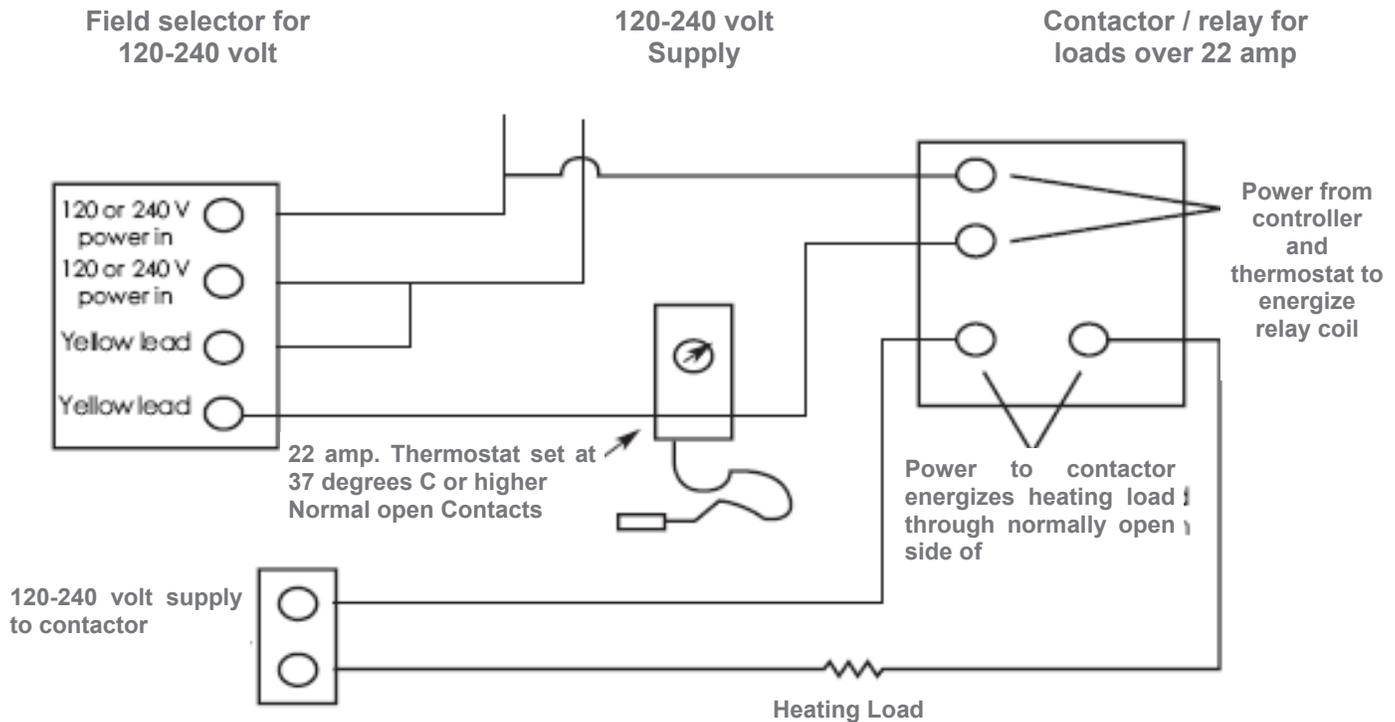


**TECH-Series Snow Melting Twin Conductor Heating Cable**



## 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 THIS SYSTEM. TROUBLESHOOTING SHOULD BE DONE BY YOUR INSTALLER OR ANY QUALIFIED, LISCENED ELECTRICIAN.**

1. If the system fails to heat, check that the GFEP (Ground Fault Equipment Protection) did not trip. If it has, contact your installer for further testing.
2. Your Installer can check for continuity with an Ohmmeter. Compare the reading with the resistance marked on the Warranty Card. Lack of, or reduced continuity may indicate a break in the system.
3. If your system fails to heat and the GFEP has not tripped, call your installer. They can verify the breaker is supplying power to the system. Have the Model Number of your system ready before calling tech support. This can be found on the Invoice, Packing List or Warranty Card that should be on site.