Application/Introduction

The use of SBA Snow Melting Cable is a reliable, efficient and economical way of preventing snow and ice accumulation on concrete, stone and paved surfaces. Snow melting systems eliminate the traditional plowing and shoveling methods of snow removal as well as the older, less efficient hydronic systems. The use of electric power for snow removal also eliminates the need for salts and other chemicals that can result in environmental pollution and greatly reduce the possibility of pavement damage.

Durability

SBA utilizes it's high performance, industrial grade, mineral insulated heating cable for improved reliability over comparable systems. The corrosion resistant outer sheath is made from Alloy 825 stainless steel for superior mechanical protection before, during and after installation.

Advantages

SBA MI cable has been used in snow melting systems for over 50 years and offers several advantages over alternate heater technologies:

- **Uniform Power Output**
- **Higher Snow Melting Loads**
- **Reduced Power Distribution Costs**
- **Reduced Cycle Time, No Idling**
- **Superior Mechanical Protection**
- **Design and Installation Flexibility**

Selection

The proper selection of the heating load is based on two basic requirements; the expected rate of snow fall and the safety requirements for the coverage area. In addition, other environmental conditions including air temperature, wind speed, higher than average snow fall rates and snow coverage should also be considered during the selection process. The following selection procedure provides the most economical snow melting system for a variety of common coverage areas.

Step 1: Determine the Desired Heat Load

The following information is used for selecting the system heat load requirements:

Minimum		Moderate		Maximum	
30 Watts / Ft²	**320 Watts / M²**	**40 Watts / Ft²**	**430 Watts / M²**	**50 Watts / Ft²**	**540 Watts / M²**
Residential sidewalks Residential driveways Light commercial walkways Light commercial entrances Industrial interplant walkways		Commercial sidewalks Commercial driveways Hospital steps Visitor entrances		Toll plazas of highways Toll plazas of bridges Aprons and loading areas Hospital loading areas Emergency Room entrances	

Step 2: Select the Supply Voltage

Select the voltage that will be used to power the snow melting system

Note: For voltages above 300 volts, surge protection should be installed at the breaker panel if the panel is not isolated from its power supply by an isolation transformer.

Step 3: Determine Coverage Area

Calculate the coverage area in square feet (Ft²) or square meters (M²). Small areas may only require a single cable. Large areas can be divided into smaller areas based on the use of multiple cables to fit the total area or by expansion joint boundary locations.

Step 4: Select Cable(s)

Using the values from Steps 1-3, select the cable or cables that best fit the calculated coverage area. For coverage areas that overlap, selecting the smaller coverage cable will reduce the heating load and selecting the larger coverage cable will increase the heating load.

Step 5: Select Breaker Size

The National and Canadian Electrical Codes require the branch circuit breaker to be sized at 125% of the total amperage load. Select a branch breaker with a handle rating that exceeds this calculated value. For installations that require more than one cable, multiple cables can be connected to a single branch breaker as long as the combined load is less than 80% of the breaker handle rating.

Example: Cable = A674K15507 Voltage = 240VAC Breaker Amps = 21.5A
Multiply Breaker Amps by 125% 21.5 X 125% = 26.9 Total Load
A Total Load of 26.9 amps would require a 30A Branch Breaker to be used.

Installation

To assure a long lasting, dependable snow melting system, please follow the guidelines and procedures detailed in the following sections.

Paving Guidelines for Concrete

1. Drainage must be adequate for run off of melting snow or ice.
2. The base material for the pavement should be smooth and compact.
3. Paving materials must be of high quality and strength.
4. Paving thickness must be adequate to support a maximum load without crumbling, settling or excessive movement.
5. A minimum thickness of 4" is recommended for sidewalks and walkways and 6" for areas supporting heavier loads or vehicular traffic.
6. Proper reinforcing materials should be used for all installations.
7. Mark all locations of expansion and control joints to aid heating cable installation.

Paving Guidelines for Tile, Stone or Brick Pavers

1. Basic guidelines for concrete installation apply for the base course.
2. A minimum 1" mortar bed is recommended over the installed heating cable.
3. Extra care must be taken to avoid damage to the cable when setting heavy slabs or brick pavers into position.

Electrical Connection Guidelines

1. Connections to power should be done by a licensed electrician in compliance with National and Local Electrical Codes.
2. Locate electrical connection enclosures to accommodate the standard 7' cold section length. If more than one cable is used, cables should be installed to facilitate multiple connections.
3. Cold sections may be routed through metallic conduit for additional mechanical protection. Do not route cables through non-metallic or PVC based conduit materials.
4. The preferred location for electrical enclosures is a minimum of 3' above grade. Enclosures should be weatherproof with a gasketed cover and low point drain if necessary.
5. Avoid grade level or buried enclosures. If unavoidable, all connections must be suitably waterproofed and the enclosures must have provisions to avoid standing water conditions.
6. Refer to **Figures 1A, 1B and 1C** for additional details.

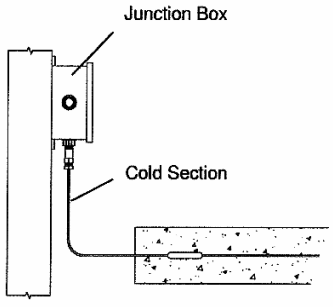

Fig 1A
Exposed Cold Section Installation

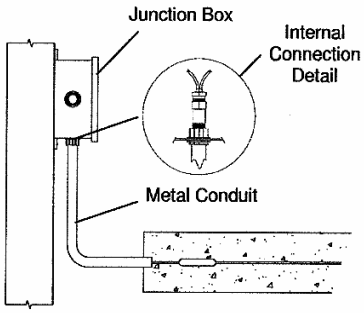

Fig 1B
Protected Cold Section Installation

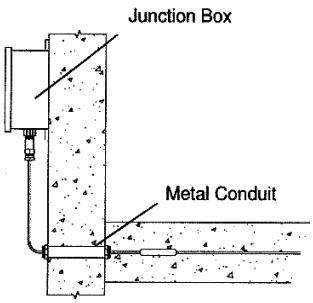

Fig 1C
Interior Wall Installation

Installation Procedures

1. The heating cable insulation resistance should be checked before installing, after final layout and monitored during the pouring operations. The conductor to sheath resistance should be 20 megohms or greater when measured with a 500VDC megger.
2. Unroll the cable along a smooth flat surface to avoid sharp bends or kinks.
3. Do not bend the cable to less than a 2" radius.
4. Do not bend the cable within 3" of any splice or fitting.
5. Heater depth should be 2" to 3" below the final surface. Uneven snow removal may occur if heater is installed less than 2" from the finished surface.
6. Avoid crossing expansion or control joints if possible. If joints must be crossed, see **Figures 2A, 2B and 2C** for recommended methods. Limit the cable installation to a single expansion joint cross, if possible. Heater cables should be installed a minimum of 4-6" from the edge of the slab. Orient the heating cable to minimize the number of bends or to accommodate the electrical connections.

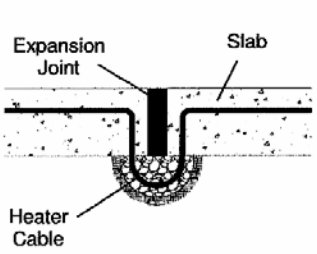

Fig 2A
Pocket Design

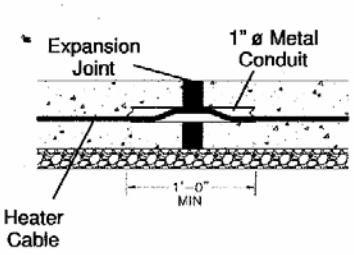

Fig 2B
Tube Design

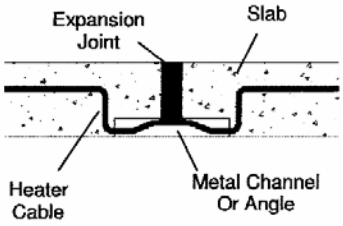

Fig 2C
Channel Design

7. Install cable in selected area but do not fasten until final layout is confirmed. The cable loops may be compressed or stretched slightly to provide uniform cable spacing. See **Figure 3A and 3B** for examples of common layouts.

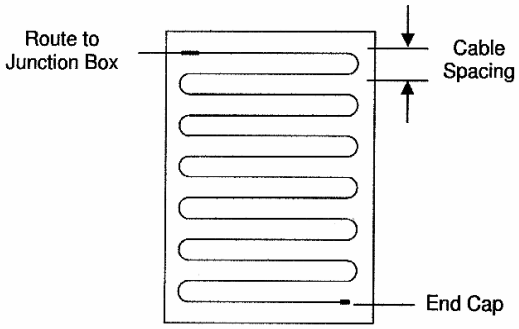

Fig 3A

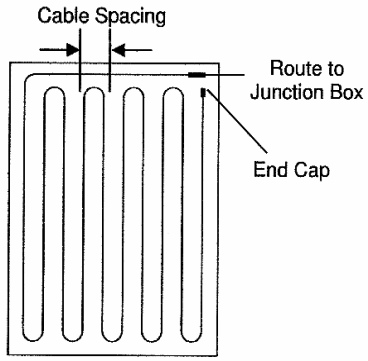

Fig 3B

Cables with ''A'' form connection

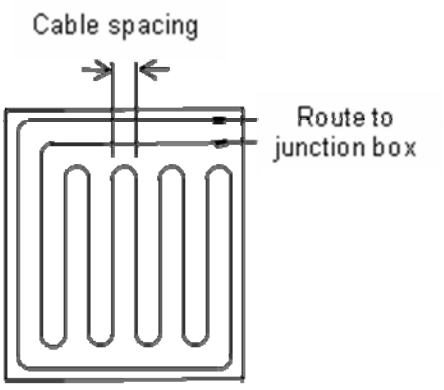

Fig. 3C

Cables with ''E'' form connection

8. When layout is finalized, fasten the heating cable to the reinforcing with metal wire ties. Do not over tighten when using wire ties to avoid possible damage. Secure heater to reinforcing as shown in **Figure 4A**.

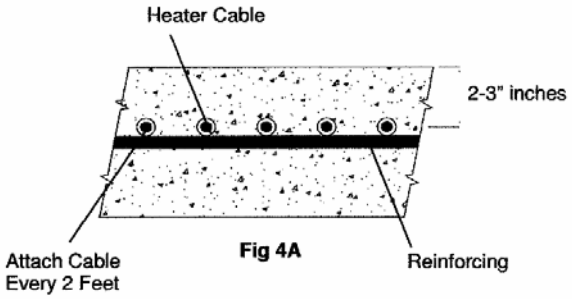

Fig 4A

9. Do not energize the cable until the concrete has completely cured.